Public Health Bibliography Series No. 12

Occupational and Related Dermatoses

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Occupational and Related Dermatoses

Abstracts from the Literature
July 1943 to December 1953, Inclusive

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Foreword

This collection of abstracts of the literature on occupational and related dermatoses constitutes the third of a series of bulletins. The publication contains abstracts for the period July 1943 through December 1953 and is a continuation of Public Health Bulletin Nos. 266 and 284, published by the U. S. Public Health Service in 1941 and 1944. Like its predecessors, it is intended as a reference for dermatologists, industrial physicians, and others interested in contact dermatoses.

An article was selected for abstracting principally because of its reference to contact dermatoses and its application to the field of related dermatoses.

Because of the volume of the pertinent literature, the compilers were confronted with the necessity of arbitrarily limiting the articles chosen in many of the subject areas. Thus, only representative papers have been included on subjects such as contact dermatitis due to antibiotics and antibacterials. Some of the foreign literature has also been covered.

Wherever feasible, the articles have been arranged according to offending agents, such as cleansers, soaps and detergents; cosmetics; and cutting oils and petroleum products. However, because of the heterogeneity of the etiologic agents, a number of articles had to be grouped more generally.

Appreciation is expressed to Dr. Louis Schwartz (medical director, retired, U. S. Public Health Service) for his continued interest in, and support of, these compilations. In addition, the assistance is gratefully acknowledged of Dr. James Jambor of the department of dermatology of the University of Cincinnati and Dr. Cleveland Denton of our staff. Appreciation is also extended to Dr. W. M. Gafafer and Mrs. Tula S. Brocard for their contribution to the bulletin, to the editors of *Excerpta Medica* (Amsterdam) for permitting the reprinting of a number of abstracts of articles of foreign origin, to the Industrial Hygiene Foundation of America for permission to include abstracts appearing in the *Industrial Hygiene Digest* and to the American Chemical Society for allowing the inclusion of several items from *Chemical Abstracts*.

Contents

Adhesive Tape

(1) Hypersensitivity to adhesive tape. Report of four cases showing its variable etiology. H. Keil. *J. Indust. Hyg. & Toxicol.* 25: 238–242 (June) 1943.

The protocols of four cases of hypersensitivity to adhesive tape are recorded. The results of patch tests with the various ingredients of adhesive tape are discussed, with particular reference to Beni Para rubber and so-called *pitch subcompound.* The first example of hypersensitivity to commercial dehydrogenated rosin is recorded. The fundamental question of specific hypersensitivity to oxidized fractions in abietic acid is discussed. Preliminary data are furnished to show that a positive patch test to abietic acid may not be due to the acid itself, but rather to oxidized fractions such as phenolic bodies. The etiology of hypersensitivity to adhesive tape is variable, and each case requires study to determine the precise cause or causes.

(2) Dermatitis bullosum of acne area, following adhesive tape contact on left arm and thorax, possibly due to tricresyl phosphate. L. E. Gaul and D. Henneger. *Indust. Med.* 13: 1014–1018 (Dec.) 1944.

The authors describe a case of dermatitis probably caused by adhesive tape contact. The patient had a fractured humerus, corrected by an aerial splint and secured in position by adhesive tape applied to the left arm and thorax. After 2 weeks of contact, the acne areas of the body developed a profuse seborrhea followed by vesicles which later became bullae. The patient showed loss of weight, great weariness, and mental apathy. A strong phenolic odor emanated from his body.

Although the skin contacted by the adhesive tape showed no visible reaction, the authors suggest that the cause of the dermatitis was the tricresyl phosphate, used as a plasticizer on the tape. After recovery the patient was given patch tests of adhesive tape. From the evidence, while not conclusive, it is believed that the tricresyl phosphate or its decomposition product, cresol, was related etiologically to the dermatitis. Apparently the tricresyl phosphate can penetrate a normal epidermis without causing any reaction. After absorption, it exerts a specialized reaction in that portion of the cutaneum richly endowed with ectodermal glands. The authors point out that a drug having such properties might prove of great value in the field of seborrhea and acne vulgaris.

(3) Contact dermatitis due to Ace Adherent. A. G. Franks. *J. Allergy* 17: 112 (Mar.) 1946.

Four cases of dermatitis were encountered among several hundred amputee patients using a variety of traction appliances. A discussion is presented of dermatitis due to transparent adhesive tape. A type of dehydrogenated rosin known as Galex used in Ace Adherent is cited as the probable cause of the dermatitis.

(4) The mechanism of adhesive plaster irritation. S. M. Peck, H. Rosenfeld, and A. Glick. *J. Invest. Dermat.* 10: 367–376 (May) 1948.

Three types of adhesive tape irritation are discussed. A study was made of the mechanism of adhesive plaster dermatitis, using hospital adhesive tape and special adhesive containing fatty acid salts. The special adhesive has less tendency to irritate, adheres more closely to the skin, and produces less increase in pH and a greater decrease in the bacterial flora on the underlying skin. The experiments indicate that bacteria on the skin surface play a role in the irritation produced by adhesive tape.

(5) The failure of fatty acid salts to lessen cutaneous irritation caused by adhesive plaster. L. Gaul and G. B. Underwood. *J. Invest. Dermat.* 12: 173–177 (Mar.) 1949.

Patch tests conducted on 570 cases with adhesive plaster failed to show any differences in the primary irritant qualities of Pro-Cap, an adhesive tape containing fatty acids, and regular adhesive tapes, such as Elastoplast and Seamless. The characteristics of adhesive dermatitis are given.

(6) Further studies on the mechanism of adhesive tape dermatitis. S. M. Peck and L. L. Paletz. *A. M. A. Arch. Dermat. & Syph.* 63: 289–311 (Mar.) 1951.

Adhesive tape may produce an allergic contact dermatitis which is well charac-

terized clinically and microscopically. This reaction is rare. It is impossible to trace the specific sensitizer in any adhesive because the chemical composition of the ingredients varies from batch to batch.

Adhesive tape also produces a fleeting, minor reaction which has been termed *the reaction of removal.* This is caused by the mechanical trauma of removal.

The majority of cases of adhesive tape dermatitis are caused by a mechanism which can be described as follows. The prime mover in most cases is a plugging of the pores of the sweat ducts by keratin, with sweat retention and the production of miliaria rubra. The greatest irritation is caused by the involvement of a large number of pores, the increased activity of the occluded sweat glands, and the relative irritating properties of the constituents of sweat. The various adhesive tapes contain ingredients which tend to stimulate hyperkeratosis to a greater or lesser degree. Such a hyperkeratosis is not limited to the ostia of the sweat ducts, but is diffuse. Follicular hyperkeratosis may be produced.

Aircraft

(7) Memorandum on the prevention of industrial dermatitis: dermatitis from glues used in aircraft construction. *Factory Dept., Ministry of Labor and National Service, Form 33. The Ministry, London,* (Feb.) 1943.

Dermatitis occurs in connection with the use of synthetic glues. Glues used in the aircraft industry are of two main types: (*a*) *Resin glues* of the urea-formaldehyde or phenol-formaldehyde type, with hardeners, and (*b*) *casein glues.* Workers are most likely to contract dermatitis in the process of batchmaking (incorporation of a resin glue with the appropriate hardener). The incidence of dermatitis is equally high among workers who wash receptacles used to contain the batch.

Contact with synthetic glues varies in different processes. The odor of formaldehyde is often appreciable in the vicinity of hot presses used in curing processes, and cases of sore eyes on this work are described. Dried glue and plywood may abrade the skin and thus promote the irritant action of the glues. Few plants where resin glues are in use escape the dermatitis problem. Some employees require absence from work; others, job transfer.

Generally, it is thought, casein glues do not often cause dermatitis, but many sore and a few bleeding fingers and forearms are observed from this cause. Casein glues are removed from the skin with relative ease by ordinary methods of washing. Raw, abraded skin surfaces from friction of forearms and wrists against bench and apron (often coated with dried glue) are sources of irritation; and it is worth noting that sleeves covering the forearms afford protection. The higher frequency of dermatitis from resin glues is probably due to formaldehyde, assisted by hardeners which may themselves be irritants.

The glue must not be allowed to remain on the skin longer than necessary, and certainly not long enough to harden. All traces of chemicals developed during glue-action must be removed from the skin before leaving work. Damp swabs should be used on gluing operations, and barrier preparations should be applied to the skin. Thorough washing is necessary, and first-aid treatment of injuries is of special importance.

(8) Occupational dermatitis in aircraft workers. M. M. Robinson. *M. Ann. District of Columbia* 15: 116–119, 1946.

Materials which cause dermatitis among aircraft workers are listed in the following order of frequency: zinc chromate paste (LF18765A), zinc chromate (primer), M–4 hydraulic oil, varsol, carbon tetrachloride and lacquer.

(9) Occupational dermatoses in aircraft workers: chromate dermatitis. F. A. Ellis. *Occup. Med* 2: 452–462 (Nov.) 1946.

Approximately one-fourth of the cases of occupational dermatitis under study were due to chromates. No positive reactions to resins were obtained in these patients. Hardening to chromates does not develop in workers sensitive to chromates. Positive reactions resulted from patch tests with 5 percent solution of sodium chromate, with the dry painted metal, and with 5 percent solution of potassium bichromate.

(10) Occupational dermatitis. C. Brundate. *J. Oklahoma M. A.* 39:55 (Feb.) 1946.

Most of the dermatoses discussed are those encountered in the airplane industry. The causes were zinc chromate primer, petroleum products, solvents, alkalis, stone felt, spun glass, dyes, varnishes, acids, and harsh cleansing agents. The author was impressed by (1) the incidence of cutaneous eruptions which could be prevented, (2) the number of nonoccupational dermatoses attributed to occupation, and (3) the high incidence of *metal poisoning*. A surprisingly large number of dermatoses was caused by sensitization to sulfa drugs which had been used in treatment. Recommended preventive measures are environmental cleanliness; careful selection of employees with reference to type of skin; and the use of protective garments. Employees with dermatoses caused by hypersensitivity should be transferred to avoid the skin sensitizer.

(11) Health hazards in aircraft manufacturing. M. Eisenbud. *Indust. Med.* 18:99–102 (Mar.) 1949.

Engine manufacturing involves exposure to fluorides, sulfur dioxide, X-ray, carbon monoxide, mercury vapor, and excessive noise. Splinters of magnesium from machining may produce gas tumors when imbedded in tissue. The design for proper paint spraying equipment is important, although the solvents for general use have a relatively low order of toxicity. Exposures from chrome plating, anodizing, bright dip and degreasing should receive attention.

Allergy

GENERAL

(12) Contact dermatitis, with special reference to industrial dermatitis. Preliminary report. N. P. Anderson. *Indust. Med.* 12:584–588 (Sept.) 1943.

The author believes that the difference between toxic and allergic reactions is merely quantitative.

(13) Contact, contact-infective and infective-allergic dermatitis of the hands, with special reference to rubber glove dermatitis. J. H. Stokes, W. E. Lee, and H. M. Johnson. *J. A. M. A.* 123:195–202 (Sept. 25) 1943.

In an analysis of skin infections of the hands and feet, the following are given as predisposing causes: (1) Allergic family background; (2) familial infection susceptibility, especially pyogenic; (3) personal allergy and pyogen susceptibility; (4) ichthyotic or dry skin habitus, predisposed by use of soap and other alkali contacts; (5) seborrheic or oily skin habitus, predisposed by fat gland overactivity and congestion due to phytids and bacterids, fungous and pyogenic infection; (6) functional disturbances of vasomotor and sweat mechanisims; (7) skin hydration, by high carbohydrate intake, alcohol, edema, high ash foods, and diabetes; (8) vasodilation through heat, humidity, emotion, histamine, fatigue, allergens, and alcohol; (9) vasoconstriction by arterial disease, and vascular spasm; and (10) sweating.

Among the list of exciting causes outlined and discussed, those generally found in common contacts are: (1) Alkalis; (2) rubber; (3) leathers, gloves, and shoe processing materials; (4) medicaments and medical contacts, procaine, disinfectants, and powders; (5) wool; (6) house and occupational dusts, oils, and cleansers; (7) plants and oleoresins; (8) miscellaneous chemicals and physical agents.

(14) Outline of recent developments in the recognition and prevention of allergic contact dermatitis in industry. D. Harley. *Brit. J. Phys. Med.* 6:165–171 (Nov.–Dec.) 1943.

Among the subjects discussed are sensitization dermatitis and sensitizing or allergenic substances; thoroughness of investigation, including study of a man's hobbies; patch testing and the prevention of dermatitis; education of the workers as to the need for personal protection; and skin cleansers and protective ointments. The final paragraph deals with contraindications in the selection of a staff.

(15) Generalized skin sensitization from topical contact. Queries and Minor Notes. *J. A. M. A.* 125:390 (June 3) 1944.

Delayed reactions appearing several days after application of a sensitizer are fairly frequent. Several such cases are

mentioned in the query and reply column. The suggested explanation is that some of the antigen applied to the skin becomes fixed by the cells. After an incubation period in previously unsensitized persons, the titer of antibodies may reach a sufficient concentration to react with uneliminated fixed antigen. This possibility is analogous to the delayed reaction in serum sickness which follows a primary dose of the serum.

(16) Allergic occupational dermatitis in our war industries. Louis Schwartz. *Ann. Allergy* 2:387–395 (Sept.–Oct.) 1944.

The chemical causes of occupational dermatoses may be divided into primary cutaneous irritants and cutaneous sensitizers, which are defined in this article. The terms *hypersensitivity* and *allergy* are distinguished. The occurrence, prevention, and treatment of allergic dermatoses in our war industries are discussed, particularly with regard to the explosives, cutting oils, and fabrics which cause allergic dermatitis. Diagnosis of all occupational allergic dermatitis is made by considering the occupational history, the sensitizing properties of the chemicals encountered, and the performance of patch tests.

(17) Facts that should be known about allergy. J. H. Black. *Texas State J. Med.* 41:21 (Mar.) 1945.

This article contains brief facts on allergy generally agreed upon by workers in the field. Such factors are considered as age at onset of allergy, duration of symptoms, climate, multiple sensitivities, and the three methods of testing in common use.

(18) Hardening in industrial allergic dermatitis. S. M. Peck, J. Q. Gant, and Louis Schwartz. *Indust. Med.* 14:214–220 (Mar.) 1945.

There is ample clinical and experimental evidence to support the fact that *hardening* occurs frequently in industry. By *hardening* is meant the disappearance or the failure of reappearance of an allergic contact type of dermatitis in sensitized individuals on repeated exposure to the sensitizing chemical. *Hardening* does not occur in all individuals, nor is its degree the same in different persons. *Hardening* may be permanent, but in most instances it disappears if the exposure to the sensitizing chemical is discontinued for any length of time. Also, exposure to a greater concentration of the sensitizer than that to which tolerance has been established may cause a recurrence of the dermatitis until a further decrease in sensitivity occurs.

(19) Epidermal and dermal sensitization existing in the same individual. Harry J. Templeton. *J. A. M. A.* 127:908 (Apr. 7) 1945.

Cases of epidermal and dermal sensitization from drugs, plants, foods, and autogenous products are reported. Sensitization may occur from within or from without. Primary sensitization nearly always occurs from allergens applied to the surface while the dermis may be sensitized to exogenous materials that have penetrated the epidermis unchanged, or to inflammatory products formed in the epidermis by the external allergen and the tissue protein. The most frequent of these combined sensitizations are those resulting from topical application of drugs, particularly of the sulfonamide compounds.

(20) Antigenicity of proteins in relation to allergy. W. H. Welker. *Ann. Allergy* 4:123–27 (Mar.–Apr.) 1946.

Three classes of antigens give different responses, due largely to the particle size of the protein when in solution. The antigenic protein of large molecular size does not readily produce a response in the human organism, otherwise the use of antitoxin would be hazardous. The second class of antigens consists of proteins of smaller molecular size, such as bacterial toxins; these form neutralizing antibodies. The third class, of even smaller molecular size, seems responsible for all forms of allergy. If this small molecule is freed from the large molecular pollen, it will not produce precipitins or anaphylactic sensitivity.

(21) Industrial allergens. Louis Schwartz. *In* **Encyclopedia of Chemical Technology,** Vol. I. Interscience, Inc., New York, 1947. P. 550.

The various causes of allergic reactions are set forth, including predisposing factors and the mechanism of allergic manifestations. The symptoms produced by the effect of allergy on different systems of the body are described; particular reference is made to allergy of the skin. Primary cutaneous irritants and cutaneous sensitizers are differentiated. The paper includes tests to determine allergy, and methods of prevention and treatment.

(22) Bacterial allergy. M. Scherago. *Ann. Allergy* 5: 1–18 (Jan.–Feb.) 1947.

Five types of bacterial hypersensitiveness are discussed: (*a*) Bacterial anaphylaxis (including toxin hypersensitivity); (*b*) bacterial atopy; (*c*) tuberculin type hypersensitivity; (*d*) the Schwartzman reaction; and (*e*) bacterial heterophile toxicity. The ways in which the tuberculin type hypersensitivity differs from bacterial anaphylaxis and bacterial atopy are given. The mechanism of the tuberculin type hypersensitivity is discussed with reference to a similar type of hypersensitivity in virus diseases.

(23) Eczematous sensitization. A review of its immunologic properties and some speculations as to its nature. A. Rostenberg, Jr. *Arch. Dermat. & Syph.* 56: 222–232 (Aug.) 1947.

Eczematous sensitization is caused by the chemical reaction of compounds able to form protein conjugates with certain body compounds. The essential requirement seems to be a rich supply of macrophages and a relatively insoluble conjugate. The resultant antigen causes an antibody to be formed that has a cellular affinity. This eczematous reaction occurs only when the antigen comes in contact with the appropriate tissue.

(24) The origin of patterns of allergic sensitization. R. P. Wodehouse. *Ann. Allergy* 7: 172–184 (Mar.–Apr.) 1949.

The patterns of allergic sensitization in sera having the same dominant sensitization reflect the character of the patient's environment as if all sensitizations were acquired independently. When two sera possessing different dominant sensitizations are combined and used in cross neutralization tests, one of the dominants is most likely to assume a subordinate position. The method of cross neutralization does not lend itself to the antigenic analysis of allergens. It does however, offer a means of determining the relative strengths of the various reagins in a serum or in two comparable sera.

(25) Progress in allergy. Dermatologic allergy. Rudolph Baer and Morris Leider. *Ann. Allergy* 8: 128–143 (Jan.–Feb.) 1950.

A comprehensive review is presented of recent progress in cutaneous allergy. Allergic eczematous contact-type eczema, atopic dermatitis, drug eruptions, urticaria, eruptions due to insects and parasites, and the allergy of infection are the main topics discussed.

The above categories of cutaneous allergic disease are discussed in light of recent publications and the personal viewpoints of the authors.

(26) Dermatologic allergy. A critical review of the literature in 1950 on allergic eczematous dermatitis, atopic dermatitis, drug eruptions, urticaria. R. L. Baer and M. Leider. *Ann. Allergy* 9: 399–416 (May–June) 1951.

(27) The antigen-antibody reaction in contact dermatitis. S. Epstein. *Ann. Allergy* 10: 633–658 (Sept.–Oct.) 1952.

(28) Allergic problems in modern industry. Raymond Suskind. *Ann. Allergy* 10: 745–754 (Nov.–Dec.) 1952.

The article deals with the prevention and control of cutaneous allergic reactions in industry. The current methodologies which can be utilized in prevention are discussed and appear under the following topics: (1) Guinea pig technique; (2) patch test technique; (3) statistical considerations in the repetitive patch test; (4) interpretation of patch test results; and (5) usage tests.

The manner of conducting an investigation of allergic dermatitis in an industrial plant is presented.

(29) Allergy and industry. H. Glenn Gardiner. *Ann. Allergy* 10: 732–744 (Nov.–Dec.) 1952.

A review is presented of the literature dealing with allergic problems in industry. Asthma, hay fever, and eczema are the main topics discussed, with rather extensive bibliographic references appended. The prevention and treatment of these problems are also covered.

A significant point of interest stressed by the writer is the concern of industry with respect to the allergic response created by products in the consumer group.

SPECIFIC

(30) Skin reactions to patch test with human dander. F. A. Simon. *Ann. Allergy* 2: 109–114 (Mar.–Apr.) 1944.

A skin reaction to patch test with human dander is described. The reaction was elicited in 8 of 12 children with eczema and in 1 child without eczema. Other children without eczema gave negative reactions. Adults with and without atopic eczema gave negative reactions to patch tests, but 7 of 9 persons, 11 years of age or older, with atopic eczema, gave positive reactions to scratch test with

human dander. In all of the latter, reagins were demonstrated by passive transfer.

It is suggested that the etiologic significance of these reactions to patch test with human dander is worthy of investigation.

(31) Insects and allergy. E. A. Brown. *Ann. Allergy* 2:235–246 (May–June) 1944.

The author reviews the literature regarding insects and the allergic reactions produced by stings, bites, contact, and inhalation. He describes the reaction and methods of treatment and desensitization.

(32) Urticaria from perfume. S. J. Zakon and J. B. Kahn. *Arch. Dermat. & Syph.* 52: 11–13 (July) 1945.

Inhalation of osmyls or odoriferous particles may cause an allergy. A case of chronic urticaria due to perfumes is presented. Histamine, calcium, and ephedrine failed to effect a cure. X-ray, ultraviolet irradiation, and other treatments similarly failed. It was only when the patient was removed from all perfume that her hives cleared up. The composition and manufacture of perfumes is discussed.

(33) Induced sensitivity from the topical use of the sulfonamides and penicillin. P. Bechet. *Pennsylvania M. J.* 49:417–420 (Jan.) 1946.

The difficulty is discussed of obtaining statistics on the frequency of induced sensitization from the use of sulfanomides. Photosensitization after oral or local use of sulfonamides is considered. Penicillin sensitization is discussed. The author cautions that recurrent papulovesicular eruptions in patients with chronic dermatophytosis may be due to some form of immunologic disturbance, rather than to the use of penicillin.

(34) Allergy to tattooing. R. M. B. MacKenna. *Practioner* 160:471, 1948.

The author quotes a case of allergy to tattooing which had been reported to him and reviews similar cases from the literature. In every instance, the red areas of the tatoo showed the allergic reaction. Two of the recorded cases showed negative patch tests to cinnabar, and it is suggested that some chemical dissociation of this substance is necessary for a reaction to occur.

(35) Dermatitis due to invisible ink. D. Bloom and M. A. Weiner. *J. Invest. Dermat.* 11:197–201 (Sept.) 1948.

The authors present a case of dermatitis, which persisted for 5 months resulting from the use of invisible ink at a swimming pool in New York. Striking features of the case, other than its long duration, were the delayed appearance of the dermatitis, its limitation to the stamped letters, and the negative response to skin tests for allergic hypersensitivity. The phenomenon may be explained as allergic spontaneous flare-up, showing a resemblance to sensitization to mercury as seen in tattoo cases.

(36) Cold allergy. Queries and Minor Notes. *J. A. M. A.* 138: 253 (Sept. 18) 1948.

Manifestations other than nasal and bronchial symptoms on exposure to cold are described. The machinism of production of respiratory allergic attacks is discussed. Usually, the allergy is not due primarily to cold, but to nasal allergy with associated intolerance to cold. The treatment of primary cold allergy or of the respiratory allergy is reported.

(37) Sensitization to petrolatum in ointment bases. S. J. Levin and S. M. Selma. *Ann. Allergy* 6: 579–583 (Sept.–Oct.) 1948.

Six cases of definite sensitivity to petrolatum or related substances are reported. Patch tests on normal skin for purified petrolatum are rarely positive due to the mildness of the substance. Usage tests are a valuable means for making a dianosis of petrolatum sensitivity. These may be positive on affected skin and later negative on the same healed sites. In view of the widespread use of ointment bases containing petrolatum and/or mineral oil for the local treatment of the allergic dermatoses, the possibility of sensitization should be kept in mind.

(38) Dermatitis caused by electrode jelly. I. Fond. *Ann. Allergy* 6: 680 (Nov.–Dec.) 1948.

A case history is reported of a patient hypersensitive to the gum tragacanth in electrode jelly used in electrocardiography.

(39) Allergic eczamatous contact-type dermatitis from odd things or in odd ways. Morris Leider and Dorothy Furman. *Ann. Allergy* 6: 693–700 (Nov.–Dec.) 1948.

Four cases are reported in which skin irritation resulted from the contamina-

tion of innocent preparations by minute amounts of powerful sensitizers.

(40) Sensitivity to a specific human dander. L. L. Bartlett. *Ann. Allergy* 7:215 (Mar.–Apr.) 1949.

A case is presented of dermatitis as a sole manifestation of sensitivity to a specific human scalp dander. No sensitivity was shown to a general body dander or stock human danders.

(41) Allergy to wax crayons, report of a case. M. Luten. *Arch. Dermat. & Syph.* 60:798–799 (Nov.) 1949.

A case is reported of multiple and recurrent sties and furuncles, and generalized pruritis attributed to wax crayons. Patch tests to the crayons and the unpigmented wax were indeterminate. Symptoms would subside upon removal of the suspected contactant. A single 2-minute exposure to the crayons would cause a recurrence of the dermatitis within 12 hours.

(42) Sensitization to polyethylene glycols (carbowaxes). M. J. Strauss. *Arch. Dermat. & Syph.* 61:420–425 (Mar.) 1950.

Two patients sensitive to a nitrofuran proprietary antibacterial ointment gave positive patch test reactions to the control base, a mixture of Carbowax 4000, Carbowax 1500, and propylene glycol. Patch tests with 5 percent concentrations of each of these glycols were positive in both patients, indicating a group hypersensitivity to these compounds. It would seem that the intensity of the reaction is a direct function of the molecular weight of these compounds.

(43) The allergic causes of eczematous hand eruptions. 1. Incidence. M. H. Samitz and J. J. Albom. *Ann. Allergy* 9:336–345 (May–June) 1951.

The authors studied 403 consecutive private cases of eczematous and pustular eruptions of the hands. Major causes were primary irritants, trichophytids, and epidermal sensitizers.

(44) Contact dermatitis from silicone putty. R. C. V. Robinson. *A. M. A. Arch. Dermat. & Syph.* 65:99–100 (Jan.) 1952.

A case is reported of eczematous dermatitis from silicone putty used as a toy. The putty gave a positive patch test. Because the putty adsorbs newsprint, lint, and other matter, a patch test was then made with new putty. This was negative. Since the original putty had been discarded, further analysis was not possible.

(45) Contact dermatitis due to colored toilet tissue. M. Braitman. *A. M. A. Arch. Dermat. & Syph.* 65:727 (June) 1952.

A case of contact dermatitis due to colored toilet tissue is reported. Samples of the tissue of various colors—peach, rose, blue, green, and white—were used for patch tests. A 4-plus reaction to the blue tissue was elicited. A patch test for paraphenylenediamine gave a negative reaction. The dye in the toilet tissue was not determined.

(46) Allergic contact dermatitis due to pork corticotropin. I. Zeligman. *J. A. M. A.* 149:263–264 (May 17) 1952.

A case is reported of contact dermatitis due to pork corticotropin in a nurse who showed allergic symptoms after handling the hormone. Patch tests to pork corticotropin were positive, while patch tests to other contactants and beef corticotropin were negative. Other allergic reactions have been encountered during the systemic administration of pork corticotropin in the past.

(47) Severe allergic reactions to p-aminosalicylic acid. W. Kniest. *Deutsche med. Wchnschr.* 77:676 (May 23) 1952.

Harmless, mild allergic reactions occur sometimes in tuberculous children who are treated with p-aminosalicylic acid. If this treatment is prolonged, it may cause severe toxic complications. This is illustrated in the two cases reported here. Following gradual sensitization of the patient during a latent period of 3 or 4 weeks, the temperature increased in steps, and 1 or 2 days later an urticarial or scarlatiniform exanthema developed. After sensitization had thus been established, the renewed administration of p-aminosalicylic acid resulted in severe acute anaphylactic reactions, characterized by high temperatures and extensive exanthema with complete desquamation. Other manifestations were swelling of the peripheral lymph nodes, angioneurotic (Quincke's) edema, asthmatic symptoms, diarrhea, symptoms of shock, and petechial hemorrhages. During the anaphylactic reaction there was pronounced leukocytosis, with increase in lymphocytes and eosinophils. Previously these children had showed no signs of intolerance for p-aminosalicylic acid, such as impaired appetite, vomiting, or diarrhea. Hypersensitivity to p-ami-

nosalicylic acid was corroborated by patch tests. Mode of appearance and severity of the allergic reaction seemed to be largely determined by an allergic predisposition, and it seems therefore important to inquire into the existence of allergy in patients who are to be treated by p-aminosalicylic acid. [J. A. M. A.]

(48) Eczematous contact dermatitis of the palm due to toothpaste. K. Loewenthal. *New York State J. Med.* 52:1437–1438 (June) 1952.

The patient cleaned her dentures by holding them in the left hand and applying a toothpaste to them with a toothbrush. A dermatitis of the left hand developed from this practice, and patch tests with Amm-i-dent were positive. The dentifrice contained carbamide, dibasic ammonium phosphate, and a chlorhydroxyphenyl compound.

(49) Dermatitis venenata due to potassium undecylenate. S. I. Rogers and H. Shatin. *A. M. A. Arch. Dermat. & Syph.* 66:289 (Aug.) 1952.

The authors report a case of dermatitis venenata due to potassium undecylenate. Sensitization to this salt and to other salts of undecylenic acid apparently occurs only rarely, for there are very few reports on this condition.

THEORETICAL AND EXPERIMENTAL

(50) Clinical and experimental experiences with the antihistamine preparation, Antergan. A. Schnitzer. *Dermatologica* 91:92–101, 1945.

The allergic disorders aided by Antergan and the untoward side effects produced are listed. The author reports that the effect of Antergan is due to sympathetic stimulation through intermediary reactions occurring in the organism, rather than histaminolysis.

(51) Studies on eczematous sensitizations (the specificity of the sensitization from the point of view of chemical configuration). Adolph Rostenberg, Jr., and Naomi M. Kanof. *J. Invest. Dermat.* 6:201 (June) 1945.

The authors report on the specificity of eczematous sensitization. In this study, the persons previously sensitized to 2,4-dinitrochlorobenzene were used; how this compound could be altered and still produce reactions in these sensitized persons was investigated. Structural isomers were used, halogen substitutions were made, and ascending concentrations were used in the study. A high degree of specificity to the constituent atoms and their structural arrangement was found.

When halogens are substituted, it is necessary that the new compound not only bear a geometric resemblance to the original but also be able to produce similar conjugates. When a geometric resemblance exists but the ability to form conjugates in sufficient quantity is lacking, a higher concentration must be used in testing.

(52) Passive transfer of experimental contact dermatitis with the Urbach-Koenigstein technique. L. H. Ballestero and A. M. Mon. *Ann. Allergy* 3:435–439 (Nov.–Dec.) 1945.

The successful passive transfer of experimental contact dermatitis induced by dinitrochlorbenzene is described. It can be achieved only with vesicatory fluid according to the Urbach-Koenigstein method, and not with blood serum used in the Prausnitz–Küstner method. It is believed that the substances present in the vesicatory fluid are identical with antibodies and that they are responsible for the origin and spread of experimental contact dermatitis and probably also of spontaneous eczema.

(53) The inunction of allergens with "Intraderm." II. Desensitization by allergen inunctions. *Ann. Allergy* 4:4–12 (Jan.–Feb.) 1946.

This is the third in a series of articles dealing with the inunction of allergens by means of Intraderm. Experiments on desensitization by allergen inunctions with Intraderm were performed. The patients were supplied with allergen suspensions for daily applications. Scratch tests for change in reactivity were made at regular intervals as the allergen concentrations were gradually increased.

Seventy-two patients were tested, the longest continued period of application being 3¼ years. No serious by-effects were noted. During the initial treatment phase, 5 patients presented transitory lesions resembling atopic dermatitis in the site of preceding allergen inunctions. Most cases showed remarkable reduction of reactivity after varying periods of treatment. Inunction tests became negative in one-third of the allergens. Scratch tests became persistently negative with 18 percent of the allergens. Less than 4 percent of the allergens failed to yield some significant reduction in activity. The inunction test for numerous series showed a greater tendency to remain positive than did the scratch tests. In other words, the inunction test had greater sensitivity for testing.

Clinically, 15 of the 22 patients showed distinct improvement or complete disappearance of their symptoms during the treatment period. All other forms of treatment were omitted. The author concludes that mere coincidence may be a factor but that further studies are warranted.

(54) Relationship between the antigens of blood and skin. P. B. Medawar. *Nature* (London) 157:161 (Feb. 9) 1946.

A study of the relationship between the antigens of blood and skin indicates that there is no evidence that leukocytes play any important part in the reactions of blood transfusion, but that the possibility that they may do so is worth keeping in mind. Conclusions of the study were (1) Red cells and skin share at the most very few antigens between them, (2) leukocytes create immunity to skin when grafted intradermally, and (3) 18 times the dose of leukocytes that is effective intradermally is barely effective when transfused intravenously.

(55) Atopic dermatitis of the hands due to food allergy. A. H. Rowe. *Arch. Dermat. & Syph.* 54:683 (Dec.) 1946.

Eczematoid dermatitis of the hands may be due, more frequently than realized, to atopic allergy to food, judging by experiments with 80 patients in private practice. Irritations of the skin of the hands from housework and other occupations help to activate a potential sensitization to food in the skin. Atopic allergy to food, activated by industrial irritants, at times is responsible for dermatitis of the hands, and may be wrongly identified as contact industrial dermatitis.

(56) Failure of benadryl and pyribenzamine in experimental skin sensitization to penicillin and horse serum. R. H. Dreisbach. *Federation Proc.* 6:323 (Mar.) 1947.

The protective actions of Benadryl and Pyribenzamine were investigated by using the experimental allergic skin reaction of rabbits to penicillin. These experiments did not substantiate the alleged beneficial effects of Benadryl and Pyribenzamine in clinical skin reactions.

(57) Studies on the eczematous sensitization. A. Rostenberg, Jr. *J. Invest. Dermat.* 8:345–355 (June) 1947.

The genesis of generalized sensitization is discussed, and it is concluded that the material causing it is a modified or conjugated allergen. The present studies were undertaken to investigate the route by which this conjugated allergen produces generalized sensitization. The literature was reviewed concerning the most probable avenue of dissemination. The experimental method is described. At stated time intervals the skin around the site of application of the sensitizing substance to guinea pigs' skin was incised, forming islands. Tests for sensitivity were made on the ninth day after the initial application. While the results were not statistically significant, the author found that his operative technic did not interfere with generalization of sensitization. He concluded that the route by which the sensitization reaction generalizes is manifold.

(58) Studies on the eczematous sensitization. II. The effect of the engendering of an eczematous sensitization on the threshold of reaction to primary irritants. J. B. Haeberlin, R. M. Oliver, and A. Rostenberg. *J. Invest. Dermat.* 10:27–30 (Jan.) 1948.

Clinical experience has demonstrated that the skin of patients with eczema or dermatitis is vulnerable to soap, hard water, rough clothing, and unsuitable local remedies. In view of this fact progressive dilutions of hydrochloric acid, and tincture of green soap and of olive oil were employed in the study in an attempt to detect a shift in the threshold of reaction after the establishment of eczematous sensitization to an unrelated material (2,4-dinitrochlorbenzene). The experiment yielded negative results.

(59) The present status of passive transfer antibodies in allergic eczematous contact-type dermatitis. M. Leider and R. L. Baer. *J. Invest. Dermat.* 10: 425 (June) 1948.

A review is given of the general theory of passive transfer antibodies in allergic dermatoses, with particular reference to antibodies in allergic eczematous contact-type dermatitis. It would appear that there must be substances within, or brought to the particular sensitized skin cells or tissue, which react with allergen to produce the clinical picture of eczema or the histopathologic pictures of spongiosis. The authors failed to transfer passively allergic eczematous hypersensitivity due to various eczmatous allergens.

(60) Examples of cross sensitization in allergic eczematous dermatitis. R. L. Baer. *Arch. Dermat & Syph.* 58: 276–283 (Sept.) 1948.

It is shown that, on the basis of primary sensitization to a single agent, a

patient may, through cross sensitization, become hyperreactive to a variety of substances, such as aniline, paraphenylenediamine, para-aminobenzoic acid, local anaesthetics, glycerol para-aminobenzoate used in "sun-screen" creams, some sulfonamide drugs, and certain azo dyes used in dyeing stockings, clothing, foods, drugs, and cosmetics.

Cross sensitizations explain some of the multiple-reactivities seen, as well as contact dermatitis from compounds with a very low sensitizing index.

(61) Some endocrine aspects of skin sensitization and primary irritation. A. Nilzen. *J. Invest. Dermat.* 18:7–35 (Jan.) 1952.

The author, in detail, concludes from experimentation with 2,4-dinotrochlorbenzene, croton oil, cantharidin, and colchicine that:

1. Systemically administered cortisone decreased the skin reactions caused by primary irritation effects of croton oil and also, but to a lesser degree, by cantharidin and colchicine.

2. Cortisone decreased the hypersensitivity reactions to 2,4-dinitrochlorbenzene. Hypersensitivity was successfully transferred by way of cellular peritoneal exudate from cortisone-treated guinea pigs to normal guinea pigs.

3. Skin reactions to 2,4-dinitrochlorbenzene and croton oil were delayed during cortisone treatment.

4. Local intracutaneous injections or percutaneous applications of cortisone did not decrease the skin reactions to dinitrochlorbenzene or to the primary irritating effects of croton oil.

(62) An attempt to demonstrate antibodies in eczematous contact-type dermatitis. C. H. Curtis. *A. M. A. Arch. Dermat. & Syph.* 65: 149–154 (Feb.) 1952.

This article cites attempts to demonstrate passive transfer of antibodies in allergic eczematous contact dermatitis by the Urbach-Koenigstein Technique in subjects sensitive to beryllium compounds, p-aminobenzoic acid, and 2,4-dinitrochlorobenzene. Results of both experimental and control tests were negative.

Animal Handlers

(*See also Biologic Agents*)

(63) Erysipelothrix rhusiopathiae septicaemia; diagnosis and treatment; report of fatal case of erysipeloid. J. V. Klauder, D. W. Kramer, and L. Nicholas. *J. A. M. A.* 122: 938–943 (July 31) 1943.

A butcher received a puncture wound of his thumb from a meat-bone. He developed a classical picture of erysipeloid. This lesion healed and he returned to work several months later. Two months after his return to work he became ill again, was given sulphathiazole with no effect, and died 6 months later. Three blood cultures before death revealed erysipelothrix rhusiopathiae.

Subacute bacterial endocarditis was confirmed at autopsy and was thought to be due to the erysipelothrix rhusiopathiae septicaemia.

(64) Hazards to meat packing workers. Queries and Minor Notes. *J. A. M. A.* 132: 545 (Nov. 2) 1946.

Fifteen years' experience in one abattoir has not revealed any cases of tetanus and gas gangrene infection. These affections are not usually regarded as occupational hazards of workers in abattoirs. Tetanus and gas gangrene antitoxin are administered to workers who sustain puncture wounds from hooks on which meat is hung, but not to workers who have lacerations from knives. The chief occupational hazards among workers in abattoirs are pyogenic infection and infection with *Erysipelothrix rhusiopathiae*. The use of *Erysipelothrix rhusiopathiae* immune serum may prevent erysipeloid, but it is expensive and its use may interfere with treatment to prevent pyogenic infection. The latter is considered more serious since erysipeloid is often a self-limited disease. Local application of penicillin may prevent both pyogenic infection and erysipeloid. The application of a sulfonamide compound has not been found effective in treating erysipeloid.

(65) Chronic erysipeloid (swine erysipelas). The effect of treatment with penicillin. G. W. Stiles. *J. A. M. A.* 134: 953–55 (July 12) 1947.

The author reports testing blood specimens from swine, arthritic lambs, and

diseased turkeys for swine erysipelas by serologic and cultural methods, as well as human serums for erysipeloid infection. The history, symptoms, duration, and treatment (with penicillin) of a 27-year old farmer, reared on a hog ranch in Nebraska, are reported. Evidence proved the existence of swine erysipelas on the premises. The history revealed nearly 9 years of illness following repeated contact with diseased swine.

(66) A case of orf (contagious pustular dermatitis): identification of the virus. F. Blakemore, M. Abdussalam and W. N. Goldsmith. *Brit. J. Dermat. & Syph.* 60: 404–409 (Dec.) 1948.

The lesions in a case of human orf are described. A virus identical with a strain of C. P. D. (Glover, U. F.) was isolated. When the disease was transmitted to a volunteer, it was found that immunity in man is incomplete. The reaction to reinfection may be partly allergic. The agglutination test may be of value for the diagnosis of the disease in man.

(67) Dermatitis following prolonged contact with equine excretions. D. M. Steeves and P. Villeneuve. *Canad. J. Comp. Med.* 12: 19–20, 1948.

Rectal examinations of mares to determine pregnancy, made before rubber gloves were available, resulted in symptoms of severe dermatitis. These symptons rapidly subsided and did not return when gloves were worn.

(68) Etiology of sealer's finger (blubber finger, "Speck Finger"). T. Thjötta and J. Kvittingen. *Acta path. et microbiol. Scandinav.* 26: 407, 1949.

The sealers of the northern and southern seas suffer from an infection of the fingers called sealer's finger or blubber finger.

From two cases of blubber finger the authors isolated a pigment-producing micrococcus showing slow growth on common media, and fermenting no carbohydrates.

Although the organism in each case was not antigenically active, repeated injections resulted in the production of rabbit serum with antibodies. The antisera of organisms isolated from each case cross-reacted with organisms isolated from the other case.

The authors do not feel that this organism has been proved to be the cause of *Speck Finger*, but that the evidence indicates a need for further study.

(69) Milkers' nodules. R. Nomland and A. P. McKee. *A. M. A. Arch. Dermat. & Syph.* 65: 663–674 (June) 1952.

The authors report 10 cases of milkers' nodules. Cowpox in milch-cows is fairly common, and milkers' nodules may be developed in those milking infected cattle. The lesion in human beings is either a verrucous papule or a nodule resembling granuloma pyogenicum, rather than a pock-like lesion.

The virus of milkers' nodules and cowpox has not been isolated. However, it is distinct from that of vaccinia. Human vaccinia can be transmitted to cattle, but passage back to susceptible humans causes a pock-like lesion.

Antiseptics

(70) Reaction and wetting power of disinfectants and their influence on skin and fabrics. H. Kliewe and L. Peukart. *Ztschr. Hyg.* 122: 560–572, 1940.

Besides its germicidal power, the reaction and wetting power of a disinfectant are of interest, especially in preparations for the skin and for laundry. The normal skin loses its natural protection when its naturally acid reaction is overcome by the repeated effect of alkaline cleansers and disinfectants. The normal covering layer of the skin, with its acid reaction, plays an important part in defense against bacteria.

The authors compiled a rather large series of disinfectants and showed that the majority have a pH value above 7, that is, they have a more or less strong alkaline reaction. Therefore, they do not correspond to the requirements of a disinfectant, if it is to be adapted to the biologic conditions of the skin. The skin of different persons, however, varies in its susceptibility to alkaline media, so that not all persons are equally damaged.

Fabrics are likewise affected in varying degree. According to studies by Kliewe and Hillenbrand, linens to which 20 percent cellulose is added are damaged

after a few hours' exposure to strongly alkaline disinfectants. With preparations free of alkali, or with reaction close to the neutral point, no damage was observed. Acid disinfectants (such as aquacide, precutanpoint mixture, zephirol, and festoxol) did not damage the fibers. To retain their acid character, some preparations must be buffered.

For a hand cleanser, high wetting power is also needed. Methods of testing are described briefly. Because of their low surface tension, most disenfectants make good suds. There is, however, no direct relation between the sudsing power and disinfecting strength.

(71) Formation of invisible, non-perceptible films on hands by cationic soaps. B. F. Miller. *Proc. Soc. Exper. Biol. & Med.* 54: 174–176, 1943.

This is a contribution to improved methods of hand hygiene for surgeons, medical personnel dealing with contagious diseases, food-handlers, and others.

When surgical gloves are not available, it might be feasible to perform a reasonably sterile operation by protecting the hands with frequent dips in a solution of one percent cationic soap. Certain cationic soaps deposit an invisible, nonperceptible film on the hands.

(72) The value of a new compound used in soap to reduce the bacterial flora of the human skin. E. F. Traub, C. A. Newhall, and J. R. Fuller. *Surg., Gynec. & Obst.* 79: 205 (Aug.) 1944.

Individuals using soap with 2 percent dihydroxyhexachlorodiphenylmethane maintained an unusually low bacterial count on the skin of the hands and forearms. Patch tests revealed it to be nonirritating. Regular use of the soap produced the best results in maintaining a low resident bacteria.

This soap (G–11) is recommended for surgeons. Time could be saved in preoperative scrub-up procedures, and irritating germicides could be eliminated. The probability of infection following superficial wounds should be greatly reduced by use of this soap.

(73) Cationic detergents as antiseptics. D. D. W. Hauser and W. W. Cutter. *Am. J. Surg.* 64: 352–358, 1944.

The authors quote Domagk as authority for the properties of Zephiran, a cationic detergent. Cationic detergents are stable and have low surface tension. They are markedly bactericidal on gram-positive organisms. Animal experimentation shows that a 1–200 dilution of Zephiran is not toxic or irritating to the mucous membranes.

(74) Occupational dermatitis caused by germicidal powder "Microlene." A. Sterling. *J. A. M. A.* 127: 219 (Jan. 27) 1945.

A waitress suffered severe dermatitis from exposure to the germicidal powder Microlene. The mere presence of the patient in the kitchen during dish washing time was sufficient to produce extreme exacerbation of the existing pruritis, presumably from the steam containing the chemicals used in washing. The container of the powder was clearly labeled: "It may produce a skin irritation in those handling it while dish washing." A patch test revealed a strongly positive reaction. The patient was advised to abstain entirely from work, and in two weeks was completely free from any dermatitis or pruritis.

(75) "Diaper rash" due to Perm-Aseptic. W. L. Dobes. *J. A. M. A.* 128: 281 (May) 1945.

Cases of diaper rash have occurred from a new antiseptic, Perm-Aseptic-Ramplex, which is a primary skin irritant in strong concentrations. This antiseptic was used in a 1: 30,000 dilution by a diaper service as the last rinse; and since it has been omitted, no more cases of diaper rash have occurred. Perm-Aseptic-Ramplex is a phenyl-mercury compound.

(76) Allergic eczematous contact-type dermatitis due to antiseptic in a tooth paste. A. A. Fisher. *A. M. A. Arch. Dermat. & Syph.* 66: 135–136 (July) 1952.

A case is reported of eczematous contact-type dermatitis due to the antiseptic Baxin, also known as G–4 (dichlorodihydroxydiphenylmethane). Amm-i-dent tooth powder and tooth paste are unique among the ammoniated dentifrices containing Baxin. Patch tests of the constitutients of the tooth powder revealed that only 5 percent Baxin gave positive reactions.

Biologic Agents

ANIMAL PARASITES

(77) Scabies treated with one application of benzyl benzoate. J. R. Graham. *Brit. M. J.* 1: 413 (Apr. 3) 1943.

Basing his observation on approximately 1,000 cases of scabies, the author finds that treatment with a 25 percent benzyl benzoate emulsion will cure scabies in more than 99 percent of cases.

In this series of cases, all members of the family were treated simultaneously. Disinfestation of clothing and bedding was found unnecessary. At the most, the omission of disinfestation of these fomites gave an increase of reinfestation of approximately 1 percent. The technic is presented.

(78) Cutaneous reactions due to the body louse ("Pediculus humanus"). S. M. Peck, W. H. Wright, and J. Q. Gant, Jr. *J. A. M. A.* 123: 821 (Nov. 27) 1943.

The author states that there are two components to the *louse bite reaction:* purpura from the bite, and inflammation from sensitization to the feces.

(79) Grain itch. G. K. Rogers. *J. A. M. A.* 123: 887 (Dec. 4) 1943.

Grain itch is one of the terms used to describe a condition caused by *Pediculoides ventricosus,* which is fairly common in certain farm districts of the United States. Many cases of the disease are never diagnosed, the cause being attributed to some form of allergy or to insect bite. Symptoms and etiology are discussed and a number of case reports are given, as well as treatments used in certain cases. Warm baths containing demulcents, such as oatmeal or Linit starch, are recommended. A formula is given for a mild antipruritic lotion which gives relief. Preventive measures require cooperation of the farmer and the State entomologist. Burning the grain is a control measure. To get rid of the mite, one authority recommends the use of powdered sulfur and the dust treatment of granaries, buildings and other materials contacted by grain and straw.

(80) Kissing bug bites. H. L. Arnold, Jr., and D. B. Bell. *Hawaii M. J.* 3: 121–122 (Jan.–Feb.) 1944.

The kissing bug, *Triatoma rubrofasciata* (*De Geer*), a member of the Reduviidae, constitutes a public health menace in Hawaii, since it is an important vector of American trypanosomiasis (Chagas' disease). Its bite generally affecting areas exposed in sleep, such as face, arms, and hands, produces itching and burning, followed by painful swelling, lymphangitis, and lymphadenitis. Course of symptoms in two patients apparently was influenced favorably by shallow incision of the swollen bite-site.

(81) Complications of scabies. L. Goldman. *War Med.* 5: 294–298 (May) 1944.

Existing knowledge of complications of scabies is summarized, with emphasis on the severe local and systemic disturbances which may occur from the disease itself or from the agents used for treatment. The results of untreated scabies (Norwegian scabies) are also discussed.

Patients are more inclined to cooperate fully in treatment when colorless, odorless preparations such as benzyl benzoate are used. Lack of rapid improvement infers ineffectiveness of the preparation, incorrect application, or re-infection from untreated contacts. Bizarre lesions and atypical localization suggests animal scabies.

Thirteen complications are listed: sulfur dermatitis, uncured scabies, recurrent scabies, coexisting dermatitis, acarophobia, psychogenic pruritus, bath pruritus, scabetic pyoderma, scabetic lymphangitis and adenitis, postscabetic eczema, postscabetic urticaria, persistent nodules, and syphilis.

(82) Irritation produced by the procession caterpillar (Ochrogaster contraria). H. Flecker and A. McSweeny. *M. J. Australia* 2: 137 (Aug. 5) 1944.

A series of stings by *Ochrogaster contraria* occurred in servicemen living under bivouac conditions on the fringe of a jungle area. All patients exhibited an irritative dermatitis where the hairs of the caterpillar had come into contact with the skin. The dermatitis took the form of an irregularly diffuse erythematous rash, accompanied with intense itching, and distributed mainly on the volar surfaces of the upper limbs, on the abdomen and on the chest. In well-established cases, a low grade urticarial eruption, manifested as an erythema, was observed between lesions.

(83) Rat mite dermatitis. C. R. Anderson. *Arch. Dermat. & Syph.* 50:90–94 (Aug.) 1944.

The author discusses rat mite dermatitis and the offending parasite (*Liponyssus bacoti Hirst*). Included in the discussion is a review of the literature. Rat mite dermatitis is common and often overlooked.

(84) Dermatitis from tyroglyphidae in handlers of straw. T. S. Saunders. *Arch. Dermat. & Syph.* 50:245 (Oct.) 1944.

In two cases of dermatitis, the history of contact with straw suggested a parasitic factor, identified by entomologists of the United States Department of Agriculture as tyroglyphid mites. It is felt that such eruptions are more common than is realized. The topical use of sulfur may be the cause of a superimposed dermatitis, as suggested by one of the cases. While avoidance of contact with infested straw is the best means of prevention, the parasites can be killed by exposure to dry heat at 150° F., according to information from the United States Department of Agriculture.

(85) Control of head and pubic lice. D. N. Roy and S. M. Ghosh. *Bull. Entomol. Research* 35:231–234 (Nov.) 1944.

The use of pyrethum extract is effective and inexpensive in the treatment of head or pubic lice. The extract is used in odorless kerosene 0.12 percent solution and applied with an atomizer.

(86) Cheese itch and "itchy cargoes" in reference to workmen's compensation. J. A. Nixon. *Brit. J. Dermat. & Syph.* 56:235 (Nov.–Dec.) 1944.

The author was requested by the Dockers' Union to investigate an *itchy cargo* of cheese.

The cheeses were crated for shipping. Each cheese was covered with muslin, which, in some cases, carried a gray feathery mold. The scrapings taken from the muslin showed a live mite, identified as *Tyroglyphus longior.*

The workers all complained of itch of the wrist and forearms. The mite can be transmitted to the home. Calamine lotion has been effective in treatment. Withdrawal from contact is essential.

(87) Medical entomology in industrial medicine in the United States. S. F. Meek and C. P. McCord. *Indust. Med.* 13:1003–1010 (Dec.) 1944.

Sporadic cases of dermatitis among industrial workers may be traced to the bites, stings, or other external action of various animal parasites, including lice, mites, fleas, bugs, mosquitoes, gnats, midges, flies, caterpillars, bees, and schistosomes. Ordinarily, origin of the affection is unrelated to work. However, few forms of employment directly provide exposure to some of these ectoparasites. Epidemics, large and small, may arise on industrial premises and may be traced to ectozoa on a fortuitous basis. Four such epidemics are reported here. The responsible parasite was the grain mite in 1 episode, the poultry mite in 1 episode, and the rat mite in 2 episodes.

(88) Treatment of pediculosis capitis. E. Blackstock. *Brit. M. J.* 1:114, 1944.

A new treatment effective for pediculosis capitis is offered. Ascabiol, a nonirritating formula of benzyl benzoate emulsion, is very satisfactory and can be used safely twice daily for 3 days. One treatment is usually sufficient.

(89) Creeping eruption. F. A. Dolce and J. E. Franklin. *Arch. Dermat. & Syph.* 52:174–175 (Sept.) 1945.

The authors present data collected by other physicians concerning treatment of creeping eruption with Fuadin. They also present a series of 14 cases of their own in which Fuadin was used as the therapeutic agent. The method of treatment is given. They conclude that results were unsatisfactory in all but two instances.

(90) Caterpillar dermatitis. S. Berkowitz. *Bull. U. S. Army M. Dept.* 4:464 (Oct.) 1945.

The caterpillar *Ochrogaster contraria,* its cocoon and the tail of the moth will produce an acute dermatitis by inoculation and contact. Treatment is palliative for the pruritus that develops.

(91) Neostigmine methylsulfate an apparent specific of arachnidism (black widow spider bite). J. E. Bell, Jr., and J. A. Boone. *J. A. M. A.* 129:1016 (Dec.) 1945.

In a typical case of arachnidism which failed to respond to calcium gluconate

and sedatives for a period of 5½ hours, dramatic and complete relief of muscle spasm and pain resulted within an hour after the intramuscular injection of 2 cc. of 1:2000 neostigmine with 1/150 grain of atropine sulfate. This single case is presented in the hope that this apparently specific therapy will be tried in other cases without delay.

(92) Distribution and hosts of certain North American ticks. F. C. Bishopp and H. L. Trembley. *J. Parasitol.* 31: 1–54, 1945.

This article contains information on the geographic and seasonal distribution of ticks, and on their host relationships. The data presented are based on information largely from the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture. Maps are used to indicate distribution of the more important and numerous species.

Additional information obtained from other authors has also been included.

(93) Bird scabies. N. P. Anderson. *Arch. Dermat. & Syph.* 53:161 (Feb.) 1946.

The author presents a case in which the patient complained of *hivelike welts* over her body. Examination revealed generalized erythematopapular eruption, particularly evident on trunk, arms and thighs. Superficial biopsy preparations were made from several lesions and no *Sarcoptes scabiei* were found. On further questioning, the patient revealed that birds were nesting in the gutter over her window. A minute search of the patient's room revealed several organisms typical of the so-called avian itch mite.

(94) Desensitization to insect bites. A. Hatoff. *J. A. M. A.* 130:851–854 (Mar. 30) 1946.

In a group of 129 susceptible infants and children, 4 out of 5 were benefited by flea antigen. The importance of this demonstration lies in the potential use of such a method as an adjunct in the control of insect-borne diseases.

(95) An outbreak of scabies in stenographers. J. Markel. *Occup. Med.* 1: 386–387 (Apr.) 1946.

This investigation presents the following interesting points: (1) The outbreak was confined to an adjacent group of 15 out of 50 women in the same room and handling the same reports. (2) The clinical signs were minimal in 14 persons on account of personal hygiene and cleanliness. (3) The pruritus was aggravated by increasing the temperature of the room with electric heating units, but persisted at nighttime. (4) the outbreak was deemed both occupational and compensable.

(96) Scabies and pediculosis treated with benzyl benzoate, DDT, benzocaine emulsion. C. C. Carpenter, J. A. Heinlein, M. B. Sulzberger, and R. L. Baer. *J. Invest. Dermat.* 7:93–98 (Apr.) 1946.

Benzyl benzoate emulsion, as developed by G. W. Eddy of the United States Department of Agriculture, constitutes an effective scabicide (benzyl benzoate, DDT and benzocaine emulsion). Two to four sprayings produced permanent cure in 41 of 42 patients. A single application was effective in curing 15 cases of pediculosis pubis and 4 cases of pediculosis capitis. No toxicity was noted.

(97) DDT dust for the control of head lice. F. A. Cowan, T. McGregor, and N. M. Randolph. *A. J. Trop. Med.* 27:67–68 (Jan.) 1947.

A dust containing 10 percent DDT in pyrophyllite was used against head lice on school children in Texas. The dose per child was 2.5 to 5 gm., according to the amount of hair.

Two hundred and forty-six children were graded according to infestation as follows: 35, heavy; 54, medium; 100, light; 57, none. A control group of 73 were untreated and, at the end of the 4-week trial, were classed as 6, heavy; 23, medium; 31, light; 13, none. A group of 66 had 1 dust treatment and were told not to wash their hair for 1 week; of this group, only 1 child was infested at the end of the trial. The remaining 107 children were dusted twice, the second time at the end of the experiment. Many of the treated children had nits present, but they were found to be dead or empty.

(98) Excessive reactivity to sandfly bites. S. Gill. *Acta. med. Orient.* 8:104–105 (Mar.) 1947.

Toxic reactions to the bite of the sandfly of Palestine, *Phlebotomus papatasii*, are described. Three cases are reported in which these reactions developed.

(99) Creeping eruption in New England. C. V. Lowe and D. L. Augustine. *New England J. Med.* 236:658–661 (May 8) 1947.

This is a report of two cases of creeping eruption, one caused by *Ancylostoma*

caninum and the other by *A. braziliense*. For treatment, ethyl chloride in carbon dioxide snow was applied. The authors comment on the fact that while *A. caninum* is a relatively frequent parasite of dogs in New England, creeping eruption is rare in the human population.

(100) Acarodermatitis urticarioides. I. Katzenellenbogen. *Arch. Dermat. & Syph.* 55: 621–629 (May) 1947).

An endemic eruption in Palestine due to the mite *Pediculoides ventricosus* is discussed in detail. Fumigation with ethylene dibromide was effective in destroying the mites.

(101) Systemic treatment of creeping eruption. J. M. Hitch. *Arch. Dermat. & Syph.* 55: 664–673 (May) 1947.

Thirty-three cases are presented of classic larva migrans observed in southeastern North Carolina, presumably caused by *Ancylostoma braziliense*. The patients were treated with antimony and arsenic compounds, with evidence that oxophenarsine hydrochloride is probably superior.

(102) Report of an itching dermatitis apparently due to "Schistosoma cercariae." W. A. Holla and E. A. Lane. *New York State J. Med.* 47: 2458 (Nov. 15) 1947.

In the latter part of the summer, bathers at Interlaken Lake in Eastchester, New York, experienced an itching eruption. The itching lasted 3 days, then began to subside. The dermatitis failed to respond to the usual local applications.

The lake is part of a multiple-apartment development, and bathing is restricted to tenants. On this lake and near the swimmers' beach is a flock of domestic waterfowl. The flock is often enlarged by an influx of wild fowl.

It was first thought that the itch was due to insect bites, but after careful observation this conjecture was discarded. The investigators then decided to collect a few snails and examine them. When placed on the examiner's wrist, they produced dermatitis similar to that seen in the bathers. On further examination, they were revealed to harbor cercariae. No cercariae were found in the lake water, but on examination, one of the white ducks was found to harbor Schistosomas, which proved to be *Trichobilharzia physellae*.

With the increasing influx of waterfowl, it is probable that water itch will be encountered with greater frequency in the future.

(103) First "grain itch" outbreak in Baltimore is reported and controlled. *Baltimore Health News* 22: 173–174 (Dec.) 1947.

An outbreak of dermatitis occurred in a local broom factory. The rash itched intensely and appeared only on the clothed portions of the body, chiefly around the waist.

An entomologist identified the mites as *Pediculoides ventricosus*. The Angounois grain moth, *Sitotroga cerealella*, which acts as one of the normal hosts for the mite, also was identified. A study of the cases disclosed a resemblance to *grain itch*, as described by Ormsby. The plant was sprayed with one of the newer insecticides, and the outbreak was promptly brought under control.

It was thought that the broom corn may have become infested in a freight car previously used to ship grain, since this was the first outbreak to occur in the 60-year operating history of this factory. Eight other broom factories were investigated in the city and they reported no such dermatitis in their experience.

(104) Amebic granuloma of the skin. I. Norwich and D. A. Muskat. *Brit. J. Surg.* 34: 287–290, 1947.

Endamoeba histolytica may invade the skin and subcutaneous tissues of the buttocks and perianal regions. It causes acute, rapidly spreading ulceration with marked constitutional disturbances. Such a case is reported in a 28-year-old Griqua male who was cured by surgical measures and with emetine hydrochloride and emetine bismuth iodide.

(105) Cheese mite dermatitis occurring in the United States. N. P. Anderson and H. C. Fishman. *Arch. Dermat. & Syph.* 57: 227–234 (Feb.) 1948.

A case is presented of cheese mite dermatitis, believed to be the first described in the United States and from American cheeses. The authors include a description of the mite, an historical review of reported cases, and speculations on the mode of irritant action of the cheese mite. The dermatitis is best treated with any antipruritic and antiseptic lotion or ointment. No parasiticidal agent is necessary, since the mite does not live on the skin.

(106) Lichen urticatus syndrome as a manifestation of sensitivity to bites from various species of arthropods. L. Goldman. *Arch. Dermat. & Syph.* 58: 74–79 (July) 1948.

Of 29 patients with lichen urticatus, definite history and observation of reac-

tion to bites from various species of arthropods as initiating the syndrome was observed in 5 patients and presumptive evidence in 4 patients. These reactors to bites belong, as a rule, to the nonatopic group of patients with lichen urticatus. Personal observations in Mexico have established the fact also that bites from insects and the like may initiate the syndrome of lichen urticatus. The insects incriminated included the fly, chigger, mosquito, flea, cimex and simulium. It is suggested that in some cases of scabies in infants and children a *portion* of the generalized reaction may be a sensitivity response rather than a dissemination of actual infective lesions. Detailed testing with antigens and with the actual insect bite (Dietrich), analysis and environmental control may help to determine the significance of the role of sensitivity from bites of insects and the like in children with lichen urticatus syndrome.

(107) Bee sting prophylaxis. Queries and Minor Notes. *J. A. M. A.* 138: 541 (Oct. 16) 1948.

A physician asks what can be done to protect a 5-year-old child from bee stings. The child is extremely sensitive, becoming cyanotic and losing consciousness for half an hour to 2 hours following a sting.

Immediate relief is obtained by injection of 0.2 cc. of 1:1,000 epinephrine. Prophylaxis consists of injecting bee extract in increasing dosages.

(108) Papular urticaria. Its response to treatment with DDT and the role of insect bites in its etiology. B. Shaffer, M. C. Spencer, and H. Blank. *J. Invest. Dermat.* 11: 283–298 (Oct.) 1948.

The authors treated 69 cases of papular urticaria with DDT in the belief that the eruptions were due to bedbugs, fleas, and other insects. The results were successful. In addition to treatment, the parents of the affected children were instructed to spray their homes as a preventive measure. Tests showed that sensitivity to fleas and bedbugs was much greater in patients with papular urticaria than in normal people.

This dermatitis occurs mainly between March and October and is usually found in children.

(109) Dermatitis from contact with moths (genus hylesia). Report of cases. W. R. Hill, A. D. Rubenstein, and J. Kovacs. *J. A. M. A.* 138: 737–740 (Nov. 6) 1948.

An outbreak of dermatitis resulting from contact with moths (genus *hylesia*) is described. As a result of direct contact with urticating hairs of the adult moth, an eruption developed in 31 of 45 members of the crew of an oil tanker. The eruption occurred not only as a result of exposure to moths, but also after contact with moth-stained bed sheets. The diagnosis was confirmed by positive reactions to patch tests with moth hairs.

(110) Epidemic of bullous erythema on the legs due to bedbugs. J. Kinnear. *Lancet* 2: 55, 1948.

Investigation of a number of women with similar bullous lesions on the lower part of the legs revealed that bedbugs in a tramcar were the cause. Disinfestation of the tram car stopped the epidemic.

(111) Creeping eruption, systemic therapy. J. Van De Erve, Jr. *J. Invest. Dermat.* 12: 69–79 (Jan.) 1949.

The author presents cases of creeping eruption which were greatly aided by the drug Hetrazan or diethylcarbamazine, administered by mouth. Cure was effected in 13 of 17 cases, or 76.4 percent. Effective larvistasis was achieved in 48 hours and cure in 7 to 10 days.

(112) Human infestation with scabies of monkeys. L. Goldman and M. D. Feldman. *Arch. Dermat. & Syph.* 59: 175–178 (Feb.) 1949.

Five persons who cared for a group of 10 gibbons sent from Siam contracted scabies. Scrapings from the animals revealed organisms identical morphologically with the mite seen in human infestation. The gibbons, manifesting a scabies norvegica picture, all died. The human patients showed a mild, typical infestation of scabies.

(113) On cheese and fig mite dermatitis. V. Pirilä. *Acta dermat.-venereol.* 31: 630, 1951

The author reports five cases of cheese-mite (*Tyroglyphus farinae*) dermatitis occurring in a wholesale cheese distributing firm. Twenty-one of thirty employees complained of itching and dermatitis when exposed to mite-dust.

In addition, six case are reported of dermatitis caused by fig-mites (*Carpoglyphus sp.*). These workers were handling infested figs imported from Greece. The author discusses the probable mechanism of irritation, as well as preventive measures.

(114) Bullous eruption due to pediculosis *pubis*. A. B. Kern. *A. M. A. Arch. Dermat. & Syph.* 65: 334–339 (Mar.) 1952.

The case is reported of a patient with a bullous eruption, associated with pediculosis pubis. A diagnosis of pemphigus vulgaris was made originally. However, the clinical and histopathologic evidence suggested that the dermatitis was not pemphigus, but rather a reaction to the infestation.

The decision as to whether the lesions were the result of the louse bite per se or a reaction to an antigen introduced by the bite is more difficult to make. When first seen, the bullae were predominantly about the axillae and inguinal areas, suggesting that they might have been the direct result of bites. However, at the time of recurrence the lesions were present on the wrists and lower extremities, sparing the inguinal and axillary areas. While it was possible that each of the multiple bullae might itself be the site of a louse bite, the pathologic picture observed pointed otherwise, and suggested a reaction similar to the papular urticaria response to the flea bite. It appears that the bullous eruption in the case reported was probably the allergic response of a hypersensitive individual to an antigen introduced by the bite of *Phthirus pubis*.

(115) Clam digger's dermatitis: schistosome dermatitis from sea water. L. Orris and F. C. Combes. *A. M. A. Arch. Dermat. & Syph.* 66: 367–370 (Sept.) 1952.

Clam diggers working in the water of Cold Spring Harbor, New York, exhibited an eruption similar to schistosome dermatitis. Schistosome cercariae have been found in such waters and probably were the cause of the disease.

BACTERIA

(116) Cutaneous anthrax. R. J. Lebowich, B. G. McKillip, and J. R. Conboy. *Am. J. Clin. Path.* 13: 505–515 (Oct.) 1943.

The local clinical manifestations of human cutaneous anthrax are correlated with the characteristic features of the pathological lesion with respect to diagnosis and treatment with antianthrax serum.

Phagocytosis plays no part in the disposal of capsulated *B. anthracis* either in human infection or in experimental cutaneous lesions in the rabbit. The ability of the microorganism to escape phagocytosis is apparently related to its capsulation in the tissues. The capsule appears to protect the bacillus against phagocytosis by polymorphonuclear leucocytes.

The primary mechanism responsible for localization of the human cutaneous infection is a mechanical barrier consisting of a coagulum of plasma and of a fibrinous network. Obstruction of the tributary lymphatics by fibrinous thrombosis is not a significant factor in preventing or retarding the dissemination of *B. anthracis* from the site of inflammation. There is no morphologic evidence to indicate that a local accumulation of tissue agglutinins assists in the fixation of the microorganism.

The mechanism of the various features of the inflammatory process is considered.

(117) Anthrax in the United States 1939–43. Report of the Committee on Industrial Anthrax. *Am. J. Pub. Health* 35: 850–858 (Aug.) 1945.

This report gives the results of a survey of anthrax for a 5-year period from data furnished by state and local health officers, hospitals, physicians, and industrial plants. An accompanying table gives a comprehensive picture of the anthrax situation, state by state, showing incidence and mortality of both human and animal anthrax and, in most cases, the sources of infection. General criticisms include: Lack of care and uniformity in reporting cases; insufficient cooperation between agricultural and health agencies; carelessness in handling infected animals, especially when taking blood smears; failure to use lime in burials; and improper disposal of hides and skins.

In the 5-year period there was a fivefold increase in the incidence of wool-and-hide anthrax. Although serum is still used, chemotherapy gives better results in anthrax prevention. It is suggested that the United States Public Health Service should demand (1) adequate methods of sterilization of hides and skins, with appropriate education for all tanners and (2) port-of-entry disinfection of all imported hides and skins.

(118) Erysipeloid treated successfully with injections of penicillin. M. J. Costello. *Arch. Dermat. & Syph.* 52: 400 (Nov.–Dec.) 1945.

Dermatitis developed on a finger, following trauma from a fish bone. The infection was accompanied by fever.

Treatment was initiated with 40,000 units of penicillin every 3 hours until 1,800,000 units had been administered in

9 days. Ten days after penicillin therapy had been started, the patient was well.

(119) Erysipeloid: successful treatment with penicillin. L. Nicholas. *Arch. Dermat. & Syph.* 54:57–59 (July) 1946.

A case of erysipeloid that was treated with penicillin (800,000 units) is presented. It is believed that erysipeloid might respond to smaller doses.

(120) Penicillin and streptomycin in the treatment of experimental erysipelothrix rhusiopathiae infection of mice; with observations on immunologic reaction to the infection. J. V. Klauder and A. M. Rule. *J. Invest. Dermat.* 7:329–335 (Dec.) 1946.

Penicillin was found to be 100 percent efficient in experimentally induced septicemia caused by *Erysipelothrix rhusiopathiae* when given immediately after inoculating the mice with the organisms. It was 50 percent effective when given 8 hours after bacterial inoculation.

Streptomycin showed a very slight therapeutic effect.

(121) Anthrax. *Indust. Health Bull.*, New Jersey Dept. of Health 2:1–7, 1947.

The facts about anthrax, especially as an industrial hazard, are briefly presented. Anthrax is a disease incurred by many animals, and a potential hazard for workers handling and processing hides, skins, furs, and hair. The danger is greatest when the animal products are imported, especially from countries with poor sanitation. Types of infection, diagnosis, treatment, and prevention are discussed. Prevention involves disinfection of animal products, care in disposal of waste and infected material, recognition of the initial lesion, and good nutrition.

(122) Disease of swineherds: Clinic and etiopathologic study of sporadic, benign meningotyphoid (occupational-type). F. Sbarbori. *Med. d. lavora* 40:146 (May) 1949.

A case is reported of a leptospiral disease in a swineherd. The Leptospira, which causes both gastro-intestinal and meningitic symptoms, is a parasite of hogs. Contact of the skin with infective hog feces is given as the source of infection. Hence, the disease is regarded as occupational.

(123) Diagnosis and treatment of cutaneous anthrax. J. A. Holgate and R. A. Holman. *Brit. M. J.* 2:575 (Sept.) 1949.

Imported hides and skins remain at present an important source of infection with the anthrax bacillus. Anthrax is seen not only in tannery employees, but also in dock workers, carters and warehousemen, and on rare occasions in persons coming in contact with leather. It is difficult to kill the hardy spores in the hides without damaging the leather.

The authors describe eight cases of cutaneous anthrax in tannery employees. The men were all employed opening bales of hides, sorting them, and carrying them to the *lime yard*. The hides were goatskins from East and West Africa, and cowhides from East and West Africa, South America, and India. The infections occured in spite of the availability of adequate washing facilities and frequent clothing changes on the part of the workers, as well as the wearing of protective clothing.

The authors conclude that penicillin is probably the treatment-agent of choice.

(124) Combat of occupational anthrax: Question of danger of anthrax in handling imported sheep and goat skins. S. Hailer and K. Heicken. *Ztschr. Hyg.* 131:443, 1950.

During both world wars, when the importation of hides was cut off, the incidence of anthrax dropped sharply. As a result, the authors observed that in Germany anthrax is associated chiefly with imported skins, pelts, hairs, and bristles.

Routine cultures on 2,338 goat skins revealed 503 to be infested with *B. anthracis*. The skins coming from Asia showed the highest incidence of infection, but those from Spain, Morocco, Mexico, and the West Indies also were infested.

Cultures of 1,902 sheep hides revealed 164 to be infested. Separate cultures of hair showed that they contained spores more frequently than the shorn skins.

(125) Industrial anthrax in the United States: An epidemiologic study. A. H. Wolff and H. Heimann. *Am. J. Hyg.* 53: 80 (Jan.) 1951.

The authors report a study made by the Division of Industrial Hygiene of the United States Public Health Service. Evidence is presented which indicates that carpet wool is the material chiefly responsible for industrial anthrax. It is shown that industrial anthrax among those handling either hair or shorn hides is largely due to goat hides, especially those from Asia.

Preventive measures suggested include strict dust control, with adequate ventilation and daily wet-sweeping. The handling of finished woolen products or hides should be such that re-infection from raw materials is avoided. Raw-stock dyeing should be done in preference to skein-dyeing. Drying of wool should be performed at the highest temperature which will not damage the product. Protective clothing should be worn, and separate lockers should be provided for work clothes and street clothes. Medical facilities must be provided for treatment of minor skin lesions. The employees should be indoctrinated on the cause, nature, and control of anthrax.

(126) Occurrence of anthrax bacilli in the carpet-wool industry in the United States. R. S. Lloyd. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6: 421–434, 1953.

There has been an increase in the incidence of industrial anthrax in the United States during the past 30 years. The epidemiologic phase of the survey showed that carpet wool was involved in more than 90 percent of the cases of reported industrial anthrax.

The finding of anthrax-contamination in dust samples from various parts of a carpet factory, in slime samples, and in wool samples reveals a definite hazard to the worker.

Measures for prevention and control of industrial anthrax include improved plant and personal hygiene, and the provision of adequate exhaust facilities in the shredding and picking areas, protective clothing, and a program of medical care for the early diagnosis and treatment of anthrax.

FUNGI

(127) The mosaic fungus, a cholesterol intercellular artefact. T. Cornbleet, H. C. Schoor, and H. Popper. *Arch. Dermat. & Syph.* 48: 282–287 (Sept.) 1943.

The theory is suggested that cholesterol may be responsible pathologically for the separation of the leaflets of scale in keratolysis exfoliativa and, physiologically, for the normal exfoliation of the epidermis.

(128) Sporotrichosis following a mosquito bite. M. Moore and G. Manting. *Arch. Dermat. & Syph.* 48: 525–526 (Nov.) 1943.

Following a mosquito bite, a case of sporotrichosis developed in a girl of Indian and French descent. A description of the case and the lesions is given.

(129) Sodium propionate in the treatment of superficial fungous infections. E. L. Keeney and E. N. Broyles. *Bull. Johns Hopkins Hosp.* 73: 479–487 (Dec.) 1943.

Sodium or calcium propionate, which is incorporated in bread dough and cake batter to inhibit the growth of molds, has been shown in vitro studies to be fungistatic for the common pathogens.

Sodium propionate prepared in an ointment, solution, or powder and applied locally was found effective in the treatment of a number of fungous infections, including athlete's foot and tinea cruris. No evidence of irritation from its use was observed.

(130) Ringworm of the scalp. VI. Successful use of roentgen rays to epilate local areas of infection. G. M. Lewis and M. E. Hopper. *Arch. Dermat. & Syph.* 49: 107–108 (Feb.) 1944.

A method is described of treating selected cases of tinea capitis localized in one or a few areas. The areas fluorescent under a Wood's light are marked out and then epilated with roentgen rays. Adhesive plaster is applied for a week before treatment with roentgen rays and then reapplied after the exposure, until a cure has been effected. The authors examined the scalp under filtered ultraviolet rays at frequent intervals to determine that no further spread had occurred.

(131) Ringworm of the scalp in Buffalo and vicinity. E. D. Osborne. *Erie County Med. Bull.* 24: 9 (Feb.) 1944.

This article reviews the prevalence of ringworm of the scalp in Buffalo and vicinity. Control procedures advocated by Osborne in collaboration with the Buffalo health department are outlined.

(132) Epidemiology of tinea capitis. I. A study of tinea capitis in a dispensary. T. Benedek and I. M. Felsher. *Arch. Dermat. & Syph.* 49: 120–123 (Feb.) 1944.

Tinea capitis can be investigated from two points of view: the individual case in itself, and the individual case as an index revealing spread of the disease within the family, school, kindergarten, asylum, or similar groups. The individual case in the dispensary is the subject of this article.

The distribution of *M. audouini* and *M. lanosum* in Chicago is compared with that of other large centers. The authors infer that trichophyton plays only a minor role and that favus is not a frequent

causative agent (5.8 percent in New York and 3.5 percent in Chicago). The general assumption that zoophilic species cause an inflammatory tissue reaction while anthropophilic species elicit a torpid course of noninflammatory lesions is inaccurate, according to the authors. Their observations permit the conclusion that a definite change occurred in the host-parasite relationship of these two species of microsporum. *Microsporum audouini* has been found to cause inflammatory lesions also. (*M. lanosum*, however, was not found in cases of noninflammatory lesions.)

(133) Dermatophytosis and occupational dermatitis. J. G. Downing. *J. A. M. A.* 125: 196–200 (May 20) 1944.

The subject of fungous infections of the skin is covered comprehensively with reference to industrial dermatitis. Industrial physicians should know not only the fungi to which the worker is exposed, but also those peculiar to his previous occupation, and should make cultures or perform a biopsy when indicated. Primary fungous infections are easily discovered, but proving their source as occupational or nonoccupational may be difficult. Inexperienced physicians usually make faulty diagnoses of fungous infections of the hands.

Classification of fungi, their role as secondary invaders, and sensitization by fungi are discussed. The legal status varies, but in Massachusetts a fungous infection is not compensable unless a preexisting condition is aggravated by the work or by trauma. Differential diagnosis is difficult. Sulfonamide compounds have no place in the treatment of uncomplicated industrial dermatitis, and there is no proof of their value for fungous disease. Treatment varies according to the nature and complications of the disease; formula for ointments and dusting powders are given. Mycotic disease is not trivial, because it provides a method of entry for other organisms. Therefore increased knowledge of this disease and increased vigilance are necessary.

(134) Fungus allergy and industrial dermatitis. S. M. Peck. *J. Indiana M. A.* 37: 304–306 (June) 1944.

Established clinical and experimental factors associated with organisms grouped under the general heading of cutaneous microbids are discussed. *Trichophytid*, often shortened in the literature to *ids*, is the general term applied to the microbids associated with fungous infections. Trichophytids of the hands are not common in industry therefore, when an eruption of the hands occurs in a worker, contact dermatitis rather than a trichophytid should be thought of first. Practical criteria to be followed in the differential diagnosis of contact dermatitis and *ids* are listed.

(135) Management of dermatophytosis. J. S. Snow. *Mil. Surgeon* 95: 147–151 (Aug.) 1944.

In the tropics, where there is excessive heat and humidity, dermatophytosis is an outstanding problem. Heat eruptions, pyodermas, and the like are also very prevalent. The author states that 34 percent of the patients admitted to the dermatology wards at the Gorgas Hospital had tinea infections. For prevention, he stresses personal hygiene, washing the feet twice a day and drying well between the toes. Sandals and perforated shoes are beneficial. For treatment, he recommends bland soothing medication in acute stages and stronger medication as the condition becomes chronic. He warns above all against overtreatment.

(136) Dermatophytosis in industry. S. M. Peck, I. Botvinick, and L. Schwartz. *Arch. Dermat. & Syph.* 50: 170 (Sept.) 1944.

In 6 industrial plants, 2,123 workers were examined for dermatophytosis. On clinical grounds alone, results were classified as 27.79 percent positive and 33.63 percent doubtful. Showerroom flooring of concrete or pine wood is a possible but not likely source of fungous infections of the feet. Copper-impregnated concrete flooring was found to be of no value in preventing the spread of such infections. Trichophytin tests were made on 776 workers. Of these, 42.53 percent had positive reactions. The trichophytin test is positive more often in patients with clinically active dermatophytosis of the feet than in those showing no evidence of the disease. There is no indication that the presence of an allergy to fungi or their products bears any relationship to the acquisition of an allergic contact dermatitis. Dermatophytosis and its allergic manifestations are not important factors in lost time among industrial workers.

(137) X-ray treatment of ringworm of the scalp. S. C. Shanks. *Month. Bull. Min. Health* 3: 188–193 (Nov.) 1944.

Epilation shortens the cure of tinea tonsurans infections; epilation with thallium acetate and X-ray is discussed.

Contra-indications are listed and the technique of X-ray epilation is described. With this method the author has had good results in more than 1,000 cases.

(138) Histoplasmosis in man. R. J. Parson and C. J. D. Zarafonetis. *Arch. Int. Med.* 75:1 (Jan.) 1945.

Histoplasmosis, formerly believed to be a rare tropical disease, has been found widespread in the United States in the past decade. The authors reviewed 56 cases from the literature and 15 cases not yet published. Of 61 cases, some form of cutaneous lesions were present in 19. Petechial hemorrhages and bullous lesions were each noted once. Of the additional 15 cases, only 3 presented neither oral nor cutaneous manifestations. There was also one instance of a generalized papular eruption, which may have been due to concomitant Hodgkin's disease.

(139) The production of an antibiotic substance similar to penicillin by pathogenic fungi (dermatophytes). S. M. Peck and W. L. Hewitt. *Pub. Health Rep.* 60:148–153 (Feb. 9) 1945.

Several members of the group of fungi occurring in clinical lesions of dermatophytosis were found to develop a factor antagonistic to certain other microorganisms.

This factor resembles penicillin in the following respects: (*a*) Enhanced production on media containing corn-steep liquor, (*b*) spectrum of activity and behavior toward penicillin-resistant organisms, (*c*) sensitivity to pH and temperature, and (*d*) destruction by clarase.

(140) The war and dermatophytosis—with special reference to treatment and fungicide testing. F. D. Weidman, C. W. Emmons, J. G. Hopkins, and G. M. Lewis. *J. A. M. A.* 128: 805–811 (July 14) 1945.

The war has added fresh importance to dermatophytosis. Expert dermatologists and mycologists have carried on investigations which have proved or disapproved some of the old ideas and established new ones. The incidence of dermatophytosis was found to be high. Hygiene of the feet is paramount, both in prophylaxis and in treatment, with emphasis on the detrimental role of sweat.

Informed current opinion regards bacteria as the cause of many infections and intertrigos that were hitherto taken for granted as mycotic. Other foot conditions result from sensitization to local applications and to long-standing hypostasis and trauma. A definite technique is established for the sterilization of shoes. Evidence points to the fact that dermatophytosis does not predispose to contact dermatitis. Hypochlorite and hyposulfite foot baths are discredited. Standard methods are being developed for the testing and the clinical evaluation of fungicides. Of these, three new methods have proved valuable in treatment, namely: sodium propionate, undecylenic acid and Cresatin (metacresylacetate).

(141) Evaluation of measures for use against common fungous infections of skin. Screening tests by means of paired comparisons on human subjects. M. B. Sulzberger, H. C. Shaw, and A. Kanof. *U. S. Nav. Md. Bull.* 45: 237–248 (Aug.) 1945.

Screening tests to evaluate the relative effectiveness of 5 preparations in the prevention and treatment of fungous infections of the feet and groin were made in 808 volunteer prisoners. In 160 cases with active and usually bilateral fungous infections of the feet, impregnated socks were of no value. In 62 of these cases, propionate powder and undecylenic acid-undecylenate powder were equally effective; in 35 cases, undecylenic acid-undecylenate powder and undecylenate acid-undecylenate ointment were equally effective.

In the treatment of 72 active fungous infections of the groin, undecylenic acid-undecylenate powder was by far the most effective. Neither the wearing of impregnated socks nor the use of boric acid-salicylic acid powder prevents fungous infections, but both propionate powder and undecylenic acid-undecylenate powder appear to afford some protection.

(142) Undecylenic acid in the treatment of dermatomycosis. A. L. Shapiro and S. Rothman. *Arch. Dermat. & Syph.* 52: 166–171 (Sept.) 1945.

An ointment of 20 percent zinc undecylenate and 5 percent undecylenic acid was used in the treatment of various dermatomycoses. In patients with dermatomycosis of the feet, it was found to be only slightly superior to the older fungicide consisting of sulfur and salicylic acid. However, the virtue of this newer fungicide lies in the fact that it is nonirritating and still strongly fungicidal. It is also very effective in the treatment of tinea cruris and tinea axillaris. Against tinea circinata, tinea capitis and onychomycosis, the results were not encouraging.

(143) Overtreatment dermatitis to the feet. G. B. Underwood, E. L. Gaul, E. Collins, and M. Mosby. *J. A. M. A.* 130: 249–256 (Feb. 2) 1946.

This article exposes the myriad of proprietaries which are advertised as beneficial for the treatment of dermatitis pedis. It further deals with the amount of contact dermatitis noted from the indiscriminate use of these drugs.

The offender in 35 percent of the patients tested was one of the organic mercurials, Merthiolate, being responsible for 90 percent of the reactions. Other offenders were benzocaine, phenol, tars, and sulfonamides. In all, 400 patients tested showed positive reaction to one or more medicaments in 40 percent of the cases.

(144) Management of dermatophytosis (in part). G. M. Lewis and M. E. Hopper. *South. M. J.* 39: 246 (Mar.) 1946.

Dermatophytosis caused by trichophyton gypseum is usually diagnosed clinically and may be treated adequately with a variety of mild remedies. Care should be taken in diagnosis when there is a complicating eczema. In such cases, patch tests with shoe leather, tricophytin tests, and culture should be used. In acute complicated cases, general therapeutic methods should be used in preference to the fungicide.

(145) Sporotrichosis with radiate formation in tissue. M. Moore and L. V. Ackerman. *Arch. Dermat. & Syph.* 53: 253–264 (Mar.) 1946.

A history of cases of sporotrichosis is presented, followed by a discussion of a case treated by the authors. Potassium iodide produced good results. The histopathologic observations are given and the mycology is discussed. In this case, aspergillosis first came to mind due to acidophilic radiating structures in a tissue nodule, but the cultivation of sporotrichum established the diagnosis of sporotrichosis.

(146) Sporotrichosis. A. Gelber. *Arch. Dermat. & Syph.* 54: 208 (Aug.) 1946.

A case of sporotrichosis is presented in which the patient had a non-sporotrichotic papillomatous growth in the palm of the hand a year later. Roentgen therapy was instituted after the patient developed an intolerance to iodide therapy. Cultures are necessary for diagnosis of sporotrichosis as the lesions may simulate any of the diseases producing granulomatous reactions.

(147) Dermatophytosis and the industrial physician. *Missouri Indust. Health Bull.* 4: 4–8 (Sept.) 1946.

Dermatophytosis is one of the most common dermatoses in the summer and ranks third or fourth in winter. It is of importance to the industrial physician because of its occasional industrial etiology and the necessity of differential diagnosis from occupational dermatitis. This paper gives full directions for diagnosis by history, clinical appearance, direct microscopic examination, culture on Sabouraud's agar, and skin tests. The paper also describes its distinction from contact dermatitis, pustular psoriasis, monilial infections, neurodermatitis, and other *id* reactions.

In the discussion of prevention, the author is skeptical of the value of footbaths with antiseptic solutions. Showerroom flooring is not a source of fungous infection, and hence copper-impregnated flooring in showers is not necessary. Previously worn shoes should be sterilized by exposure to formalin vapor. Full directions for shoe treatment are given; also, for mass sterilization, as needed in institutions. In suggesting treatments for acute, subacute, and chronic dermatophytosis, the author warns against overtreatment.

(148) Fungistatic agents for treatment of dermatophytosis. J. G. Hopkins, J. K. Fisher, A. B. Hillegas, R. B. Ledin, G. C. Rebell, and E. Camp. *J. Invest. Dermat.* 7: 239–253 (Oct.) 1946.

The following results were found in the study of fungistatic agents:

1. Undecylenic acid and di-nitro-cyclohexyl-phenol gave the highest percentage of satisfactory clinical results, when tested in dermatophytosis of the feet.

2. 2,4,dinitro-orthocyclohexyl-phenol and trichlorophenol were the most rapidly fungistatic of the agents used, but were irritating in numerous cases.

3. The incidence of irritation was lowest with undecylenic, propionic, and benzoic acids.

4. The high percentage of effectiveness and low incidence of irritation in the use of undecylenic acid indicate that it is the best of the fungicides tested for routine treatment of subacute cases.

5. None of numerous fungicides tested was immediately effective, and none was ultimately successful in all cases.

6. Until some fungicide with a higher order of effectiveness is discovered, treatment of dermatophytosis must be varied according to the severity of the case, the degree of sensitization, and secondary infection.

(149) Aspergillus infection of the nails. E. S. Bereston and W. S. Waring. *Arch. Dermat. & Syph.* 54: 552–557 (Nov.) 1946.

A careful mycologic study of 13 cases of onychomycosis disclosed that *Aspergillus glaucus* or *Aspergillus nidulans* can cause this disease whether present alone or occurring with *Trichophyton rubrum.* All the usual characteristics of other forms of fungous infection of the nail were found in addition to a typical greenish discoloration of the nail plate.

(150) The treatment of tinea capitis with gliotoxin in a special plastic base. E. R. Constant. *J. Invest. Dermat.* 7: 337–339 (Dec.) 1946.

Gliotoxin in a plastic base was employed in the treatment of 18 cases of tinea capitis due to *M. audouini.* The base is a film-forming residue like collodion or traumaticin.

The author concludes that the results do not indicate that it is an effective remedy for the disease.

(151) Control of ringworm of the scalp among school children in Hagerstown, Maryland, 1944–1945. L. Schwartz, S. M. Peck, I. Botvinick, A. L. Leibovitz, and Elizabeth S. Frasier. *Pub. Health Bull.* No. 294, U. S. Public Health Service, 1946.

The epidemic of scalp ringworm in Hagerstown, Maryland, during 1944–45, was controlled in 1 year without barring infected children from school or other public places.

The probability is strong that the principal source of spread of infection was the barber's implements, especially the electric clippers. Tests made by a dermatologist of the United States Public Health Service disclosed that barbers' implements, including electric clippers, can be sterilized by immersing them in petroleum oil (boiling point 150°—200° C.) kept at 100° C. and working the clippers for 10 seconds while in the oil.

The two most efficacious fungicides tried during the epidemic were: (1) Salicylanilide, 5 percent in Carbowax 1500 and (2) copper undecylenate saturated solution in Carbowax.

(152) The role of "Candida albicans" in the production of erosio interdigitalis and paronychia. F. Raubitschek. *Dermatologica* 93: 295–306, 1946.

In cultures of 54 cases or erosio interdigitalis, *Candida albicans* was isolated in 82.4 percent and other types of Candida in 8.8 percent. Attempts were made to produce experimental lesions similar to spontaneously occurring erosio interdigitalis by inoculating with *C. albicans, C. tropicalis,* and *C. krusei.* The results indicated that similar lesions could be produced only by *C. albicans.*

(153) Ringworm of the scalp. R. J. Steves and F. W. Lynch. *J. A. M. A.* 133: 306–309 (Feb. 1) 1947.

An epidemic form of ringworm of the scalp which occurred in 747 children in Minnesota and which has appeared throughout most of the United States, is discussed. Most of the cases were due to *M. audouini,* which appears responsible in large part for the recent marked increase in the number of cases.

In a selected series of cases, 25 percent were cured by *manual therapy* (clipping the hair and manually removing hairs fluorescent under the Wood's light). X-ray epilation of the scalp was followed by cure in 80 percent of the cases. This was considered the method of choice.

(154) Sporotrichosis. D. H. Garrison. *J. M. A. Georgia* 36: 80–82 (Feb.) 1947.

Sporotrichum schenckii gains entrance through abrasions, punctures, cuts, stings and bites. A specific remedy is iodine, used internally and externally. The method of administration is outlined.

(155) Treatment of mycotic infections by inhibiting respiration of dermatophytes. F. A. Dolce and W. J. Nickerson. *Arch. Dermat. & Syph.* 55: 379–384 (Mar.) 1947.

Zinc chloride was used in the treatment of superficial mycotic infections to evaluate its effect on the metabolic activity (oxygen consumption) of mycelia. The results of the study are presented.

(156) Control of fungous infections of the feet in industry. L. Schwartz. *Occup. Med.* 3: 543–546 (June) 1947.

An extensive study by the United States Public Health Service in six industrial plants has shown that many of the current ideas about dermatophytosis are wrong. Fungous infections are no more prevalent among industrial workers than among the general population. Contagion from floors of shower rooms is negligible. Impregnation of concrete floors with copper does not kill the bacteria. As to sodium hypochlorite in foot baths, 1 percent requires over an hour to kill the organisms. Fungous allergy does not predispose to other dermatoses.

An effective method of prevention consists of wearing wooden-soled bathing slippers into the showers and keeping them on until the bather returns to the locker. Thorough drying of the feet, removal of scales and dead skin, and sprinkling a moisture-absorbing powder between the toes is advised.

(157) Common fungous diseases of the skin. W. W. Wilson. *J. Florida M. A.* 34: 151–155 (Sept.) 1947.

Skin diseases due to fungi are classified in three groups:

1. Primarily cutaneous mycoses usually without definite systemic involvement: the dermatomycoses.
2. Primarily cutaneous and/or mucous membrane infections with frequent systemic involvement: moniliasis, blastomycosis, sporotrichosis, and actinomycosis.
3. Primarily systemic infections with infrequent cutaneous or mucous membrane involvement: coccidioidomycosis and torulosis.

Several clinical pictures are discussed, and it is pointed out that superficial mycoses are the most common fungous diseases of the skin.

(158) Disseminated ulcerating sporotrichosis with widespread visceral involvement. W. T. Collins. *Arch. Dermat. & Syph.* 56: 523–528 (Oct.) 1947.

The author reviews some cases of sporotrichosis which have appeared in the literature and presents a detailed report of a case of disseminated cutaneous and visceral infection with *Sporotrichum schenkii* in a 67-year-old white man.

The patient died 2 months after initial swelling of the knee, which was followed by a generalized cutaneous eruption of papular and ulcerative lesions.

(159) Verrucous sporotrichosis. L. M. Smith and H. D. Garrett. *Arch. Dermat. & Syph.* 56: 532–534 (Oct.) 1947.

The authors present an unusual case of sporotrichosis which they term *sporotrichotic dermatitis*, a localized verrucous lesion involving both the epidermis and the corium. The clinical and histologic observations are given.

(160) Suppurative ringworm contracted from cattle. L. P. Fowle and L. K. George. *Arch. Dermat. & Syph.* 56: 780, 1947.

Twenty-three cases of animal ringworm are described. In 14 cases, *Trichophyton faviforme* was the cause; in 4 cases the ringworm was due to *Trichophyton mentagrophytes*. In the five remaining cases no fungus could be found either on culture or microscopically. The patients all lived on farms; they were treated with sodium iodide and with topical 5 percent sulfathiazole ointment or merthiolate ointment. The authors question any benefits from topical therapy with sulfonamide.

(161) Ringworm of the scalp. R. T. Behling and I. J. Markel. *J. Invest. Dermat.* 11: 239–242 (Oct.) 1948.

The cure of an epidemic of ringworm of the scalp in 431 children in Elkhart, Indiana, is discussed, and reference made to control of a similar epidemic in Hagerstown, Maryland, by the United States Public Health Service. Screening methods are described. Treatment consisted of manual epilation and local application of copper undecylenate or salicylanilide mixtures. On the average, 50 applications were made. Where liquid mixtures were used, the average was 26 applications. Cooperation of local physicians, barbers, teachers, nurses, and parents is necessary for control.

(162) Industrial sporotrichosis. H. M. Robinson. *South. M. J.* 42: 343 (Apr.) 1949.

The author reports three cases of sporotrichosis, giving a history of possible infection from industrial trauma. One patient, a stevedore, had the lesions on his back. Apparently, they developed after he had carried a bag of fertilizer. The other two patients had been struck on the hand by a piece of asbestos. The granulomatous lesions developed at the sites of these initial lacerations.

(163) A new treatment for superficial mycoses. L. Schwartz, M. Robinson, and J. Q. Gant. *Indust. Med.* 18: 257–258 (June) 1949.

Superficial fungous infections were formerly treated with fungicides put up in a grease base. However, salicylanilide and a cationic detergent in Carbowax proved very effective in the treatment of tinea capitis. Further experiments revealed that topical application of a solution of salicylanilide and Hyamine 3258 in isopropyl alcohol cured 43 of 50 cases of superficial mycoses. Of 38 cases of tinea pedis, 36 were cured within 3 weeks. This treatment is efficient, stainless, and easy to apply.

(164) Sporotrichosis with asteroid tissue forms. H. Pinkus and J. N. Grekin. *Arch. Dermat. & Syph.* 61:813–819 (May) 1950.

A 57-year-old white male employed in baling waste paper sustained a hand injury from an end of loose wire. The lesion healed under local therapy. Several weeks later there occurred in the same area an injury which did not heal during a period of a year and a half. The lesion was a firm 3 cm. plaque on the dorsum of the hand, with a firm nodular border. There was scarring, and in the center, superficial ulceration. Biopsy revealed a granulomatous infiltrate with numerous micro-abcesses. In some of the micro-abcesses there were found peculiar bodies from 6 to 22 microns in diameter, a thick walled structure containing some nuclear material and beset with numerous, plump, blunt rays of uneven length. *Sporotrichum schenkii* was isolated on culture, which proved lethal to two rats on intra-peritoneal inoculation. Spores and mycelia were seen in the tissues, but no asteroid forms were seen.

(165) Industrial sporotrichosis. L. Tulipan and E. Muskatblit. *Compens. Med.* 3:36 (June) 1950.

The authors report a case of sporotrichosis occurring in a sewer digger. There was rapid response to therapy with aureomycin and potassium iodide.

(166) Chromoblastomycosis: report of first case recognized in Michigan; apparently contracted in South Carolina. A. J. French and S. R. Russel. *A. M. A. Arch. Dermat & Syph.* 67:129–134 (Feb.) 1953.

This is thought to be the first case of chromoblastomycosis diagnosed in Michigan. The disease is a specific infective granuloma caused by one of three related fungi: *Phialophora verrucosa*, *Hormodendrum pedrosoi*, or *Hormodendrum compactum*. The disease is limited to the skin, and visceral involvement has not been reported. Complete, early, local excision may be curative.

The patient was injured with wood, an occurrence frequently noted in the other cases reported. A trauma of this type can make this disease occupationally connected.

(167) Occupational hazards from fungi causing deep mycoses. S. S. Raphael and J. Schwartz. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 8:154–165 (Aug.) 1953.

Evidence of laboratory infection with fungi is presented, and control measures are discussed. Sporotrichosis is shown to be a numerically important occupational disease of florists, nurserymen, and miners. The authors point out the endogenous origin of actinomycosis, and stress that it is not occupationally determined. Allergic diseases caused by non-pathogenic fungi are discussed.

Cancer

CARCINOGENS

(168) Preparations of dispersions of carcinogenic hydrocarbons and hormones with the aid of dioctyl ester of sodium sulfosuccinate (Aerosol O. T.). E. Lorenz, M. B. Shimkin, and H. L. Stewart. *J. Nat. Cancer Inst.* 1:355 (Dec.) 1940.

Solid pellets of Aerosol, weighing 30 mg., were implanted subcutaneously into strain A backcross mice. Severe ulceration at the site of injection appeared within 1 week. None of the mice died, and the grossly ulcerated lesions healed within 3 weeks.

Strain A mice, injected subcutaneously with 0.2 cc. of a 5 percent Aerosol solution, were killed at various periods, from 3 to 120 days, after the administration. An acute ulcerative lesion developed at the site of injection.

In the animals injected with Aerosol, the liver in the early stages showed rather marked increase in mitotic figures in the absence of any demonstrable liver damage. There was a moderate degree of myelopoiesis of the spleen during the first 10 days of the experiment.

With intravenous injection of doses above 0.25 cc. of a 0.5 percent Aerosol solution in water, there was a sudden collapse and death in most of the animals. With fatal intravenous doses, the mice showed congestion and petechiae in the lungs. With doses of 0.5 cc. of 0.1 percent solution, no pathologic changes were observed. There were no consistent or significant gross or microscopic lesions in the mice receiving Aerosol orally.

(169) Health hazards from carbolineum substitute. Schaefer. A. *Reichsarbeitsblatt 22: III, Arbeitsschutz* 349, 1942.

Carbolineum substitutes marketed under various trade names contain mainly coal tar oils. When these substances are used in liquid form as a spray to produce an antifouling surface on walls, the atmosphere can become contaminated, giving rise to skin irritations. It is therefore recommended that the substitutes be used as a paste which can be painted on the walls rather than sprayed.

(170) The harmfulness of paraffin and petrolatum-containing preparations. E. O. Schock. *Monatschr. f. Krebsbekämpf.* 11: 31–33, 1943.

In regard to the possible cancer-producing effect of mineral oils and fats when allowed to act for a long time, the author reports on a personal observation. After more than 10 years' daily use of brilliantine on the scalp, many small tumors arose. Later, they also developed on other parts of the body which did not come in contact with the medium. Following discontinuance of the preparation, the swelling receded in 2 to 4 weeks, without residue.

(171) Carcinogenic effect of aminoazobenzene. A. H. M. Kirby. *Nature (London)*, 154: 668–669 (Nov.) 1944.

Experiments on rats have elucidated further the mechanism whereby N,N-dimethyl-p-aminoazobenzene (butter-yellow) brings about neoplastic changes in liver tissue. It was found that the butter-yellow split product, p-aminoazobenzene, is less carcinogenic for rats than the fully methylated compound.

(172) Influence of bromobenzene on the induction of skin tumors by 3,4-benzpyrene. H. G. Crabtree. *Cancer Research* 4: 688, 1944.

Applications of bromobenzene can inhibit and sometimes prevent the carcinogenic action of benzpyrene, probably by intermittent interference with sulfur metabolism, which is a local effect.

(173) Mule Spinners' Cancer and Automatic Wiping-down Motion. Interim Report, Great Britain Joint Advisory Committee of the Cotton Industry. His Majesty's Stationery Office: London, 1945.

The use of animal and vegetable oils by spinners would prevent development of cancer. These oils are not available at present. When they are available, the price should not be prohibitive, as only small amounts are needed. Mineral oils with certain characteristics are the least carcinogenic and can now be obtained. The specifications of oils are given. The report recommends that workers engaged in mule spinning be examined periodically.

(174) Symposium—Industrial skin cancer with special reference to pitch and tar cancer. Chemical aspects of industrial skin cancer caused by pitch and tar. I. Hieger, S. A. Henry, P. Ross, and J. G. Winternitz. *Brit. J. Radiol.* 20: 145, 1947.

Heiger deals with the chemical aspect of carcinogenic hydrocarbons and their action on mouse skin as a simplified model of the action of tar and pitch on the human skin. He cites the work of Kennaway, and traces the steps which led to the discovery of these hydrocarbons, pointing out that the cancer-producing potency depends on the chemical composition and the dosage. There are, at present, some 300 recognized carcinogens of varying potency. Trivial changes in constitution bring about enormous variations in potency. The mechanism by which cancer is produced is discussed.

Henry deals with the relation between pitch, tar, and tarry products and epithelioma of the skin and its sites. He discusses the course of the condition and its behavior and analyzes the reported cases. The site at which the lesion occurs depends on the nature of the patient's occupation and the chemical properties of the substance, though individual habits cause modification. Pitch and tar produce lesions in a shorter time than mineral oil.

There is a short account of the clinical features by Ross.

Winternitz describes treatment by X-rays, and points out that the combination of education of the patient, vigilance of the industrial medical officer, and accessibility of the tumor, produces a 100 percent cure rate. Short-distance low-voltage therapy has supplanted treatment by radon. He analyzes 449 cases treated at the Royal Cancer Hospital, London. Of these, 348 patients had benign lesions and 39 malignant, while 62 had both benign and malignant growths. Of the patients with malignant tumors, 19 had two or more malignant growths, but only in one case was it necessary to treat regional lymph nodes.

(175) Occupational cutaneous cancer attributable to certain chemicals in industry. S. A. Henry. *Brit. M. Bull.* 4: 389–401, 1947.

Pitch, tar, or tar products were held responsible for approximately two-thirds

of the 3,753 cases of cutaneous cancer reported in England during the past 40 years. The time from onset of work to the manifestation of the growth in pitch and tar workers varied from 8 months to 1½ years depending on the nature and location of the growth. The time for the onset of malignancy in shale-oil or mineral-oil workers varied from 4 to 9 years. The latter cases comprised about one-third of the total.

(176) The role of arsenic in carcinogenesis. A. N. Currie. *Brit. M. Bull.* 4: 402–405, 1947.

It is difficult to assess the function of arsenic in the production of malignant change. It may act as a chronic protoplasmic irritant directly stimulating epithelial proliferation. On the other hand, because of its profound effect on cell oxidation, it may bring about an intracellular chemical breakdown, liberating organic substances which are known to produce cancer experimentally. These substances may act at the site of their evolution or may be transported to distant parts to effect in time malignant change at their ultimate destination.

(177) Epidemiology of skin cancer. S. Peller. *J. Invest. Dermat.* 11: 73–80 (July) 1948.

A review of the literature on cancer due to soot, arsenic, tar and paraffin, shale oil, and sun rays is presented. Observations are also made on the incidence of skin, lip, and other types of cancer in various racial and national groups. Statistics found in the literature are interpreted.

(178) Occupational skin lesions due to pitch and tar. P. Ross. *Brit. M. J.* 2: 369–374 (Aug. 21) 1948.

A brief account is given of the preparation, the chemistry, and the industrial uses of coal tar and pitch. The following clinical effects are described and discussed: tar burns, tar erythema, allergic eczematous dermatitis, folliculitis, acne and comedones, melanosis shagreen skin, neoplastic changes, and epitheliomata. The pathogenesis of pitch and tar cancer is discussed. Various prophylactic measures are described. A statistical survey is included.

(179) Sunlight and skin cancer in Kenya. F. Piers. *Brit. J. Dermat. & Syph.* 60: 319 (Oct.) 1948.

This article contains a discussion of the factors influencing ultraviolet radiation in Kenya. The three principal types of cutaneous reaction—permanent suntan, farmer's skin, and chronic solar dermatitis—are described. Cutaneous cancer among the European and non-European population of Kenya is discussed. It is concluded that sunlight is the paramount factor in the causation of cutaneous carcinoma in Kenya.

(180) Dermatoses Among Gas Workers and Tar Workers. W. D. Jenkins. John Wright & Sons Ltd., Bristol, 1948. 54 pp.

The author describes the manufacturing processes in tar distillation, coalite manufacture, and chemical production and indicates in what manner exposure to the various substances occurs. A series of tables lists the incapacitating and non-incapacitating occupational dermatoses, together with the types of work performed by the affected employees. Protective measures and methods of treatment are described.

(181) Cancers due to industrial tar and arsenic. *J. A. M. A.* 140: 408 (May 28) 1949.

Recent American and British reports on industrial cancer are mentioned. Workers handling inorganic arsenicals seem to have an excess amount of skin and lung cancer. The use of arsenicals in insecticides in certain regions creates a hazard because the cancers are slow to develop. Only 75 cancers from tar and pitch have been reported in the United States. It is urged that physicians pay closer attention to industrial cancer and report all cases immediately.

(182) Skin cancer in the engineering industry from the use of mineral oil. C. N. D. Cruickshank and J. R. Squire. *Brit. J. Indust. Med.* 7: 1–11 (Jan.) 1950.

A definite hazard exists in the use of cutting oils. Of 138 workers examined, 79.6 percent showed oil folliculitis and 32.6 percent showed either hyperkeratoses or pigmented rugose warts similar to the ones observed in tar workers and mule spinners. A case of scrotal cancer in a 42-year-old patient is reported as further evidence of possible carcinogenicity of cutting oils.

From 1939 to 1948, 34 patients with scrotal cancer were treated at the United Birmingham Hospitals. Of these, 6 were machine operators, 6 were workers exposed to oil in the machine-tool industry, 13 were tar and pitch workers, and 9 were employed in other ways.

Painting with cutting oil produced benign tumors in 2 of 4 rabbits by the

52d week. A benign, hyperkeratotic papilloma occurred in 1 of 46 mice after 54 weeks' local application.

(183) Incidence of cancer in the carbon black industry. T. H. Ingalls. *Arch. Indust. Hyg. & Occup. Med.* 1: 662 (June) 1950.

In a company employing 476 carbon black workers, 1 man died of cancer of the stomach during a 10-year period. Cancer of the skin developed in 2 other employees during a 5-year period. The observed death rate from cancer in this industry, 0.21 per thousand per work year, is low. The morbidity rate of 1.0 new case annually per thousand workers per work year is likewise low. The author therefore feels that the probability is very small that an occupationally connected cancer will develop in the carbon black worker.

(184) The problem of occupational carcinoma of the skin. K. H. Sroka. *Ztschr. Haut- u. Geschlkr.* 11: 250–258, 1951.

The problem of occupational carcinoma of the skin and its prophylaxis are discussed. The latter includes improvement of general and local conditions by means of both social and medical measures. Distinction is made between four main groups of carcinogenic substances, the most important of which is the one including polycyclic aromatic hydrocarbons with at least four benzene rings. These substances—for example, tar, soot, pitch, anthracene—are discussed in detail with reference to carcinoma of the skin. Various benzpyrenes and benzanthrenes are at present considered to be undoubted carcinogenic agents. They are alleged to have a special penetrative power and an affinity for basal cells.

Dethmers—Apeldoom [EXCERPTA MEDICA]

(185) Experimental analysis of the carcinogenic activity of certain petroleum products. W. E. Smith, D. A. Sunderland, and K. Sugiura. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4: 299–314 (Oct.) 1951.

The authors report the results of experimental studies revealing carcinogenic properties in oils boiling above 700° F., obtained from petroleum by the fluid catalytic cracking process. Nonaromatic fractions were essentially noncarcinogenic, while the aromatic components were carcinogenic. The carcinogenic activity of potent oils was diminished by dilution with noncarcinogenic oils. Hydrogenation or adsorption treatment reduced the carcinogenic activity but did not abolish it.

Unrefined *slackwaxes* induced occasional benign papillomas and a few cancers after prolonged painting. Aromatic extracts of such material were more active, indicating that the carcinogens are not the paraffins themselves but the material from which the paraffins are pressed.

(186) Properties of high-boiling petroleum products: Physical and chemical properties as related to carcinogenic activity. H. G. M. Fischer; W. Priestley, Jr.; L. T. Eby; G. G. Wanless; and J. Rehner, Jr. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4: 315–324 (Oct.) 1951.

Experimental work on the physical and chemical properties of carcinogenic petroleum products is reviewed. Four simple and rapid laboratory assay methods have been developed for predicting the carcinogenic activity of high-boiling refinery products. The authors correlate the results of these chemical procedures with the results of actual experimental carcinogenesis. Although the data are still too limited to be statistically conclusive, the correlation seems high, and the usefulness of these procedures yet to be established.

(187) Occupational hazards of the cotton industry. 1. Mule spinner's cancer. R. Murray. *J. Indust. Nurses* 3: 132, 1951.

A history of the disease is given, together with a description of the spinning mule and how the groin of the worker is likely to be splashed by oil. The clinical course of the lesion is described, from the initially innocent-appearing verrucous lesion to a carcinoma.

Two methods of prevention are the provision of antisplash devices on the machines, or the use of sintered metal bearings which need infrequent lubrication. Another solution is the use of a highly refined, technical grade, light oil which is noncarcinogenic. However, such a lubricant is expensive.

Prevention through personal cleanliness and the importance of early diagnosis through periodic physical examinations are stressed.

(188) Survey of some current British and European studies of occupational tumor problems. W. E. Smith. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 5: 242–263 (Mar.) 1952.

The author surveys some current British and European studies of occupational tumor problems under the headings of shale oil, petroleum, asbestos, dyestuffs, and sources of statistical data on occupational factors in cancer.

(189) Industrial aspects of skin cancer. E. L. Wynder. *Bull. Am. Inst. Chemists* 30:23 (Jan.) 1953.

In Great Britain, 2,975 cases of skin cancer were reported up to 1945, with roughly 60 percent attributed to pitch or tar products, and 40 percent to shale oil, mineral oil, or bitumen. In the United States, only 151 cases were reported up to 1948. The author attributes this low figure to inadequate recording and reporting. In the British series, the maximum number of cases occurred 20 to 24 years after the first exposure to pitch and tar, and 50 to 54 years after the first exposure in shale and mineral oil workers.

In addition to chemicals, carcinogenesis is attributed to radiant energy and scars from burns.

Prevention is stressed as the most important phase of the problem, with compulsory medical examinations, protective clothing, minimizing of contact, and worker education.

(190) Occupational skin cancer in a group of tar workers. R. E. W. Fisher. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 7:12–18 (Jan.) 1953.

The results of a survey of 241 workers in a tar distillery are reported. No evidence was found that fair-haired men are more prone to tar warts than are dark-haired men. There appears to be a correlation between susceptibility to photosensitization and to pre-malignant and malignant hyperkeratoses (tar warts). Chronic tar skin (hyperkeratoses, hyperpigmentation, and telangiectasia) does not necessarily precede the development of tar warts.

(191) Experimental studies on cancerigenesis of synthetic liquid fuels and petroleum substitutes. W. C. Hueper. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 8:307–327, 1953.

The author reports on studies of carcinogenicity of American shale oil and several fractions boiling over 700° F. These substances have a low carcinogenic potential.

INDUSTRIAL (GENERAL)

(192) The prophylaxis of cutaneous cancer. R. Aitken. *Edinburgh M. J.* 51:339, 1944.

In taking steps to prevent cancer of the skin, the Scottish Oil Works has experienced a drop of 50 percent in cases of epithelioma, shagreen skin, or warty lesions, which often precede malignancy.

Preventive measures include selection, inspection, and protection. Selection excludes those with a reddish complexion. Inspection, at 3-month intervals, excludes those with any signs of a paraffin dermatitis. Protection entails the promotion of cleanliness and the use of a modern barrier cream.

(193) Industrial management and occupational cancer. W. C. Hueper. *J. A. M. A.* 131:738–741 (June 29) 1946.

The author discusses the term *occupational cancer* and reviews some of the history of early cases. He points out the increase in occupational cancer in recent years in other countries as well as in the United States. Cancers from radioactive substances, roentgen rays, specific carcinogenic agents, skin cancers and cancers of other organs are discussed. Emphasis is placed on the importance of the carcinogenic agent itself, rather than age or sex.

Fourteen recommendations are made for the control of occupational cancer.

(194) A cancer detection clinic in industry. F. H. Craddock, Sr., and F. H. Craddock, Jr. *J. M. A. Alabama* 15:291–294 (1946).

The first industrial cancer detection clinic in the United States was opened in 1944 at the Drummond Fraser Hospital, Sylacauga, Ala., in cooperation with the American Cancer Society, the State medical association, and the State cancer committee. The purpose of the clinic is to provide regular, periodic examinations of all women over 29 years of age connected with the Avondale Mills. Clinics are held 3 afternoons a week. While the examinations are entirely voluntary, the response has been good. Samples of all the appointment cards, follow-up notice cards, forms used in preliminary questioning of the patient, and the examination record of the physician are printed in full and should serve as valuable suggestions to other clinics.

Examinations of the first 300 women revealed that several suffered from cancer, some beyond effective treatment. The examinations showed a surprising number of pathologic conditions other than malignancies.

(195) Significance of industrial cancer in the problem of cancer. W. C. Hueper. *Occup. Med.* 2:190–200, 1946.

This is a general discussion summarizing the author's point of view on occupational cancer. Carcinogenic agents, age, sex, heredity, and the mechanism of can-

cer production are discussed in relation to occupation. The public health aspect and the necessity for enlarged study and control are emphasized. Though occupational cancer is not a common problem in the United States, the author urges that more attention be paid to it. Industrial cancer is not reportable in most states.

(196) Occupational cancer. *Month. Rev.*, New York State Dept. Labor 26: 40 (Sept. 1) 1947.

The Division of Industrial Hygiene and Safety Standards of the New York State Department of Labor is inaugurating a campaign against occupational cancer. The first point of attack is bladder cancer arising from beta-naphthylamine, benzidine, and their derivatives. These substances are known to produce cancer on the basis of animal experiments. Because cancer may be caused by very small quantities of these chemicals, precautions against exposure should be extraordinarily thorough. Besides periodic cystoscopic examinations and analysis of urine, precautions should include the frequent supplying of clean clothing.

The types of cancer to be considered in the State program include: (1) Bladder cancer, (2) cancer of the lungs, larynx, or other parts of the respiratory tract, (3) skin cancer, (4) leukemia, and (5) bone cancer. Progress reports will be made periodically.

(197) Pathologic aspects of occupational tumors. Shields Warren. *Occup. Med.* 5: 249–255 (Mar.) 1948.

The importance is stressed of recognizing precancerous changes in tissues as an aid to determining that an occupational hazard exists. Pathologically, an occupational tumor is not distinct from a chance tumor of the same part when fully developed. Early studies are advised.

(198) Environmental and occupational cancer. W. C. Hueper. *Pub. Health Rep. Supp. No. 209*, 1948.

This pamphlet presents in considerable detail (1) the role of environmental agents in human cancer causation, (2) occupational factors in cancer incidence growth, and (3) problems in the control of occupational cancer. The main conclusion is that exogenous agents, especially in industry, are important causal factors in certain types of cancer and that attention should be given to these occupational carcinogens in view of the gradual increase in occupational cancer.

(199) Environmental cancer hazards caused by industrial air pollution. W. C. Hueper. *Arch. Indust. Hyg. & Occup. Med.* 2: 325 (Sept.) 1950.

A number of recognized occupational cancers are probably caused by inhalation of carcinogenic air pollutants, or by cutaneous absorption of these materials. Numerous carcinogenic agents are listed, together with the type of contact and the site of the malignancy produced. The control of these hazards makes it essential that industrial management, public health agencies, and the medical profession be alerted to the problem and work together in its solution.

(200) A cancer-control program for high-boiling catalytically cracked oils. J. P. Holt, N. V. Hendricks, R. E. Eckardt, C. L. Standton, and R. C. Page. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4: 325–334 (Oct.) 1951.

Exposure to oils obtained from the fluid catalytic cracking process, and containing material boiling about 700° F., is believed to represent an occupational cancer hazard. A description is presented of the precautionary program established to keep employees from contact with these oils, and to insure early diagnosis and treatment of skin lesions through adequate medical supervision and periodic examination.

(201) Occupational cancer hazards in American industries. W. C. Hueper. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 5: 204–208 (Mar.) 1952.

The author reviews several of the causes of occupational cancer of various organs, including the skin. He stresses that the medical profession must become aware of the existence of occupational cancer hazards in order to discover and evaluate present environmental conditions which are the direct cause of some occupational tumors.

TRAUMATIC

(202) A skin carcinoma developing acutely after a single trauma. W. Lutz. *Schweiz. med. Wchnschr.* 73: 1089–1090 (Sept. 4) 1943.

A case of skin cancer 2 months after trauma is presented, with a descrip-

tion of the symptoms and the microscopic findings. Theories on the development of carcinoma following trauma are given.

(203) Cancer said to be caused by a single injury. F. W. Steward. *J. A. M. A.* 126: 125 (Sept. 9) 1944.

Letter to the editor, apropos an earlier editorial, represents a scathing indictment of physicians who testify that a single trauma is a likely cause of cancer.

(204) Cancer not ascribed to single injury. I. H. Perry. *J. A. M. A.* 126: 190 (Sept. 16) 1944.

Prompted by an earlier editorial, the author cites experience which indicates complete absence of reliable evidence that a single trauma can produce a malignant tumor.

(205) Trauma in malignant bone tumors. B. L. Coley. *Am. J. Surg.* 73: 300 (Feb.) 1947.

The role of single injury in the development of sarcoma of bone has been overemphasized. Little support of traumatic theory is afforded by pathologists and laboratories. Until qualified authorities are summoned by the court and not by the plaintiff, medical expert testimony will continue to be of doubtful value and will not enhance the physician's reputation.

(206) Basal-cell carcinoma at site of trauma. T. G. Reah. *Brit. M. J.* 1: 412 (Mar.) 1947.

A case of basal cell carcinoma, which apparently developed after a superficial shell wound, is reported. However, since secondary infections were common in the Middle East and frequently delayed the healing of wounds, the exact time the malignancy developed in this case is unknown.

(207) Occupational and post-traumatic cancer. F. W. Stewart. *Bull. New York Acad. Med.* 23: 145 (Mar.) 1947.

The author gives a number of illustrations of cancers clearly related to industrial hazards. Others, which he calls the individual type, are industrial cancers in a broader sense. They may result, for example, from lack of cleanliness while at work or from improper treatment of a condition due to occupation. The former type may be eliminated by the intelligent application of knowledge, but not the individual type. The author states his disbelief in the relation of single trauma to cause of cancer and shows how attempts to prove such a relationship have been propagated.

(208) Basal-cell carcinoma at site of trauma. J. Marshall. *Brit. M. J.* 1: 901 (June 21) 1947.

A case is reported of basal cell tumor in a 38-year-old man who had been severely beaten about the head and neck with a revolver butt.

(209) Cancer of skin and occupational trauma. J. G. Downing. *J. A. M. A.* 148: 245 (Jan.) 1951.

Although the number of recorded cases of occupational cancer in the United States is small, it is not indicative of the hazard. Figures are given for tar and pitch, grease and oil, roentgen, and arsenic carcinomas. The author reports cases of cancer occurring in a coal tar worker, a man exposed to arsenical sprays, and an inspector of creosote- and carbolic-acid-distilling equipment.

The author has never been satisfied that cancer has resulted from a single trauma. Four case histories of persons associating their carcinoma with trauma are presented and discussed.

The key to prevention lies in understanding the hazards of an industry, and then applying accepted methods of preventive medicine and hygiene.

Chemical, Inorganic

ACIDS

(210) Poisoning with hydrogen cyanide by absorption through the skin. F. Flury and R. Walther. *Arch. Gewerbepath. Gewerbehyg.* 11: 311–25, 1942.

Amounts of liquid hydrocyanic acid up to 1.4 gm. produced no toxic effect when spread over 15 square cm. of the belly skin of rabbits. When 2 to 3 gm. were used, defecation and cramps appeared within 8 minutes, but all of the animals recovered. Five gm. resulted in fatalities within 20 minutes in every case. A solution of hydrocyanic acid was absorbed through the tail skin of mice more

rapidly than were solutions of cyanide salts. It was also found that the acid and its salts were very rapidly absorbed from the conjunctival sac. There was no absorption from molten cyanides so long as the burn scab remained intact.

(211) Safety in the operation of hydrogen fluoride alkylation plants. R. Benson. Tr. 32d Nat. Safety Cong. 1:536–541, 1943.

With hydrofluoric acid burns, prompt action is always necessary, even when the acid is dilute and no irritation is felt immediately. A stinging sensation should warn the worker to lose no time in starting first-aid treatment as follows: (1) Flush well with water for at least 10 minutes; (2) apply an ammonia solution (28 percent, dilution 1 to 10); and (3) rub into the affected area a special magnesium oxide-glycerin hydrofluoric acid burn salve. Blisters should be opened with a sterile instrument by a competent person.

It must be remembered that hydrofluoric acid has a double action on the skin: the usual acid action and that of the fluoride ion. Thus, complete treatment involves both neutralization of the acid and precipitation of the fluoride, best done by magnesium or calcium in a neutral or alkaline form, such as in the salve mentioned. When the acid has already penetrated, 10 percent calcium gluconate or 20 percent magnesium sulfate must be injected around the affected area. Similar treatment should be given if possible when the acid has penetrated under the fingernails. Because the gas is too pungent for voluntary inhalation, fatalities from inhalation are rare. Treatment inclues removal to fresh air, treatment of skin burns, rest, discouraging the patient from coughing, artificial respiration if necessary, and warmth. The physician always should be called. Fluorosis from continued light exposure is not in evidence, but the subject is being studied.

(212) Chromic acid poisoning resulting from inhalation of mist developed from five percent chromic acid solution. I. Medical aspects of chromic acid poisoning. N. Zvaifler. *J. Indust. Hyg. & Toxicol.* 26:124–26 (Apr.) 1944.

Chromic acid solution, 5 percent, is used in anodizing operations, whereby a coating, highly resistant to corrosion, is formed on aluminium and its alloys through oxidation of the aluminium. Workers exposed to mist arising from the solution may suffer from necrosis, with perforation of the nasal septum. Observations based upon over 100 cases are reported. Some persons, especially those with spurs or deflections of the septum, are more susceptible than others, but few finally escape. The perforating process proceeds with so little disturbance that the ulcer is far advanced before aid is sought, and the perforation is inevitable.

Cases are divided into (1) those limited to the anterior part of the septum and (2) those with a general involvement of all the nasal mucosa, extending into the posterior pharynx. Submucous resection of the necrosing cartilage is recommended to hasten a cure, but there is no need to attempt to close the perforation. No constitutional symptoms have been observed. The solution of the problem lies in prevention through engineering controls. The mist should be kept under control by adequate ventilation.

(213) Chromic acid poisoning resulting from inhalation of mist developed from five percent chromic acid solution. II. Engineering aspects of chromic acid poisoning from anodizing operations. J. T. Gresh. *J. Indust. Hyg. & Toxicol.* 26:127–130 (Apr.) 1944.

An anodizing solution contains 5 percent of chromic acid. During action it is kept at 95° F. in constant agitation by an air line. Hydrogen is evolved carrying into the air a fine mist of chromic acid.

Although the anodizing tanks were provided with exhaust ventilation, employees working at the tanks were found to be affected and to develop nasal ulcerations. Employees performing different operations in the same room, approximately 200 feet distant from the tanks, were similarly affected.

This exhaust ventilation is criticized, since mist escaped into the air of the workroom whenever the doors were opened to inspect the work, although the anodizing tanks were closed. Various changes were tried to improve the efficiency of the ventilation system, but safety was not effected until the air flow was at least 134 cubic feet per minute per square foot of the tank area. Even so, the chromic acid mist discharged into the exhaust stack proved harmful to the surrounding plant until moisture collectors were introduced. As the different engineering changes were made, their efficacy was tested by medical examinations of the workers, and they were not accepted as satisfactory until the irritation of the nostrils had subsided to an *almost well* degree. [*Poisoning* hardly seems the best term to use, since no systemic

effects result and since a similar, although not so pronounced, perforation of the nasal septum has been observed from exposure to fine dust of common salt; the main influence at work seems to be dehydration.]

(214) Hydrofluoric acid (aqueous and anhydrous); handling and discharge of containers: Recommended practice. Manufacturing Chemists' Association, Inc., Manual Sheet H–10. Washington, 1948.

The health hazards of hydrofluoric acid are described and recommendations made for their control. Personal protective equipment, first aid, and suggestions for medical treatment are considered. Detailed instructions are given for the safe handling and discharge of containers.

(215) Allergy to chromic acid in various industries. H. T. Schrus and H. Burk. *Arch. f. Gewerbepath. u. Gewerbehyg.* 12: 218–222 (July 15) 1944.

Chromium can cause an acute or chronically recurring eczema, in addition to other toxic effects, such as nasal perforation. Skin tests at the Düsseldorf skin clinic showed that 16.5 percent of the patients suffered hypersensitivity to chromic trioxide and potassium bichromate.

(216) Phosphorus burns and their treatment. A. Wagner. *München. med. Wchnschr.* 91: 46, 1944.

The author treated 100 cases of severe phosphorus burns with 2 to 5 percent copper sulfate. Immediate relief of pain was obtained and healing effected within 2 to 3 weeks. Other cases, not so treated, had not healed in 8 weeks.

(217) Toxicity of phosphoric acid in industry. Queries and Minor Notes. *J. A. M. A.* 129: 1296 (Dec. 29) 1945.

Phosphoric acid, as industrially employed for fingerprint removal and rust prevention, is not a likely source of injury to exposed workers. It is no more damaging to the skin than an equal concentration of other mineral acids.

Difficulties currently experienced in industry from phosphoric acid mixtures used for antioxidation usually derive from the solvent of phosphoric acid, which, in many instances, is butyl cellosolve. This compound is ethylene glycol monobutyl ether and is credited with being the most toxic of the compounds in its series. Early manifestations center about minor irritations of the eyes and respiratory tract, but in more severe instances, there may be inflammation of the liver and kidneys, associated with hematuria. In animals the minimum lethal dose of the compound is about 0.5 cc. per kilogram of body weight. Its apparent toxicity is about five times as high as that of the better known ethylene glycol. Other substances used as solvents of phosphoric acid are likewise toxic in varying degrees.

(218) Hydrofluoric acid burn. A. N. Flack and P. D. Scofield. *Indust. Med.* 16: 1–17 (Jan.) 1947.

The authors present a case of burn from hydrofluoric acid in a 41-year-old pipefitter. Treatment consisted of (1) infiltration with calcium gluconate, (2) iced magnesium sulfate soaks and paste, (3) blood paste, and (4) minimal surgery. Complete healing of the wound resulted in 34 days.

(219) The hair as circumstantial evidence in a case of malingering. T. Benedek. *J. Invest. Dermat.* 9: 55–61 (July) 1947.

A soldier presented eight lesions with typical eschar formation in six distinct anatomic areas. Observation of the eschars under a magnifying lens revealed three types of hair; some were normal, some were thoroughly singed along the shaft, and some were completely shriveled. The cuticle of the hair shaft was roughened. Experiments revealed that concentrated sulfuric acid causes changes identical to those found on the hairs near or within the eschars. It was proved that the lesions were self inflicted and caused by sulfuric acid.

(220) Acetic anhydride. *Chemical Safety Data Sheet SD–15.* Manufacturing Chemists' Association, Inc., Washington, 1947. 10 pp.

Acetic anhydride is a local irritant and corrosive on contact with body tissues; but acute toxicity is rare, due to the warning irritant effect. Since it is readily combustible, precautions must be taken against fire and explosion. Full data on preventive measures, first aid, and treatment are given.

(221) Erosion of skin caused by hydrofluoric acid. H. Haar. *Zentralbl. Chir.* 74: 467, 1949.

Treatment for hydrofluoric acid burns should be given early to prevent scars,

crippling disability, and prolonged illness.

Hydrogen fluoride has wide application in industry. It is used, among other purposes, for the etching of glass and for the desilicification of cane preparatory to braiding. Fluorides are used as antiseptics in distilleries and breweries. They are also employed in soldering aluminum, as a fungicidal impregnum in wood, and as a pesticide.

In a case observed by the author, the customary, progressively destructive course of a hydrofluoric acid burn was arrested by the early application of calcium gluconate packs, and by the injection of a 10 percent solution of calcium gluconate under and around the lesion.

BASES

(222) Simplified method for estimating skin sensitivity to alkalies. W. Burckhardt. *Med. & Hyg.* 4:10 (Nov.) 1946.

Lowered resistance predisposes the skin to eczemas caused by alkaline irritants. In this method, a N/2 solution of sodium hydroxide applied to the epidermis produces a vesicle within 10 minutes. A normal subject can stand 2 to 8 drops before the reaction appears; sensitive skin responds to 2 drops. Patients suffering from alkali-caused eczema have a skin sensitivity six times higher than normal.

Neutralization of alkalies depends on the rate of diffusion of carbon dioxide in the skin, on the albumins present in the horny layer, and on the sweat secretion.

(223) Caustic soda. Chemical Safety Data Sheet SD–9; **Caustic potash,** Chemical Safety Data Sheet SD–10. Manufacturing Chemists' Association, Inc., Washington, 1947. 11 pp. each.

The contents of the two bulletins are practically identical, except for the tables of physical properties. The health hazards of caustic soda and potash lie in their corrosive action on skin and eyes; they are also harmful when swallowed or inhaled. Advice and requirements are given for types of containers, storage, unloading, emptying, and transferring. As a first-aid measure, copious use of water to wash away the caustic or its strong solution is recommended. Vinegar may be used when the caustic solution is swallowed. Ventilation and personal protective equipment are necessary when caustic dust may be in the air. Employee education in hazards and first aid is stressed.

(224) Sodium bicarbonate—an occupational medical problem. E. W. Probst and F. B. Lanahan. *Indust. Med.* 17:24 (Jan.) 1948.

Sodium bicarbonate, is thought by many to be an innocuous substance. Yet it has been observed to cause contact dermatitis, temporary change in texture and color of the hair, and mild upper respiratory irritation. No pulmonary or other system changes have been recognized.

(225) Chemical alopecia. G. E. Morris. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6:530–531 (Dec.) 1952.

A case is reported of alopecia caused by leakage from a drain pipe containing one of the common pipe cleaning compounds. The alopecia, which was reversible, was caused by the alkali effect of the liquid, which had a pH of 13.5.

GENERAL

(226) Peroxides suitable for the treatment of M–1 burns. Progress report to February 24, 1943. M. S. Kharasch and S. Weinhouse. Publication Board Reports No. P. B. 6526, U. S. Dept. of Commerce, (May 4) 1943.

Investigations showed that urea peroxide was too unstable and inorganic peroxides too insoluble for use as sources of peroxide solutions. It was found that a mixture of equal parts of dry sodium perborate monohydrate and dry sodium dihydrogen phosphate produced, when dissolved in water, a peroxide solution having a satisfactory pH and activity. The perborate solution is compared with BAL.

(227) Phosphorus poisoning and phosphorus burns. W. Straub. *München med. Wchnschr.* 90:507–510, 1943.

The use of 2 percent copper sulfate solution in treatment of phosphorus burns is described. Phosphorus particles are believed to be covered with a layer of metallic copper, thus preventing phosphorus absorption.

Ibid. 629–630. Guinea pigs routinely succumb to the insertion of 0.2 gm. yellow phosphorus under the skin. If the phosphorus is first dipped in 2 percent copper sulfate solution, the phosphorus is covered with a film of copper-phosphorus or metallic copper, which is not permeable to elemental phosphorus, and the animals are not poisoned. After several weeks, however, the depot of phosphorus disappears even when cov-

ered by copper. The author believes this to be due to penetration of copper film by water, formation of phosphorus pentoxide, and later of phosphoric acid, with subsequent dilution and excretion of the latter.

(228) First-aid treatment of phosphorus burns. W. McCartan and E. Fecitt. *Brit. M. J.* 2:316–318 (Sept. 8) 1945.

To improve the method of first-aid treatment of phosphorus burns, a single substance was sought that would be readily available, and immediately extinguish the phosphorus and inactivate the products of combustion. It was desired that the substance be sufficiently viscid to stay on the lesion and hold the phosphorus particles in situ, and yet be easily removed with warm saline.

Such a compound is described by the authors to be a mixture of copper sulfate 4 percent in sapo mollis (*B. P. Add. III*). In experimental comparison with other methods, this ointment was demonstrated to be an excellent first-aid measure and to aid in reducing the healing time of the wound. Experiments also showed removal of the ointment with sodium bicarbonate solution to be a valuable adjunct to the method. The preparation of the ointment is described.

(229) Dermatoses among unloaders of salt. C. Scaglioni. *Rass. med. indust.* 15:27–52 (Jan.–Apr.) 1946.

A large number of workers engaged at wharves unloading salt suffer from cutaneous lesions due to prolonged contact with the hygroscopic salt. Preventive measures and treatment are given. The author believes that these workers should be eligible for compensation.

(230) Cutaneous iridiform gangrene due to a chemical agent. O. G. Costa. *Arch. Dermat. & Syph.* 54:63–65 (July) 1946.

An unusual case is presented of gangrene caused by topical application of mercury bichloride to a lesion with the hope of securing early cicatrization. An iridiform gangrene was produced which was present when the patient first consulted a physician.

(231) Calcium necrosis of the skin. A. G. Heppleston. *Brit. J. Indust. Med.* 3: 253–254 (Oct.) 1946.

A case is described in which multiple cutaneous necroses developed as a result of contact with 40 percent calcium chloride solution. The characteristic lesion was a non-ulcerated focal necrosis of the dermis without evidence of any kind of inflammatory reaction. The lesions proved to be indolent, and their delayed or incomplete resolution is attributed to the persistence of calcium necrosed tissue. Where there was also inflammatory ulceration, healing was assisted.

The use of such a solution for industrial purposes demands adequate protection of the skin and especially of the eyes. Thorough and immediate washing, using plenty of soap, may mitigate the effects of contamination.

(232) Hazards of photoengraving. Queries and Minor Notes. *J. A. M. A.* 132: 753 (Nov.) 1946.

The trade of photoengraving has become so complex and so many processes and different substances are utilized that it is necessary to learn from the patient what chemicals are used by him. Long ago, Hayhurst recorded that photoengravers as a class are probably exposed to the greatest number of poisonous substances to be found in any single industrial calling. Earlier statistical records indicate a high frequency of respiratory disorders.

Among other materials likely to be involved are mineral and organic acids, ammonium and bromine compounds, aniline, benzene, naphtha, chromium compounds, alkalis, chlorinated compounds including chloroform, cyanides, sulfides, formaldehyde, glues, gums, albumin, and varnishes. The most likely single offender seems to be nitric acid or nitric oxides. In addition to possible direct respiratory tract irritation, some of the agents mentioned are sensitizers.

(233) Skin irritation from cyanide in cadmium plating. Queries and Minor Notes. *J. A. M. A.* 130:313, 1946.

Cyanide solutions are preferred in cadmium plating because of economy and the results obtained. However, sodium carbonate is commonly used along with the cyanide solution to decrease the liberation of hydrocyanic acid. Sulfate baths have been used as a substitute, but the product is not as perfect. Adequate exhaust systems and protection of the skin make the use of cyanide baths safe.

(234) Poisoning by calcium-cyanamide fertilizer. A. Jordi. *Schweiz. med. Wchnschr.* 77:805–806 (July) 1947.

Calcium cyanamide is produced by the nitration of calcium carbide and is often

added to other fertilizers, including compost. In the body it is changed to calcium carbonate and cyamide, the latter inhibiting certain catalytic and oxidation reduction processes. Its toxic action is greatly increased by the presence of alcohol in the body. Symptoms in the form of vasomotor disturbance often begin a few hours after exposure and are precipitated by a few drinks of alcoholic beverages. Skin lesions may appear after a few days in the form of a papular, vesicular, or bullous dermatitis. This is due to the irritative action of the calcium cyanamide when moistened.

Prophylactic measures include keeping contact at a minimum, enclosed mixing, and protective clothing.

Chemicals, Organic

(235) Skin lesions caused by phthalic acid anhydride. G. Rundberg. *Nord. hyg. tidskr.* 23: 332–342, 1942.

Workers producing phthalic acid anhydride developed an acute dermatitis. The exposed areas were primarily affected, and there was frequently irritation of the conjunctivae and the upper respiratory tract. Experiments with rabbits produced a highly acute, purulent dermatitis.

(236) Safety measures for use of chlorinated naphthalenes and diphenyls in industry. L. Greenburg. *Indust. Bull.* New York State Dept. Labor 22: 404–406 (Oct.) 1943.

Toxic and systemic effects of chlorinated naphthalenes are described. The possibility of skin absorption is given as a cause of systemic poisoning. Conclusions are drawn regarding control of exposure. Recommendations made concerning the method of impregnation to be used are general hygienic measures, pre-employment and periodic physical examinations, instruction of foremen in the safe handling of the material, and engineering control of plant operations.

(237) The skin absorption of triorthocresyl phosphate as shown by radioactive phosphorus. H. C. Hodge and J. H. Sterner. *J. Pharmacol. & Exper. Therap.* 79: 225–233 (Nov.) 1943.

Triorthocresyl phosphate containing radioactive phosphorus was absorbed through the palmar skin of human hands and through the abdominal skin of a dog. The magnitude of absorption of triorthocresyl phosphate through human skin is such that a real hazard exists in industrial operations permitting a considerable or repeated exposure to this compound. Industrial hygiene control measures should be taken to prevent such skin contact. Also, all workmen exposed to the compound should be instructed as to the hazard and the necessity for preventing skin contamination.

(238) The aliphatic alcohols: Their toxicity and potential dangers in relation to their chemical constitution and their fate in metabolism. W. F. von Oettingen. *Pub. Health Bull.* No. 281, U. S. Public Health Service, 1943.

The aliphatic alcohols are important in industry, both as solvents and in the manufacture of other chemicals. The monovalent alcohols are most common, although the bivalent alcohols are gaining in importance as solvents.

The toxicologic action is discussed of the various alcohols, and an attempt is made to relate their toxicity to their physiochemical properties and their fate in the body.

(239) Precautions in the use of chlorinated naphthalenes and diphenyls. L. Greenburg. *Chem. Indust.* 54: 68–69 (Jan.) 1944.

Measures for the prevention of dermatitis from chlorinated naphthalenes and diphenyls are described.

(240) Poisoning due to industrial use of methyl bromide. H. Heiman. *Indust. Bull., New York State Dept. Labor* 23: 103–105 (Mar.) 1944.

Methyl bromide is employed in making antipyrene; it is used as a refrigerant, a fire extinguisher, and an insecticide. It is odorless in low concentration and smells like chloroform in higher concentrations. It can be rapidly or gradually fatal. However, most cases of exposure do recover after a prolonged convalescence.

A number of cases resulting in recovery are described. The only fatality reported

involved a 16-year-old girl. Exposure due to primitive filling apparatus was corrected by cooling and exhausting.

(241) Pathologic changes in animals exposed to a commercial chlorinated diphenyl. J. W. Miller. *Pub. Health Rep.* 59: 1085–1093 (Aug. 18) 1944.

Guinea pigs, rats, and rabbits were exposed to a commercial chlorinated diphenyl by subcutaneous injections and applications to the skin. The material was also administered to guinea pigs and rats by ingestion and to rats alone by corneal instillations. The doses varied from 17 to 1,380 mg. and were either single or were repeated at regular intervals.

Two conspicuous pathologic findings were observed: liver damage in all series of experiments, and skin changes in the animals receiving subcutaneous injections or applications of the material to the skin. Fatty degeneration and atrophy of the centrolobular cells were present in varying amounts and in varying numbers of animals in the different test groups. In the rat, an additional finding—hyaline bodies within the liver cells—was noted in certain animals. On the basis of liver damage, it was possible to detect a difference in response of the three species to the material. Most liver damage was found in the guinea pig, less in the rabbit, and least in the rat. This same species order was followed, regardless of dose, duration of test, or mode of administration.

(242) Methyl bromide poisoning. P. H. K. Gray. *J. Roy. Nav. M. Serv.* 30: 214–218 (Oct.) 1944.

Three cases of burning and mild poisoning occurred when an Essex Featherspray fire extinguisher, containing one gallon of methyl bromide, was accidentally discharged in a small engine room. Three men, who tried ineffectively to stop the escape of the vapor, were soon forced into the open as a result of coughing and smarting of the eyes.

Symptoms which followed shortly were coldness, *pins and needles* in the feet, and vomiting. Cyanosis and sweetish odor of the breath persisted for several days in two men. Painful, large bullous blisters on the feet also developed. No severe neurological or pulmonary symptoms developed, despite the fact that a considerable amount of vapor was presumably swallowed and inhaled. All 3 men complained 3 months later of *pins and needles* in the feet after prolonged exercise, but of nothing else. Methyl bromide appears to take days to be excreted from the system.

(243) Hepatotoxic effects following occupational exposure to halowax (chlorinated hydrocarbons). N. Strauss. *Rev. Gastroenterol.* 11. 381 (Nov.–Dec.) 1944.

A man aged 50 was exposed to the fumes of halowax in a defense plant. After 3 months he developed halowax dermatitis, 3 months later he became jaundiced and was hospitalized. Death occurred 2 months later from cirrhosis of the liver, due to subacute necrotizing hepatitis.

As a result of this case, a review was made of the literature on the toxic effects of exposure to the various chlorinated hydrocarbons. It was noted that, in all the cases reviewed, a drop in the serum albumin and total proteins was recorded.

The importance is stressed of removing from exposure a worker who has developed halowax dermatitis or jaundice. He should be placed on a high protein diet and given several transfusions of either whole blood or plasma. He should never be permitted to return to an occupation in which he would inhale carbon tetrachloride or its allied compounds.

(244) Methyl bromide burns. E. C. B. Butler, K. M. A. Perry, and J. R. F. Williams. *Brit. J. Indust. Med.* 2: 30–31 (Jan.) 1945.

Liquid methyl bromide in contact with the skin causes superficial burns with much vesication. Clothing is not impervious to it. Warning notices should be fixed on all fire extinguishers containing the substance.

(245) Methyl bromide intoxication. H. Wyers. *Brit. J. Indust. Med.* 2: 24–29 (Jan.) 1945.

Nine cases of intoxication from methyl bromide occcurred in industry. The symptoms were varied, including vomiting, drunken sensation, blurring of vision, delirium, unconsciousness, convulsions, amnesia, and abdominal pain. Hesitant speech, staggering gait, tremor, and cyanosis were the most prominent physical signs. The uses of methyl bromide and the incidence of intoxication, its pathology, prevention, and treatment are discussed. The literature is reviewed, with a note on medicolegal aspects. Safe concentration of methyl bromide in the atmosphere was estimated to be 70 parts per million for short exposures, and 50 parts per million for exposures of 8 hours.

(246) Toxicity of cresylic acid-containing solvent. A case report. M. E. Klinger and J. F. Norton. *U. S. Nav. M. Bull.* 44: 438–439 (Feb.) 1945.

The case is reported of a man whose work involved immersing his hands unprotected in a cresylic acid solution for a large part of his 5-to-6-hour shift. He developed skin lesions on the hands and a facial neuritis of the peripheral type. Emollient ointments applied to the skin lesions, and anti-neuritic vitamin therapy and guided physiotherapy for the neuritic lesions, produced satisfactory progress and complete recovery was predicted. Persons having occasion to employ solvents of this nature should be required to avail themselves of protective equipment. If any signs of dermatitis appear, the person should be removed to other work and closely observed for signs of early nervous system involvement.

(247) Marking crayon causes dermatitis outbreak. *Ind. Hyg. Digest* 9: 2 (Mar.) 1945.

Crayon used in marking steel, aluminum, and other metals was found to be the cause of a serious outbreak of dermatitis among foundry workers, in a recent investigation made by the Industrial Hygiene Service of the Missouri State Board of Health. The marking pencil was used in applying identification numbers on poured castings with a surface temperature of 800–900° F. When used on cold metal parts, the crayons caused no trouble; but on contact with the hot metal, chlorinated naphthalene used as a pigment binder was volatilized, causing dermatitis of the arms, face, and neck in workers. Air samples collected in the vicinity of the marking operations showed the presence of high concentrations of chlorinated naphthalene. Shutdown of this operation was avoided through prompt development of a new crayon containing no toxic material.

(248) Chlorinated napthalenes and diphenyls. L. Greenburg. *Indust. Med.* 12: 520–521 (Aug.) 1945.

Chlorinated napthalenes and diphenyls are highly toxic, and therefore extreme care should be taken when handling them. Cold or solvent methods are less toxic than hot processes. Most cases of liver damage have resulted from exposure to fumes from hot processes. It is possible that skin absorption may produce systemic poisoning, although most workers that contract dermatitis from these chemicals do not develop liver damage. Preventive measures are given.

(249) Vesication and some vesicants. M. W. Goldblatt. *Brit. J. Indust. Med.* 2: 183–201 (Oct.) 1945.

The possible mechanism of vesication and a technique for treatment of chemical vesication are described. Certain powerful vesicants encountered in the organic chemical industry are considered. These include derivatives of pyrimidine, derivatives of alkyl sulfides, derivatives of arsine, organic mercurial compounds, and organic thioisocyanates. Hypersensitivity to chemical compounds frequently arises after the apparent healing of a vesicated skin. Special precaution is necessary in deciding on the time of return to work of the affected person. In certain cases, photosensitivity may follow vesication.

(250) Formaldehyde. Chemical Safety Data Sheet SD–1. Manufacturing Chemists' Association, Inc., Washington, (Apr.) 1946. 6 pp.

This is the first in a series of chemical product safety manuals issued (or under preparation) by the Manufacturing Chemists' Association. Designed for supervisory staffs and management, the manuals concisely present essential information for the safe handling and use of chemical products. This issue outlines the important physical and chemical properties of formaldehyde. It also discusses shipping containers and methods for loading and unloading, container storage and handling, labeling, personal protective equipment, medical controls, and first aid. Hazards arise from skin contact and vapor inhalation. A maximum allowable concentration of 10 p. p. m. (American Standards Association) is accepted. The fire hazard is small.

(251) Paraformaldehyde. Chemical Safety Data Sheet SD–6. Manufacturing Chemists' Association of the U. S., Washington, (Nov.) 1946. 4 pp.

Paraformaldehyde is a mixture of polyoxymethylene glycols containing 95 to 99 percent formaldehyde. Although potentially it presents the same hazards as formaldehyde, paraformaldehyde is in many ways less hazardous. Because it dissolves slowly in water, it is much less reactive. It depolymerizes under a variety of conditions to give soluble formaldehyde vapor. The powder is inflammable, and the dust may form an explosive mixture with air. A fine water spray or carbon tetrachloride may be used as an extinguisher. Directions are given for shipping containers and ventilation dur-

ing unloading and emptying, storage, and handling. The first-aid directions are substantially the same as for formaldehyde. A physician should be called at once in any severe case.

(252) An occupational dermatitis due to the inhalation of trichlorethylene gas. K. C. Baker and C. J. White. *Indust. Nursing* 5: 44 (Nov.) 1946.

A case showing a generalized erythematous eruption due to trichlorethylene exposure is reported. There was no recurrence of the dermatitis when the patient wore a gas mask during the exposure but as soon as he removed the mask, it flared up again. A new ventilating system was installed whereby the fumes were discharged onto the roof of the plant.

(253) Tetraethyl lead intoxication. A Bruusgaard. *Nord. med.* 32: 2644–2656, 1946.

A survey is given of tetraethyl lead intoxication, with history, symptoms, diagnosis, and treatment. While cleaning railway tanks which had been used for ethyl gasoline transport, three workers fell ill; two were hospitalized and one died. The main symptoms were insomnia, unrest, weakness, and irritation of skin and mucous membrances. Precautions to be observed in the handling of ethyl fluid and ethyl gasoline are mentioned.

(254) Occupational dermatitis from phenyl-beta naphthylamine (Neozone). P. Cirla. *Occup. Med.* 3: 4524 (Apr.) 1947.

An outbreak of dermatitis from the handling of Neozone is reported.

(255) British anti-lewisite: Its use and therapeutic value in arsenical intoxications. A report from the BAL conference Medical Research Council. R. A. Peters, chairman. Lancet 2: 497–498 (Oct. 4) 1947.

Forty-four patients with severe and widespread arsenical dermatitis of the acute exfoliative type, were treated with BAL (2,3-dimercaptopropanol). The ampules of 2,3-dimercaptopropanol contained 5 percent BAL in peanut oil and benzyl benzoate; they were nitrogen filled and were sterilized by heating for one hour at 170° C. The drug was given by deep intramuscular injection into the thigh or gluteal region. On the first day, 4 injections of 2 cc. of 5 percent BAL were given at 4-hour intervals; on the second, third, and fourth days, 2 cc. were given twice a day, and on the fifth and sixth days, 2 cc. were given once daily. Of the 44 patients studied, 31 benefited by the treatment. Healing was obtained in an average of 21 days. The earliest sign of response was subsidence of the edema.

(256) Xylidine (c,c-dimethylaniline): Its toxicity and potential dangers as compared with those of aniline and an appraisal of the potential hazards from its use in blending gasoline. W. F. von Oettingen, P. A. Neal, R. F. Sievers, J. L. Svirbely, A. R. Monaco, B L. Horecker, H. Yagda, T. R. Sweeney, D. C. Peterson, W. C. Alford, V. B. Hauff, and H. Gay. Nat. Inst. Health Bull. No. 188, U. S. Public Health Service, 1947. 124 pp.

Xylidine is a substance closely allied to aniline and based structurally on the benzene ring. It is used in the preparation of aviation gasoline. Acute toxicity of aniline is more spectacular than that of xylidine. A calculated acute hazard coefficient was 1.11 for xylidine as against 2.19 for aniline. Xylidine is primarily a hepatotoxic substance, while aniline is predominantly a blood poison and has no hepatotoxic action. Xylidine may be absorbed through the skin, inhaled, or absorbed through the gastrointestinal tract. Since this is a very toxic compound, continued exposure should be avoided and various protective measures employed to keep contact at a minimum.

(257) Trichlorethylene. Indust. Health Bull., Vol. 1, No. 9. New Jersey Dept. of Health, 1947. 3 pp.

The uses and properties of trichlorethylene are discussed, and the conditions under which it may decompose are given. The effects of trichlorethylene poisoning, both local and systemic, are described. Engineering control measures are listed. Medical examinations at regular intervals are advised for workers exposed to this solvent. Trichlorethylene poisoning is not compensable in New Jersey, but many other states list it as a compensable disease.

(258) Short-term toxicity tests on the mono- and di-methyl ether of hydroquinone. H. C. Hodge, J. H. Sterner, E. A. Maynard, and J. Thomas. *J. Indust. Hyg. & Toxicol.* 31: 79–92 (Mar.) 1949.

The effects of the two ethers on mice, rats, and rabbits are described. A defi-

nite dermal toxicity was produced; hyperkeratosis and chronic inflammation developed in a second series of studies.

(259) Comparative toxicity of methacrylonitrile and acrylonitrile. W. A. McOmie. *J. Indust. Hyg. & Toxicol.* 31: 113–116 (Mar.) 1949.

Both nitriles are very toxic to mice by inhalation. Methacrylonitrile penetrates the skin of a rabbit more readily, but acrylonitrile has a greater irritating effect on the skin. Death was caused by 2.0 ml. per kg. of methacrylonitrile. The nitriles are comparable to inorganic cyanide in the dose required to kill.

(260) Occupational dermatosis due to hexachlorocyclohexane. M. P. Francone and W. Chena. *Farmalecta* 4: 35 (Aug.) 1949.

Hexachlorocyclohexane produces dermatitis both as a primary irritant and as a sensitizer. The duration of the incubation period in specific cases, follows no set pattern. Some workers experience a spontaneous involution of the dermatitis, while others suffer periodic exacerbations. In 1947, Argentine industrial workers handling this compound had an incidence of dermatitis of 25 percent. Since that time, the incidence has diminished following improved plant hygiene and worker-protection.

(261) On dermatitis caused by formaldehyde and its compounds. V. Pirilä and O. Kilpiö. *Ann. med. int. Fenniae* 38: 38, 1949.

An analysis is presented of 30 cases of dermatitis caused by formaldehyde, 24 of which were occupational. Twenty cases were caused by a commercial 40 percent solution of formaldehyde and four by formaldehyde resin. Vegetable glue containing 0.25 to 1.0 percent of the commercial solution as a preservative was the cause of 14 cases. Seven of these cases had a positive patch-test reaction with a 1 percent solution of formaldehyde, while seven did not. The authors attribute the dermatitis of the latter group to either a local sensitization or to a toxic dermatitis occurring under favoring ambient conditions, such as heat and moisture.

Oral hexamethylenetetramine was administered to three patients. Two patients experienced an exacerbation of a previously healed dermatitis, while one had a flare-up at the site of a formaldehyde patch test.

(262) Local and systemic effects following application of dilute solutions of phenol in water and in camphor-liquid petrolatum on the skin of animals. W. B. Deichmann, T. Miller, and J. B. Roberts. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 2: 454–461 (Oct.) 1950.

The results are reported of studies on absorption of phenol from aqueous solution and from various mixtures of phenol, camphor, and liquid petrolatum. In the initial phase of the study, the authors equilibrated phenol-camphor-petrolatum mixtures and phenol-petrolatum mixtures against distilled water. They found that addition of camphor to the liquid petrolatum reduced the diffusion of phenol into the aqueous phase.

The tails of rats were immersed in phenol-camphor-petrolatum and phenol-petrolatum mixtures for a measured period of time, and then a determination was done of the phenol remaining in the container. It was found that phenol was most toxic in aromatic liquid petrolatum and least toxic in aromatic liquid petrolatum containing camphor in the concentration of 10.86 percent, with aqueous solutions assuming intermediate positions.

(263) Experimental ethylene oxide human skin injuries. R. J. Sexton and E. V. Henson. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 2: 549–564 (Nov.) 1950.

The authors report the results of investigative studies of ethylene oxide on the skin of human volunteers. They conclude that the substance has three effects on the skin. The first is thermal, resulting from rapid evaporation with consequent freezing of the underlying tissues. The chemical burn is dependent on the concentration of ethylene oxide in aqueous solution and on the length of exposure. The allergic response, when it occurs, is probably due to repeated second-degree burns.

(264) Pathological symptoms caused by formaldehyde. V. Wyss. *Rass. med indust.* 19: 290–294, 1950.

Examination of 26 workers exposed to high concentrations of formaldehyde vapor showed chronic inflammation of the mucous membranes. The skin was involved only by direct contact with formaldehyde solutions. In order of decreasing frequency, the author found bronchitis, dermatitis, rhinitis, pharyngitis, and conjunctivitis. [CHEM. ABSTR.]

(265) Industrial accident with thionyl chloride. L. Parmeggiani and E. Tagliabue. *Med. d. lavora* 42:121 (Apr.) 1951.

A case is reported of a worker who splashed thionyl chloride over his face and clothes. After washing with water, he noted burning of the affected area and became unconscious. On admission to the hospital he showed first- and second-degree burns of the skin. He also suffered from a severe bronchitis which subsided in a few days. The action of the thionyl chloride is attributed to its hydrolytic dissociation into hydrochloric acid and sulfur dioxide.

(266) Clinical experiences with exposures to ethylene amines. C. U. Dernehl. *Indust. Med. & Surg.* 20: 541–546 (Dec.) 1951.

Case reports of 14 industrial workers with dermatitis caused by exposure to ethylene amines are presented. It was not definitely learned whether the dermatitis developed from a sensitization or from direct irritation. Prevention and treatment are discussed.

Respiratory symptoms and headaches also resulted from exposure to amine vapors.

(267) Toxcity of di-(acetyl cyanide). J. F. Treon, F. R. Dutra, and J. Cappel. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4: 573–584 (Dec.) 1951.

Extensive studies of the toxicity of di-(acetyl cyanide) are reported. On the skin, the substance acts as a primary irritant. When 2.5 gm. of the material per kilogram of body weight was kept in contact with the intact skin of rabbits for a few hours, death usually resulted.

(268) Effects of dimethyl and diethyl paranitrophenyl thiophosphate on experimental animals. W. B. Deichmann, W. Pugliese, and J. Cassidy. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 5: 44–51 (Jan.) 1952.

The authors demonstrate the absorption of toxic amounts of paranitrophenyl thiophosphates through the intact skin of the rabbit, and advise that exposure by skin contact or by inhalation or ingestion be carefully avoided.

(269) Acute phenol poisoning. S. J. Evans. *Brit. J. Indust. Med.* 9: 227–229 (July) 1952.

Phenol is rapidly absorbed by ingestion, by inhalation, and through the skin. Signs and symptoms of acute poisoning and methods of treatment are discussed.

(270) The toxicology of hydrazine—a review. S. Krop. Report No. 30, Chemical Corps Medical Laboratories, (Aug.) 1953.

Beyond general statements in publications primarily directed to chemical and production problems, the recent literature contains little information on the hazards of hydrazine and its salts to plant production personnel and other handlers. The effects of brief and of prolonged exposure of man have not been described in sufficient clinical and laboratory detail to determine the extent of qualitative and quantitative similarity to the effects on other animals.

Vapor inhalation, and liquid eye and skin contact are the major routes for injurious exposure, and effects may be local, systemic, or both. Dermatitis after skin contact has been reported. The ammoniacal odor of hydrazine and effective ventilation combined should reduce inhalation hazard adequately, and prompt flushing of skin and eye with copious quantities of water should reduce the hazard of alkali-like skin burn and of percutaneous absorption of toxic amounts.

If results of animal experiments can be applied to man, complete vaporization of one-half ounce in an unventilated room, 20 x 10 x 8 feet, would result in approximately 400 mg. per cubic meter, a dangerous concentration, if none was adsorbed by the walls, furnishings, and fabrics. The ratio of adsorbed hydrazine to hydrazine in vapor form would determine the amounts of spillage expected to be dangerous. However, adsorbability of hydrazine is potentially serious, since brief flushing of a room with air after a spill may lead to a false sense of security inasmuch as the walls, furnishings, and fabrics could subsequently give off sufficient hydrazine to produce a hazardous situation. Possibility of such hazard should be ascertained in each situation by suitable study.

Chloracne

(See also Cutting Oils and Petroleum Products; Chemicals, Organic)

(271) Halowax acne (cable rash), a cutaneous eruption in marine electricians due to certain chlorinated naphthalenes and diphenyls. C. K. Good and N. Pensky. *Arch. Dermat. & Syph.* 48: 251–257 (Sept.) 1943.

Chloracne is discussed and an evaluation made of various preventive measures. The probable mechanism of the production of these lesions is discussed. The absence of systemic, visceral and hemopoietic involvement in handling the *cold* dry synthetic wax cable is noted. The chronicity of the eruption and its resistance to therapy are emphasized. No evidence of internal absorption has been found.

(272) Occupational acne. L. Schwartz and S. M. Peck. *New York State J. Med.* 43: 1711–1718 (Sept. 15) 1943.

This report gives a list of chemicals that cause occupational acne, and also includes a list of occupations in which exposure is most frequent. The chemicals are petroleum; cutting oils—insoluble and sometimes soluble; coal tar and similar materials; chlornaphthalenes; chlordiphenyls; chlordiphenyloxide; and solid chlorbenzols and chlorphenols. The nature and location of the eruptions differ somewhat according to the nature of the chemicals responsible. Details are given whereby the types may be distinguished. The article suggests preventive general and personal measures and indicates treatment. The histological studies given are of special value.

(273) Chlorine, a skin irritant. L. Greenburg. *Safety Eng.* 87: 43, 46–48 (Feb.) 1944.

Chlorinated naphthalenes and diphenyl are valuable industrial products because they are resistant to water and alkali, have insulating value, possess thermoplasticity, are quite stable chemically, and are flame-resistant. For these reasons, these substances are used in the making of electric condensers and in the insulation of wire and cable. The chlorinated naphthalenes and diphenyls are used in one of two ways: by the cold method, in which material is dissolved in a solvent; and by the hot method, where the material is rendered plastic by heat. The toxic effects which they cause may occur in the liver, or on the skin, and are present more often when the hot method is used. Most dermatitis cases do not develop liver damage. The author gives recommendations for avoiding the toxic effects.

(274) Pentachlorinated napthalenes in industry. L. H. Cotter. J. A. M. A. 125: 178 (May 13) 1944.

A study was made in a plant where 2,500 men were engaged in coating wire cable with a toxic substance which rendered the cable heat resistant and water repellent. Four hundred and fifty men were shown to be sensitive on exposure to the chemicals, and there were seven fatalities.

Seven case histories are summarized, and the chemical findings are tabulated. The most common early symptom was a papular rash of the exposed surface in white men and a corresponding depigmentation in Negroes. With continued exposure, actual change took place in the liver and there were alterations in the serum cholesterol, serum phosphatase, serum bilirubin, and serum proteins. The cephalin flocculation tests gave no decisive results until late in the disease.

For an earlier determination of the disease, laboratory tests should be supplemented with a careful history of the patient's symptoms, including intense revulsion to the smell of the chemical, and with a physical examination for signs of jaundice or liver dullness.

(275) An unusual form of occupational dermatitis. Report of an outbreak in a plant manufacturing hydrochloric acid. L. Schwartz. *Arch. Dermat. & Syph.* 50: 25–26 (July) 1944.

A combination of acute photodermatitis with melanosis and chloracne is reported as an unusual and unexpected event in a factory of this character. It resulted from exposure to a mixture of pitch and chlorinated hydrocarbons, produced by the addition of charcoal to salt blocks. The exposure occurred during the cleaning of the absorption towers, which had become lined with this yellow waxy substance.

(276) Chloracne (cable rash). T. P. Connelly and W. C. Marsh. *U. S. Nav. M. Bull.* 42: 405–406, 1944.

Characteristics distinguishing chloracne from acne vulgaris are given, as well as a formula for a zinc ointment with brief directions for treatment. Preventive procedures are stressed, including: (1) Exhaust ventilation; (2) application of protective ointment; (3) separate lockers for work and street clothes; (4) shower baths after work; and (5) use of a special cleansing soap. Work involving use of chlorinated compounds should be done by older persons, and contact with the compounds should be avoided as far as possible.

(277) Chloracne. P. E. Bechet. Arch. *Dermat. & Syph.* 54: 728–729 (Dec.) 1946.

A man, aged 36, exposed to an oil containing a highly viscous, chlorinated hydrocarbon, showed comedones about the temples and malar regions of the face, and numerous indolent dark-red indurated papules with large comedones on his arms and thighs. With cessation of exposure, the eruption cleared up entirely. The author specifies use of an ointment, containing three chlorine derivatives of 8-hydroxyquinoline, for cure and prevention of this dermatosis.

(278) Keratosis follicularis "epidemica." R. Schuppli. *Dermatologica* 94: 44, 1947.

The author reports 150 cases of a dermatosis which seemed of one type at first, namely, a comedo-acne; this later evolved into a general eruption of cysts and pustules. Histologic examination showed the essential identity of the lesions. Most of the patients were children; all but one were native Swiss. No clues to the etiology were found, but, on statistical grounds, the author suspects an infective origin.

In the discussion which followed this paper, several speakers expressed the opinion that the cases could be diagnosed as chloracne and suggested that the patients may have come into contact with perchlornaphthalene.

(279) Industrial intoxication due to pentachlorophenol. E. W. Baader and H. J. Bauer. *Indust. Med. & Surg.* 20: 286–290 (June) 1951.

Ten cases of industrial intoxication due to pentachlorophenol are reviewed. Following a description of the production process of pentachlorophenol, the systemic and cutaneous effects of this substance are given. The outstanding symptomatology is characterized by irritation of the mucosae and upper respiratory tract, neuralgic pain, and chloracne. Results of animal experimentation using pentachlorophenol are included.

(280) Pathogenesis of photoder matitis from chlorinated naphthalenes. V. M. Gavrilova. *Vestnik venerol. i dermat.* 3: 32–36, 1949.

Polychloronapthalenes cause occupational dermatitis by a mechanism of photoeffect, and by a disturbance of the follicle. The early stages, which are reversible, are best treated by benzene washing. Activation of the polychloronaphthalenes by light, rather than contact hypersensitivity, is believed to be the pathogenetic mechanism.

[CHEM. ABSTR.]

Cleansers, Soaps and Detergents

(281) Concerning the "fatting" of the skin. H. Czetch-Lindenwald. *Arch. Gewerbepath. Gewerbehyg.* 10: 49–52, 1940.

The amount of fat in untreated and creamed skins was measured by means of immersing a hand for a period of 5 seconds in petroleum ether, kept at 0° C. The amount of fat removed (determined gravimetrically after distillation of the solvent) varied from 0.02–0.1 g. Only fractions of the removed fat are replaced by the use of *super-fatted* soaps.

(282) Soap versus industrial dermatoses. G. Leffingwell and M. A. Lesser. *Indust. Med.* 12: 739–742 (Nov.) 1943.

Careful washing with a good grade of soap and water and thorough drying are considered an essential part of any program to prevent industrial dermatitis. In addition to its role in personal and environmental cleanliness, soap works in other ways to help prevent industrial dermatoses. As a primary measure when injuries occur, use of soap and water helps prevent infection and disability.

(283) Clinical observations on the use of soaps containing an abrasive. R. L. Kile and A. L. Welsh. *Arch. Dermat. & Syph.* 49: 188–189 (Mar.) 1944.

In controlled tests, the regular use of soaps containing 25 percent of fine pumice was found to decrease the oiliness of the skin and to produce improvement in patients with acne.

No significant difference was observed between the degree of discomfort produced by the abrasive soap and that produced by the control soap used.

(284) The action of pumice stone soap on the skin. J. Wolf. *Arch. Gewerbepath. Gewerbehyg.* 12: 388–424 (Sept. 26) 1944.

The use of pumice stone soap is considered to be harmless. The effect of the soap on the skin was studied microscopically with the skin intact, not in histological sections. Two techniques were used: a colloidin contact technique, and one referred to as Jager's method.

(285) Soap, soap sensitivity and soap substitutes. E. A. Brown. *Ann. Allergy* 3: 50–60 (Jan.–Feb.) 1945.

The composition and uses of soap from early times to the present are discussed in detail. The complex problem of soap sensitivity is also presented. The author deals further with the action of soapless detergents and sulfonated oils stating that soapless detergents are not as satisfactory as soap.

(286) Dermatitis venenata as result of strong dishwashing soap. Taylor v. Newcomb Baking Co. Massachusetts Supreme Judicial Court, Middlesex. Feb. 5, 1945.

A worker who contracted dermatitis venenata while employed to wash pots and trays in a restaurant brought a tort action against his employer, who was not insured under the Workmen's Compensation Act. The claimant pointed out that dermatitis is a common condition in various industries among workers who come in contact with chemicals, including strong soaps. He showed that a preceding employee in the same restaurant had contracted the same condition from the same type of soap. He argued that these were sufficient reasons for the employer to recognize a potential source of danger in the job. He argued further that, since he had never before been engaged in similar work and since the danger was not obvious, he had not contractually assumed the risk in accepting the job.

(287) Soap in industry. L. Schwartz. *Indust. Nursing* 4: 36–44 (Apr.) 1945.

Solvents and harsh soaps which workers use in washing are often the principal causes of many cases of dermatitis, supposedly caused by substances handled in the course of work. The chemical nature of soaps, the chemical and physical properties by means of which they remove soil from the skin, and the actual effect of the cleansers on the skin itself are discussed. Consideration of these points is requisite to the proper selection of a soap or cleanser that will assure safe cleansing of the skin of workers. Formulae are given for industrial cleansers suited to certain types of skins and for use by workers exposed to various hazards.

(288) Removal of industrial dirt from the skin. A. D. Forgie. *Brit. J. Phys. Med.* 9: 76 (May–June) 1946.

For thorough cleansing of the skin, all particles of dirt and the skin itself must be completely wetted and soap applied. Through hydrolytic action, soap liberates free caustic soda, which removes the natural fats from the skin and adventitious oil or grease. The dirt particles thereby come under the dissolving, emulsifying, and floating action of the soap and water solution. Rubbing and kneading may be required to remove dirt and oil from all the interstices of the skin. The whole of the skin is defatted and rendered superficially sodden. While this thorough cleansing is essential to a healthy skin condition, it makes the skin susceptible to bacterial attack. A choice may be made between a rapid, efficient cleanser which is badly tolerated and one which is less convenient to handle but causes no irritation. Insufficient time is often devoted to thorough washing.

Paint, tar, waxes and other waterproof substances will require the agency of an organic solvent or an abrasive for their removal. For many varieties of industrial dirt, such as particles of abrasive, mineral acids, and electroplating solutions, there are on the market special detergents which are superior to ordinary soap. A range of alkyl sodium sulfates, recently made available in commercial quantities, possesses remarkable qualities. The author makes no general

statement as to the effect of alkyl sodium sulfate on the skin, but his personal experience over a 6-month period has shown no deleterious effects but rather the reverse. Also discussed are soap powders, scouring powders, cleansing pastes and creams and superfatted soaps.

(289) Cleansing of sensitive skin with determination of the pH of the skin following use of soap and a soap substitute. E. T. Bernstein. *J. Invest. Dermat.* 9:5–9 (July) 1947.

Important clinical features of soap dermatitis are:

(1) Patchy vesicular eruption on the dorsum of the fingers, hands, and occasionally on other areas, (2) general improvement of the dermatitis in warm weather, (3) many dermatoses diagnosed as ringworm and treated as such. By experimentation it was found that soapless detergents produced only a moderate and transient increase in pH of the skin compared to ordinary soap. Clinical experience has shown that a soap-free regimen or use of soapless detergent is a valuable adjunct. Two satisfactory available detergents are mentioned, namely, an acidified cake containing lauryl sulfoacetate dispersed in a bentonite buffer for skin cleansing, and a liquid containing aryl alkyl sulfonate for household cleaning.

(290) Action of soap on the skin. C. G. Lane and I. H. Blank. *Arch. Dermat. & Syph.* 56:419–424 (Oct.) 1947.

The common soaps contain single fatty acids, such as lauric, myristic, palmitic, stearic, and oleic acids. Soaps containing palmitic or stearic acid are the only ones to yield a low percentage of positive patch tests. The irritating effect of fatty acids is usually heightened when the skin has an increased pH due to buffer solutions. However, stearic and palmitic acids usually elicit a negative reaction. Highly sulfated oleic acid usually elicits a negative reaction also. The use of a detergent containing primarily stearic, palmitic and octadecanoic acids with little lauric or oleic acid has been successful, producing very few positive reactions.

(291) Industrial diseases of the skin. P. B. Mumford. *Practitioner* 160:353–358 (May) 1948.

Dermatitis arising from the use of cleansing agents and different oils in industry is discussed. The more efficient the cleanser, the greater is the keratin or fat-solvent effect on the skin. Dermatitis due to oil is one of the most common problems of industrial disease. The article points out the various types of oil dermatoses.

(292) The evaluation of skin cleansers and protective creams for workmen exposed to mineral oil. C. N. D. Cruickshank. *Brit. J. Indust. Med.* 5:204–212 (Oct.) 1948.

A method is described for determining the value of cleansing agents and protective creams for workmen exposed to mineral oils. The most satisfactory results were obtained with a mixture of equal parts of milled dried soap powder and fine woodflour. None of the many barrier creams has given satisfactory results. The excessive removal of fat from the skin is discussed, and a method of investigating this problem is described.

(293) Better soaps for the industrial worker. C. P. McCord. *Indust. Med.* 17: 421–427 (Nov.) 1948.

Detergents are discussed, and it is brought out that a good detergent should possess a high degree of quick cleansing power and yet not damage the material on which it is used. The natural acidity of the skin and the effect of alkaline soaps on the skin are described. A good detergent should not remove the skin's acid mantle. The use of scrubbers and alkali builders in soap is discussed. Superfatted soaps are actually less efficient cleansing agents. The mechanics of cleansing and its germicidal action are mentioned. Organic scrubbers are preferred, especially cornmeal, and their equivalence to a powdered wash rag is emphasized.

(294) Comparing the irritant action of soaps. Louis Schwartz. *Ann. Allergy* 8:530–535 (July–Aug.) 1950.

A review of soap action including its irritant potential is presented. The article stresses the difficulties encountered in patch testing with soaps. It further emphasizes that in any group of subjects, the closed patch test with soap is actually more irritant than would be found in regular usage.

(295) Actual causes of certain occupational dermatoses, III further study with special reference to effect of alkali on the skin, effect of soaps on pH of skin, modern cutaneous detergents. J. V. Klauder and B. A. Gross. *A. M. A. Arch. Dermat. & Syph.* 63: 1–23 (Jan.) 1951.

A report is made of an additional series of 1,412 cases of cutaneous disease pre-

sented for industrial compensation. The cases previously reported and the present series total 3,709, male patients numbered 2,850 and female, 859. Of the total number of cases, 1,673 (45.08 percent) were diagnosed as occupational in origin, and 2,036 as nonoccupational.

The causes of the dermatoses of occupational origin are broken down into the following groups, with percentages of incidence: primary irritants (acids, alkalis and solvents)—28 percent; trauma and accidental injury—22.6 percent; sensitizing substances—13.6 percent; wet work (water alone, soap and water, and alkaline salt detergents)—13.1 percent; cleansing agents applied to the skin—10.7 percent; petroleum products and other causes (chlorinated hydrocarbons, vegetable oils, and dust) of folliculitis—9.2 percent; and physical and biologic agents—2.2 percent.

Nonaqueous solvents were the predominating causal irritants. The trauma and accidental injury group included all dermatoses (18 different diseases of the skin) that resulted directly or indirectly from accident or injury. Substances causing sensitization dermatitis are enumerated. Wet work and methods of hand cleansing as causes of occupational dermatitis are discussed. Substances causing occupational folliculitis are enumerated.

Burkhardt's alkali sensitivity and alkali neutralization tests are discussed.

The pH of the hands of normal persons ranged from 4.5 to 6.5 and that of the sweat-bathed skin was lower.

The increase in the pH of the hands after exposure to alkali and the duration of such increase are in direct relation to the duration of continuous exposure, frequency of intermittent exposure, and degree of alkalinity to which the skin is exposed.

The greatest and most prolonged change of pH was observed in two pot-and-pan washers. It took about 20 hours after the cessation of exposure to the soap solution for the pH to return to the normal range. The role of the buffer action of sweat is mentioned. The effect of buffer solution on the pH of the hands after exposure to alkaline solutions was studied.

Study was made of the pH of the following commercial detergents: 7 non-soap detergents were advised for patients with hand dermatitis, 103 hand cleansers for industrial workers, and 19 synthetic detergents for kitchen and household purposes. Of the hand cleansers for industrial workers, 94 were alkaline, and 57 were gritty, abrasive powders which predominantly contained one or more of the alkaline salt detergents.

(296) Hand cleansers and protectants with particular reference to products designed to reduce the incidence of industrial dermatitis M. A. Lesser. *Soap & Sanit. Chem.* 27: 30–33, 98, 157–159 (June) 1951; Ibid., 27: 34–37, 139 (July) 1951.

A large number of industrial soaps, hand cleansers, and barrier creams are discussed. In addition, causes of occupational dermatitis are reviewed, together with contributing factors.

(297) Surface active agents in dermatology. R. Douglas Sweet. *Practitioner* 167: 53–60 (July) 1951.

The characteristics of surface-active agents and glycols of interest in the field of dermatology are reviewed.

(298) Role of soap in occupational allergic dermatoses. E. Sidi, C. Mangematin, and R. Longue Ville. *Arch. d. mal. profess.* 13: 272–278, 1952.

The authors attempt to distinguish the true allergic eczema, rarely seen from contact with soap, from the usual effects of soap patch-tests, which they call the *caustic* reaction. By combining soap with suspected allergens they have succeeded in producing far livelier test reactions. Even in cases where soap produces only the caustic reaction and the allergen none, a combination produces a true vesicular eczematous response. Theoretically, this depends on (1) the interference caused to the acid mantle of the skin and (2) the roughening and fissuring caused by soap, which allows the allergen to come in closer contact with the tissues. Certain conclusions are drawn regarding prevention and treatment of industrial eczemas.

Lowenthal—Johannesburg [EXCERPTA MEDICA]

299) Synthetic Detergents—up to date, II (1952). J. W. McCutcheon. *Soap & Sanit. Chem.* 28: 48–57 (July 1952; Ibid., 28: 53–63 (Aug.) 1952; Ibid., 28: 52–61 (Sept.) 1952; Ibid., 28: 50–61 (Oct.) 1952.

In this coverage of synthetic detergents, the author classifies pertinent nomenclature and lists the trade name, manufacturer, class and formula, main uses, physical form, percentage concentration, and type of the synthetic detergents included.

(300) The use of household detergents and their dangers. G. Hodgson. *Practitioner* 170: 166–174 (Feb.) 1953.

Household soaps and new detergents are discussed from the viewpoint of their cleansing action and their side effects on the skin.

(301) Waterless hand cleansers. M. A. Lesser. *Drug & Cosmetic Industry* 72: 326–327, 408–414 (Mar.) 1953.

The author discusses the various types of waterless hand cleansers and gives several representative formulas for each type.

Cosmetics

COLD WAVES

(302) Cold permanent-wave solutions. C. A. Tyler. *Consumers Res. Bull.* 14: 23–25 (Oct.) 1944.

This article deals with work performed by the U. S. Food and Drug laboratories to determine the toxic effects upon rabbits exposed under a variety of conditions to ingredients of the cold wave process.

As a result of patch tests, inhalation tests, feeding tests, and intravenous injections, it was concluded that: (1) Under normal usage, thioglycolate wave solution can probably be considered safe for commercial use; (2) its toxic properties as shown by intravenous injection and inhalation test are not unlike many substances which come into contact with the skin; and (3) hydrosulfide solution cannot be considered safe for commercial use.

(303) Cold wave dermatitis: Report of 2 cases. C. M. McGill and L. F. Ray. *Indust. Med.* 16: 238 (May) 1947.

Cold wave preparations contain organic, inorganic, or synthetic chemicals in a strong alkaline medium and may irritate the skin of the beauty operator or customer if contact is prolonged or frequent. These materials may act as primary irritants or as sensitizers. Two clinically proved cases and 11 cases allegedly due to these preparations are cited.

(304) The percutaneous toxicity of thioglycolates. M. Whitsell, E. Alvarez, and J. H. Draize. *Federation Proc.* 6: 383–384, 1947.

The cold permanent wave process consists, in part, in a reducing action on the proteins of the hair. A 7 percent thioglycolic acid solution adjusted to pH 9.0–9.5 (ordinarily with ammonia) is the common waving agent employed. Salts of thioglycolic acid (sodium, calcium, ammonium, monoethanolamine) may be absorbed percutaneously by animals to produce systemic poisoning, but the dose level required is higher and the manner of application more rigorous than those specified in directions accompanying wave solutions intended for use by beauticians or in home applications.

Blood examinations in animals treated according to the method of Draize and others (*J. Pharm. and Exper. Therap.*, 82: 377, 1944), reveal minor fluctuations in hemoglobin levels and volume of red cells even at doses of 4.0 ml. per kg. per day. The latter dose level elicits a two- to threefold increase in total urinary sulfur excretion. Ammonium dithiodiglycolate and ammonium thiodiglycolate (an oxidation product and a contaminant, respectively, both found in common wave solutions) are less toxic than ammonium thioglycolate. Similarly, fractions representing various stages in the manufacture of ammonium thioglycolate are less toxic than the active waving ingredients. These studies support the view that ammonium thioglycolate hair wave solutions are safe for use if the usual directions are carefully followed.

(305) Thioglycolate cold wave process. W. D. McNally and R. H. Scull. *Arch. Dermat. & Syph.* 57: 275–278 (Feb.) 1948.

From toxicologic studies on rats and guinea pigs and dermatologic studies on 154 human subjects, the authors conclude that the cold wave solution containing 6.5 percent ammonium thioglycolate is nontoxic when applied as described in the article.

(306) Permanent wave process. L. Goldman, L. Mason, and W. McDaniel. *J. A. M. A.* 137: 354 (May 22) 1948.

Skin irritation due to cold wave solutions has been found to be more frequent, severe, and extensive among the operators than the patrons. Before the cold wave solution can be incriminated, all

other chemicals employed on the same occasion must be investigated. Ammonium thioglycolate was found to be a mild irritant to the skin. Suggestions are made for the protection of patrons and operators.

(307) A clinical appraisal of the cold wave process. M. H. Cohen. *Arch. Dermat. & Syph.* 60:14–23 (July) 1949.

A review of the literature concerning the cold wave process is given, with eight case reports to illustrate various types of cutaneous reaction following the use of the thioglycolic acid type of permanent wave process. The author feels that the home permanent cold wave process is potentially dangerous, but that in the hands of a competent beautician it may cause minimal harm in carefully selected cases. The cold wave process should not be given to allergic persons, to those suffering from anemia, hepatic disease, chronic dermatosis, or preceding irritation of the scalp.

(308) The cold permanent hair-waving process. H. T. Behrman, F. C. Combes, G. Weissberg, M. G. Mulinos, and M. M. Hurwitz. *J. A. M. A.* 140:1208–1209 (Aug. 13) 1949.

Cold wave preparations used in this investigation showed a low level of cutaneous irritation and a low sensitizing potential. Studies of a clinical and laboratory nature do not support the contention that toxic manifestations result from the use of cold wave preparations. Cold wave lotions of the composition set forth in this paper are safe for general use.

(309) The toxicity of "cold-wave" fluids. A. P. J. van der Burg. *Nederl. tijdschr. v. geneesk.* 93:3400 (Oct.) 1949.

A hairdresser is reported to have been suffering from malaise, nausea, vomiting and giddiness during a period that she had been using cold wave solutions in her work. Initially, she had erythema, edema, and desquamation of her hands, but these affections had subsided following her use of rubber gloves during application of the solutions.

Physical examination revealed little, but the author noted that the signs were those of thioglycolic acid poisoning, thioglycolic acid being the main constituent of these solutions. Reference was made to a publication on the subject, issued by the U. S. Food and Drug Administration (The percutaneous toxicity of thioglycolates, *The Toilet Goods Association*, No. 7, May 16, 1947), which mentions the potentially toxic nature of these substances.

(310) Dangers involved in dyes, cosmetics and permanent wave lotions applied to hair and scalp. J. G. Downing. *A. M. A. Arch. Dermat. & Syph.* 63:561–564, 1951.

Patch tests with thioglycerol and ammonium thioglycolate lotions were done on 223 subjects to observe the irritating and sensitizing potentials of these substances. The reactions to the thioglycerol lotion were more severe, more prolonged, and more constant than those to the ammonium thioglycolate lotion.

(311) Alopecia-areata-like lesions due to cold wave thioglycolate preparations. A. J. Reiches and W. Parker. *A. M. A. Arch. Dermat. & Syph.* 66:521–522 (Oct.) 1952.

The authors report two additional cases of temporary alopecia and another in which this same alopecia occurred for the second time after use of cold-wave thioglycolate preparations. Distinguishing features are presented which differentiate the temporary alopecia following the use of cold-wave thioglycolate solutions from alopecia areata of the scalp.

(312) Medical aspects of home cold waving. M. J. Brunner. *A. M. A. Arch. Dermat. & Syph.* 65:316–326 (Mar.) 1952.

Ammonium thioglycolate cold wave formulations of the average concentration supplied for home use are below the threshold for primary irritation when used on normal skin according to directions. Misuse may result in irritation, for the compound is a potent keratolytic agent in high concentrations. The sensitizing index of ammonium thioglycolate is low; but when sensitization does develop, it is manifested by a typical exzematous process.

Hair damage is most likely to occur in instances in which the hair has been dyed or bleached, and particularly when directions are not followed and over-long processing results. Such damage is apparently limited to the hair shaft, and no inhibition of growth is observable.

Direct systemic toxic manifestations are not seen after percutaneous absorption of ammonium thioglycolate.

HAIR DYES

(313) Skin reactions to hair dyes. A. J. Reiches. *A. M. A. Arch. Dermat. & Syph.* 65: 619–620 (May) 1952.

Three cases of cutaneous irritation to the oxidation-type of hair dye are reported. These hair dyes are replacing metallic salt and vegetable hair dyes. The oxidation hair dye depends on the action of p-phenylenediamine or some modification of this agent.

(314) Paraphenylenediamine hair dyes. L. Schwartz and C. Barban. *A. M. A. Arch. Dermat. & Syph.* 66: 233–239 (Aug.) 1952.

Reported cases of dermatitis from paraphenylenediamine hair dyes have been rare despite the great increase in their use. In the cases that have occurred, localized areas of eczematous, allergic, contact type dermatitis were seen.

The low incidence is due to the following factors:

1. Adequate controls by the manufacturer to assure that the finished product is the same as the formulas which have been proved safe by investigation.
2. The use of pure ingredients for the manufacture of the dye.
3. The employment of the prophetic patch test and the trial usage test before marketing of the dyes.
4. Careful packaging and detailed instructions for the use of the dyes as prescribed by law.
5. Inclusion on each package of directions for the use of the open patch test by the consumer. The consumer is directed to employ the open patch test before each use of the product.

The use of modern paraphenylenediamine hair dyes as now regulated by law is not attended by any undue hazard.

NAIL LACQUERS

(315) Nail varnish. E. I. du Pont de Nemours & Co. *Chem. Abst.* 35: 6398 (Sept. 20) 1941.

A fingernail varnish is described which comprises cellulose nitrate, a polymerization product of an aliphatic or an alicyclic ester of acrylic acid, a placticizer and a volatile solvent or a mixture of volatile solvents having an evaporation rate approximately equal to that of butyl acetate.

(316) Dermatitis due to nail polish foundation. J. M. Shelton. *Arch. Dermat. & Syph.* 48: 197, 1943.

A case of dermatitis of the eyelids and cheeks, at first thought to be due to nail polish, is reported. Patch tests with nail polish were negative. Further investigation disclosed that the nail polish foundation was the cause of the trouble.

(317) An unusual example of dermatitis due to nail polish. J. F. Madden. *Arch. Dermat. & Syph.* 49: 197 (Mar.) 1944.

The case is presented of a woman sensitive to nail polish who had a recurrence of dermatitis whenever she slept with a female friend who wore nail polish.

(318) Contact eczema due to nail polish. W. L. Dobes and P. H. Nippert. *Arch. Dermat. & Syph.* 49: 183–187 (Mar.) 1944.

Citing seven cases of dermatitis due to nail polish, the authors state that solvents, such as primary irritants, are the usual offending agents.

(319) Dermatitis due to nail polish. H. Keil and L. S. Van Dyck. *Arch. Dermat. & Syph.* 50: 39–44 (July) 1944.

The cause of nail polish dermatitis in the vast majority of cases observed in 1943 was toluene sulfonamide formaldehyde resin. In tests on 25 out of 26 subjects with this eruption, this substance, which is not a primary irritant in the concentration used, elicited intensely positive reactions.

Hypersensitiveness to this resin is frequently accompanied by group reactions to related chemical fractions and derivatives, such as the condensate of toluene sulfonamide and formaldehyde, toluene sulfonamide and, to a lesser extent, formaldehyde.

This principle of group reactions seems also to extend to sulfanilamide, but the data are too few to warrant general conclusions. In one of four subjects with nail polish dermatitis, a definite positive reaction was elicited by sulfanilamide; the patient had never used this nor related compounds, either internally or externally.

(320) An unusual source of dermatitis due to nail polish. I. L. Schonberg. *Arch. Dermat. & Syph.* 54: 65–66 (July) 1946.

A case of dermatitis due to nail polish is reported. A patch test with nail polish yielded strongly positive results. The

patient discontinued the use of nail polish, but 2 weeks later an exacerbation of the dermatitis occurred. After careful investigation, it was revealed that nail polish had been applied to her husband's military insignia and also to a necklace and bracelet. Removal of the nail polish resulted in clearance of the dermatitis within a week.

(321) Hyperkeratosis and onycholysis after use of a new nail cosmetic. S. J. Fanburg and H. Sharlit. *J. A. M. A.* 127: 785 (June 26) 1948.

Everon, a new nail lacquer, has caused subungual hyperkeratosis and onycholysis. Patch tests were positive, but the exact constituents of the product were not known.

(322) Allergic eczematous reactions of the nail bed. Persistent subungual and ungual changes based on contact with "undercoats" containing artificial resins and rubbers. M. B. Sulzberger, C. R. Rein, S. J. Fanburg, M. Wolf, H. M. Shair, and G. L. Popkin. *J. Invest. Dermat.* 11: 67–72 (July) 1948.

Twelve cases are reported of nail disorder due to nail polish undercoat which contains phenol-formaldehyde resins. The clinical symptoms were: (1) Discoloration (2) separation of the distal nail, (3) subungual hyperkeratosis, and (4) erythema, edema, and scaling of the fingertip. Patch tests were positive.

(323) Disturbances of nails caused by base coats. C. W. Laymon and E. M. Rusten. *Minnesota Med.* 31: 1218 (Nov.) 1948.

Nail disorders arising from the use of base coats underneath nail polish are described. Important symptoms are discoloration, dryness and brittleness, striations, and deposition of hyperkeratotic material beneath the nail, which lead to varying degrees of onycholysis.

(324) Subungual hemorrhages and hyperkeratoses due to Everon. M. Sullivan. *Bull. Johns Hopkins Hosp.* 84: 11 (Jan.) 1949.

A case is described of severe nail pain and discoloration, due to the use of a base coat under regular nail polish. Patch tests with the undercoat were positive. Boric acid solutions provided symptomatic relief. It is presumed that the undercoat gets under the nail and therefore causes damage.

(325) Relative allergenicity of standard and supposedly hypoallergenic nail polishes. E. Edelson. *Arch. Dermat. & Syph.* 59: 522–525 (May) 1949.

An experiment was made to determine the comparative sensitivities of several different nail polishes, including standard well-known polishes and supposedly hypoallergenic polishes. Since a person may be sensitive to one or more organic chemicals, it was concluded that a change to a brand of polish compounded with a chemical to which he is not sensitive will allow him to use the polish without difficulty. It may be found necessary to change from a supposedly hypoallergenic polish to a standard make.

(326) Allergic eczematous reactions of the nail bed due to "under coats." C. R. Rein and J. R. Rogin. *Arch. Dermat. & Syph.* 61: 971–983 (June) 1950.

This report is based on 47 cases of eczematous reactions of the nail bed due to undercoats, a material applied to the nails prior to the application of lacquer, and designed to prevent chipping of the lacquer.

The condition was limited to the fingernails. There was discoloration of the nails, associated with longitudinally oriented subungual hemorrhages. There was subungual hyperkeratosis at the edge of the nail and extending proximally under the nail. Onycholysis involved the distal portion of the nails. Some cases showed paronychia with edema, erythema, and scaling of the finger tips. Some patients complained of pain, tenderness, and paresthesias; others were asymptomatic. The discoloration of the nail was due to hemorrhage, and material from the undersurface of nail clippings gave a positive benzidine test for blood pigment.

Thirty-two of the patients were patch-tested, and all but five showed eczematous responses to materials supplied by a manufacturer. These materials included a methyl ethyl ketone solvent, two synthetic rubbers, and three formaldehyde resins. Tests with these materials in a control group yielded negative results. The principal offending substances appeared to be the phenol-formaldehyde resins.

The nails returned to normal when the use of undercoats was discontinued.

(327) Dermatitis from nail lacquer applied to costume jewelry. H. J. Parkhurst. *A. M A.. Arch. Dermet. & Syph.* 63: 264 (Feb.) 1951.

Two cases of dermatitis due to contact with nail lacquer applied to costume

jewelry are reported. It is expected that more may be encountered. In such cases the jewelry and nail lacquer must be removed and a soothing ointment applied. This procedure constitutes a simple and effective treatment.

MISCELLANEOUS

(328) Contact dermatitis caused by hair lacquer pads. S. Epstein. *J. A. M. A.* 123: 409 (Oct. 16) 1943.

Three cases are reported of contact dermatitis in a woman and her two daughters who had used hair lacquer pads. Patch tests were positive.

(329) Allergic dermatitis caused by hair lacquer products. A. Hollander. *Arch. Dermat. & Syph.* 48: 656 (Dec.) 1943.

The symptoms and lesions formed as a result of sensitivity to hair lacquer pads or hair lacquer are discussed. Patch tests were positive to the two types of synthetic resins in the pads and to the mixture of shellac and myrrh in the lacquer. Eighty percent of the patients were sensitive to the resin in the adhesive tape used for the patch tests.

(330) Current views on cosmetics and dermatitis. L. Schwartz. *J. Am. Pharm. A.* (Pract. Pharm. Ed.) 5: 74–76, 1944.

The types of cosmetics and the chemicals therein causing dermatitis, and the types of dermatitis caused, together with their frequency, are tabulated and discussed.

(331) Cosmetic dermatitis. Queries and Minor Notes. *J. A. M. A.* 133: 899 (Mar. 22) 1947.

(1) What substances in cosmetics are the common cause of contact dermatitis? (2) What are the ingredients of Hair Vita Finger Waving Lotion? (3) What other cosmetic preparations contain the same ingredients? (4) Is skin testing and desensitization for these substances possible and successful? (5) Of what value are the so-called protective lotions which are rubbed on the skin previous to contact?

(1) Reference is made to *Cosmetics & Dermatitis* by Schwartz and Peck. (2, 3) Cold Wave preparations are discussed. The action of these chemicals serves to reduce the elasticity of the hair. The hair is then set and oxidizing chemicals are applied which restores to the hair its natural elasticity. (4) When patch tests are used, extreme caution must be used in interpreting the results, since positive reactions may occur to substances which have nothing to do with the case in hand, and clinically-proved allergens may give negative results. (5) Protective creams and lotions are of comparatively little value to the beauty parlor operator, since they are removed by soap and water.

(332) Cosmetics and the care of the skin. G. Hodgson. *Practitioner* 160: 373, 1948.

The author first mentions the comparative rarity of cosmetic dermatitis. He then considers the ill effects which may result from a variety of cosmetic preparations. He recommends stopping the application of the suspected substance rather than using a patch test.

(333) Hair and scalp treatments and preparations; a report from the committee on cosmetics. *J. A. M. A.* 139: 840 (Mar.) 1949.

Consideration is given to the many products and methods available to the public which have no scientific basis or efficacy. Massage, ultraviolet rays, solutions and ointments, and various hair *tonics* are discussed. The causes of and medical treatment for simple dandruff, seborrhea of the scalp, and baldness are discussed, as opposed to the remedies with no proved efficacy.

(334) Facial tattoo. Queries and Minor Notes. *J. A. M. A.* 139: 1238 (Apr. 23) 1949.

A slightly pigmented linear scar is usually successfully concealed by cosmetics. If it is desired to remove the area, a plastic procedure is said to give better cosmetic results than tattooing.

(335) Alopecia from hair straightening. J. W. Anderson. *A. M. A. Arch. Dermat. & Syph.* 62: 910 (Dec.) 1950.

An alopecia from hair straightening, seen frequently in a Negro population, is discussed.

The hair straightening is usually done by means of application of sodium hydroxide in a greasy base, followed by brisk combing with a hot metal comb. The result may be an area of alopecia usually starting in the frontal region, showing a seborrhea sicca type of scaling and the stumps of broken hairs.

Cessation of the practice of straightening is followed by regrowth of hair.

(336) Cosmetic sensitizers. Francis Whitacre and R. C. Parsil. *Ann. Allergy* 8: 670–678 (Sept.–Oct.) 1950.

A list is presented of the most common cosmetic ingredients included in face powder, rouge, creams, lipstick, nail polish, hair dyes, rinses, tonics, wave preparations, and perfumes.

Some of the reasons for the occurrence of cosmetic dermatitis are listed. The need for constant collaboration between the manufacturers and the medical consultant is stressed.

(337) Disturbance of nails and nail beds produced by artificial fingernails. G. M. Frumes, H. M. Lewis, and E. J. Henschel. *J. A. M. A.* 149: 828–829 (June 28) 1952.

A nail disturbance characterized by pigmentation, separation of the nail plates from the nail beds, acumulation of wart-like debris beneath the separated nail plates, and tenderness of the nail beds and finger tips following the application of artificial fingernails is reported. No prior records of this occurrence were found in the medical literature. The clinical picture is characteristic and resembles, in all details, that seen in the cases of nail disorders due to base-coat. The mechanism of the disorder is probably one of allergic-eczematous sensitization. Cosmetic distributors reveal that the use of artificial fingernails is becoming more widespread. It is believed, therefore, that more cases of this disorder are occurring and that physicians should be alerted to its existence.

(338) The physiologic properties of thioglycolic acid and thioglycolates. C. M. McCord. *Occup. Med.* 3: 422 (Apr.) 1947.

The thioglycolates have achieved prominence in the artificial curling, and artificial straightening, of human hair. Consideration is given to the chemistry and physics of hair waving, primary irritation of the skin, the prospects of sentitization, the extent of instability of thioglycolic acid and thioglycolates, stabilization, systemic action after subcutaneous introduction, and direct action on the hair.

(339) Comparative chronic toxicity of diethylene glycol monoethyl ether (carbitol) and some related glycol: Results of continued drinking and feeding. P. J. Hanzlik, W. S. Lawrence, and G. L. Laqueur. *J. Indust. Hyg. & Toxicol.* 29: 233–41 (July) 1947.

Carbitol is widely used in cosmetics and industrial products and to some extent in dermatological formulas. Importance therefore is attached to its possible toxicity. Various experiments were carried out, and it was calculated that it would be necessary for a man to absorb 91 cc. daily before toxicity would result. Possible systemic hazards from epidermal applications are to be discussed in a later report.

(340) Lipstick cheilitis. A common dermatosis: report of thirty-two cases. S. J. Zakon, A. L. Goldberg, and J. B. Kahn. *Arch. Dermat. & Syph.* 56: 499–505 (Oct.) 1947.

Lipstick dermatitis and cheilitis are much more common than is generally believed. More than 30 causes of these affections are listed. The bromfluorescein dyes are considered to be the most common cause. The authors report 32 cases which cleared up when lipsticks not containing the bromfluorescein dyes were substituted.

(341) Cosmetic dermatology. H. Sharlit. *Arch. Dermat. & Syph.* 56: 666–668 (Nov.) 1947.

The author points out the importance of dermatologic principles to the cosmetic industry, in understanding and abiding by the Federal Food, Drug and Cosmetic Act of 1938.

Skin tolerance to alkalinity is discussed. The skin can tolerate habitual exposure to moderate degrees of alkalinity.

(342) Pigmentation of the palpebral conjunctiva resulting from mascara. A. B. Reese. *Am. J. Ophth.* 30: 1352–55 (Nov.) 1947.

A case of pigmentation of the palpebral conjunctiva due to the use of mascara is described. The pigmentation occurs at each extremity and along the upper margin of the tarsus. The conditions which were considered and ruled out in the differential diagnosis are listed. However, it must be assumed that there is some individual contributing factor, because many persons who use mascara do not develop such a pigmentation.

(343) Concealment of cutaneous blemishes. A. W. Stillians. *Arch. Dermat. & Syph.* 57: 279 (Feb.) 1948.

The author reports on a preparation for protection of the skin from light and for concealment of blemishes. It is composed of red ferric oxide, yellow ferric oxide, and titanium dioxide in a base of bentonite jelly.

(344) External use of "Carbitol solvent," "Carbitol" and other agents. W. Meininger. *Arch. Dermat. & Syph.* 58:19–26 (July) 1948.

Carbitol solvent (monoethyl ether of diethylene glycol) is an ingredient of many commercial cosmetic products and of certain vehicles for topical application. In spite of reported animal toxicity, the author was unable to demonstrate toxicity for man resulting from the application of 5 to 50 percent Carbitol solvent in lotions and ointments for prolonged periods of time.

It was not possible to demonstrate Carbitol solvent or its metabolic end-products in the urine of these subjects. Hence, the author reports that absorption is probably negligible, even in concentrations higher than are found in cosmetics.

Patch tests indicated that monoethyl ether of diethylene glycol does not possess high sensitizing powers for human skin, and is probably seldom responsible for contact dermatitis from cosmetics.

(345) Dermatitis from "Prell" shampoo. C. C. Carpenter. *Arch. Dermat. & Syph.* 58:354 (Sept.) 1948.

A case is reported of a 46-year-old white woman with a severe weeping and crusting dermatitis of the face, scalp, and neck. This began 2 days after using Prell shampoo, which contains as its active cleansing agent, alkylsulfate, a detergent considered to have a low index of sensitization.

Cutting Oils and Petroleum Products

(*See also Cancer; Chemicals, Organic*)

(346) Acnelike skin ailments produced by industrial oils and greases. III. Literature survey and discussion of etiology. Y. Nakauchi. *Japan. Ztschr. f. Dermat. u. Urol.* 49:3–4, 1941.

Production of various kinds of skin eruptions by oils and greases is correlated with the size of the particle or droplets. Small particles enter the hair follicles; larger ones do not. Working conditions (heat, irritation) which expand the follicles and aggravate the trouble are discussed.

(347) Oil dermatitis. R. F. Mackenzie. *Brit. J. Phys. Med.* 6:89–90 (May–June) 1943.

At an engineering factory, 150 out of some 950 employees were affected by dermatitis due to exposure to machine oil. Examination of the oil, before and after use, failed to indicate with certainty the noxious element at work. The oil was treated with phenols to keep down its microbic content and was not found to contain any living bacteria before or after use.

The most probable of the explanations put forth is that the oil dissolves the natural skin oils and defats the skin; the skin then becomes dry, cracks, and no longer keeps out the invasion of microbes. Hence, a secondary infection of the skin may take place by organisms normally present on it. Lead, picked up by the oil during use, also may act as an irritant.

The need for careful attention to the skin of the hands and arms is stressed. It should be washed with soap and water before and after work and then anointed with lanolin to replace the natural oils. The lanolin should be well rubbed in. Medical supervision is required, with periodical inspection of the skin at least once a week. Any worker showing signs of impending dermatitis should be removed from exposure to the oil. Facilities for ultraviolet irradiation should be available to accelerate cure or to arrest the condition.

(348) Recognition and prevention of industrial dermatitis with additional reference to oil dermatitis and folliculitis. H. R. Foerster. *J. A. M. A.* 122:370–375 (June 5) 1943.

Emphasis is placed on the importance of recognizing early the occupational origin of dermatitis and of identifying primary irritants and sensitizing agents. Criteria for diagnosis are discussed. The prevention of industrial dermatitis is considered under the headings of personnel, protection, and cleansing procedures.

Selection of suitable working personnel is one of the most effective means of reducing dermatitis in industries. The proper use of the patch test in pre-employment examinations is indicated.

Instruction in the hazards of the occupation and the methods of combating them should be given.

Protective measures vary according to the nature of the exposure. They may include the maintenance of adequate factory sanitation, the provision of sanitary engineering controls, and the use of mechanical protective measures, protective clothing, and protective creams, ointments, and lotions. Nine suggested formulas for protective hand creams and cleansers are given. Schwartz's description of six classes of protective applications is included. Requirements for cleansing agents are discussed, and four formulas are given for sulfonated oil cleansers.

The reference to oil folliculitis and dermatitis includes a brief description of cutting oils and mixtures and the types of skin disorder caused by various kinds of oil. The prevention of cutting oil dermatitis and folliculitis is chiefly a matter of personal cleanliness of the skin and clothing. Sleeves and aprons of material impervious to oil may be worn at some types of work. Individuals with abnormally dry skins may require the application of carefully selected ointments or creams.

(349) Prevention of oil rashes. Form 296, Ministry of Labor and National Service, Great Britain, (Sept.) 1943.

In general, straight cutting oils cause oil acne, while emulsions of oil in water (suds) cause softening and breaking up of the skin. Slight injuries to the skin, caused, for example, by metal filings in the oil, make the occurrence of rashes more likely; while neglect of such injuries may lead to local infections. Preventive measures are outlined. Important among these are the provision and the use of adequate facilities for washing—hot water, soap, and towels.

(350) The bacterial content of cooling and lubricating oils in the engineering industry. H. Waniek. *Arch. Gewerbepath. Gewerbehyg.* 12: 35–80 (Sept. 8) 1943.

The author reviews the etiology of industrial skin diseases usually associated with working in oil and concludes that, ordinarily, prolonged contact with oil is not by itself enough to produce disease. Important adjuvants to the causation of skin disease are the presence of dirt and especially metal splinters in the oil, the addition of alkali to oil and water emulsions, and a predisposition on the part of the worker. A number of bacterial cultures and subcultures of the oil were performed to support this conclusion.

(351) The skin-damaging effect of oil. K. O. Frykholm and B. Hammar. *Nord. hyg. tidskr.* 24: 121–143, 1943.

Oils used to cool automatic tools are known to cause cases of purulent skin affections. A great number of cases occurred in two large Swedish metal factories. However, tests with the oils on volunteer subjects produced only slight irritation. Poor hygiene was probably a factor in the occurrence of the dermatitis.

(352) Skin troubles of machine operators and their control. W. Schweisheimer. *Canad. Machinery* 54: 108–109, 1943.

Some of the operations involved in the manufacture of steel shells, with a copper bond around the base, require the immersion of the workers' arms in oil up to their elbows. A number of the workers who washed the oil off with a solvent developed pimples, some of them superficial and others more serious. The effect of oil, particularly cutting oil, and the need for preventive care, are discussed.

(353) Prevention and control of cutting oil dermatitis. E. Collier. *Brit. J. Indust. Med.* 1: 110–113 (Apr.) 1944.

This is a general paper on cutting oil dermatitis, with particular reference to experience in an engineering factory. The most common dermatitis observed was oil acne caused by lard oil or a mixture of lard oil and paraffin oil.

The chief cause of oil acne is mechanical blocking of the sebaceous glands and hair follicles. The most frequent sites are on the forearms, anterior areas of thighs and legs, and anterior elbow.

Workers should be selected with skin that is thick, and not too dry or too greasy. Fair-haired and pale or red-skinned persons should be excluded. Formulas for a dermis wash and an alkaline wash are given. Clean clothing, special protective clothing, and frequent analysis and change of the oil are recommended.

(354) Dermatitis from cutting oils, solvents and dielectrics, including chloracne. S. M. Peck. *J. A. M. A.* 125: 190–196 (May 20) 1944.

Clinical characteristics are discussed in some detail, and a few illustrations are given. Methods for prevention and treatment are suggested. A possibility that apparently has not been considered previously in the formation of chemical compounds from reactions that may take

place between the cutting fluid and the freshly ruptured chip surface. These compounds may act as a possible source of some of the dermatitis from cutting oils.

(355) Relative sterility of the hands of certain metal workers. I. Lominski and G. R. Thomson. *Brit. J. Indust. Med.* 1:165–167 (July) 1944.

The skin of the palms of workers in contact with metal filings and oil showed a lower bacterial count than that of other people. This relative sterility of the skin appeared to have no relation to hygienic conditions. Injuries to the hands usually healed without becoming septic. The explanation of the relative sterility is not clear.

(356) Dermatitis from cutting oils. G. P. B. Whitwell. *Lancet* 1:529–530 (April 28) 1945.

Differences in reaction of the skin to various cutting oils present an interesting problem. The tendency of a given oil to produce oil acne or to block the hair follicle does not seem to be a function of any physical property, and the suggestion is made that the carcinogenic properties of the oil may be the factor of importance.

Nonsoluble oils, which have been thinned with paraffin, tend to produce severe acne and severe eczematoid rashes, whereas, soluble oils have the opposite effect. Thick, heavy oils are not necessarily the most toxic.

Discussion is presented to show that the more refined lubricating oils usually cause less trouble than the cruder forms. Investigation by industrial chemists would do much to end the uncertainty of this problem. The relation of oil folliculitis to seborrhea and oil acne is also discussed.

(357) Dermatitis from oils and solvents. Queries and Minor Notes. *J. A. M. A.* 129:1232 (Dec. 22) 1945.

In a plant manufacturing motors, eight workers exposed to cast iron dust, oils, and solvents developed dermatitis which cleared upon removal from work but recurred when they returned. After the men were assigned to other work, the dermatitis, in some cases, disappeared for 3 to 6 months, then reappeared without further exposure to the original irritant.

Since cast iron is innocuous as far as dermatitis is concerned, the oils and solvents were probably the cause. Oil and solvents are apt to be encountered anywhere in a motor plant; doubtless, the workmen did again come in contact with them. The dermatitis from oils shows folliculitis, comedones and acne on the extensor surface of the forearms and thighs, while that caused by solvents usually affects the interdigital spaces, the fingers, and the dorsum of the hands, although the forearms may also be involved. Subsequent attacks of dermatitis venenata cannot occur without reexposure, but in the case of dermatitis from solvents which defat the skin, it may recur on contact with any defatting solvent, even including soap.

(358) Dermatitis from cutting oil, resembling Riehl's melanodermia. H. Gordon. *Brit. J. Dermat.* 58:8 (Jan.–Feb.) 1946.

A 50-year-old woman had been exposed to cutting oil as a capstan operator for a year. She noticed burning and discoloration of the arms and face shortly after starting work. The condition improved on holidays and during weekends. Examination revealed redness and pigmentation up to both elbows and on both cheeks. There was no vesiculation and only slight scaling. The appearance was not one of a dermatitis, but of poikiloderma. The condition was apparently due to exposure to cutting oil. Other workers performing the same work were not affected by this condition. Whereas pustular dermatitis (more properly called an oil folliculitis) is rather common in workers using cutting oils, a condition like the one described had not been noted before by the author.

(359) Dermatitis control. J. T. Gresh and G. H. Jackson. *Indust. Med.* 15:85–87 (Feb.) 1946.

Industrial dermatitis now comprises approximately 70 percent of all occupational diseases. Dermatologists agree that almost any substance can, under certain conditions, cause dermatitis. This study is limited to dermatitis caused by cutting oil.

Several theories as to its cause are discussed, namely: (1) Fine sharp metal particles in the oil, (2) germs passed on in oil from one person to another, (3) dirt and grease which block the minute orifices of the skin, and (4) fine metal chips which get into the wiping rags.

Oil dermatitis can be prevented by (1) providing adequate washing facilities with plenty of clean towels; (2) furnishing suitable cleansing agents; (3) allowing sufficient time for the employees to wash thoroughly; and (4) encouraging employees to engage actively in a personal hygiene program.

(360) Oil acne; based on case reports of Swiss Accident Insurance Board during the years of 1939–42. A. Serati. *Praxis* 35 : 141 (Feb. 28) 1946.

Seventy-five cases of oil acne are reported, due to emulsions of alkali and mineral oil, metal splinters, dirt, or personal uncleanliness. Allergy of the skin to mineral oil is not likely. The greatest numbers of cases are found among young workers. Hands and arms are most often affected, but frequently acne appears on the face, neck, waist region, or thighs. Higher temperatures seem to increase the incidence.

There is an acute pyoderma of the skin, with folliculitis and a crop of comedo-like plugs. If there is no inflammation, expression of the comedos is advised. Local compresses of Alibour water, or of solutions of boric acid, sulfurated lime, or lead, may be applied. Sulfur preparations may be taken internally and local applications made of sulfur, resorcinol, tannic acid or tumenol ointments.

Prophylactic measures advised are using vegetable oils instead of mineral oils, cleansing hands with thigenol soap, treating skin with vegetable tanning principles, and centrifuging cooling oils.

(361) Cutting oil sanitation. *Occup. Hazards* 9 : 12–13 (Sept.) 1947.

The provision and use of protective clothing, protective ointments, and modern washing facilities and the observance of general personal cleanliness are measures to be taken to diminish dermatitis from both soluble and insoluble cutting oils. Specialists may be requested to make tests of soluble cutting oils to determine if they are badly contaminated with harmful bacteria. In many cases, steps can be taken to disinfect such coolants.

(362) Dermatitis from cutting oils and solvents. I. Cutting oils. P. C. Campbell, Jr. *Indust. Hyg. Newsletter* 7 : 12–13 (Oct.) 1947.

Cutting oils are divided into two classes—soluble and insoluble—and their effects on the skin are discussed. The prevention of dermatitis consists mainly of cleanliness of the person, of the work clothes, of the machines, and of the oil.

(363) Dermatitis from cutting oils and solvents. II. Solvents. P. C. Campbell, Jr. *Indust. Hyg. Newsletter* 7 : 5 (Nov.) 1947.

Solvents are even more likely to cause dermatitis than cutting oils. Workers in the airplane industry, painters, and workers engaged in degreasing small metal parts are especially subject to the development of dermatitis from solvents. Diagnoses are made on the basis of history of exposure and patch testing. The skin manifestations are due to removal by the solvents of naturally occurring fats and oils. The exposed parts are most frequently affected. Prevention lies in the practice of personal cleanliness and the use of protective clothing.

(364) Skin lesions caused by cutting oils among workers employed at automatic lathes. Assouly, Colin, Radiezki and Pallaud. *Arch. d. mal. Profess.* 8 : 538–541, 1947.

Occupational dermatitis was studied at a factory where cutting oil containing fine particles of steel from lathes reaches the arms and faces of workers and even penetrates their overalls. No pathogenic micro-organisms were found in the oil. The skin showed large comedones and pustular acne. Penicillin was the only treatment used.

Prevention is difficult. It is recommended that hoods and exhaust drafts be designed to prevent the escape of oils into the air.

(365) Dermatitis from diesel oil. Queries and Minor Notes. *J. A. M. A.* 148 : 689 (Feb. 23) 1952.

Dermatitis from diesel oil is oftener of the contact variety than of the allergic type. Sensitization is possible, but it is unlikely that it would be due to the oil per se; it is probably due to the aberrant proteins of the skin resulting from the contact damage. Also, after contact injury the skin may respond more readily to the allergenic qualities of soaps and other offenders. Diesel oil is a crude petroleum fraction similar to fuel oil, and, thus, is not outstanding as an allergen. The common severe injuries from diesel oil and diesel motors are from flesh penetration from high pressure jet streams received when the oil is thrust into the combustion chambers. This deeply imbedded oil provides traumatic injury and not essentially a dermatitis. The practice of cleaning the skin with this oil is indefensible and should be condemned. Some protection is afforded by hand coatings. Ordinary protective ointments and lotions are of dubious value.

(366) Toxicity of cutting oils. Queries and minor notes. *J. A. M. A.* 149 : 717 (June 14) 1952.

There are no reports of systemic toxicity from exposure to cutting oils having

the composition given in the query. It is possible that the heat generated by the cutting operation may liberate sulfur dioxide and hydrogen sulfide, but the symptoms of toxicity from these sulfur compounds do not correspond to those of this patient. Some cutting oils contain carbon tetrachloride or solid chlorinated hydrocarbons. Systemic poisoning is possible from exposure to such oils, but the symptoms are not those of this patient. Chloracne is caused by cutting oils containing solid chlorinated hydrocarbons, but from the description, this patient has dermatitis and not chloracne. The sensory disturbances suggest exposure to heavy metals.

(367) Causes of cutting-oil dermatitis. G. E. Morris and C. Maloof. *New England J. Med.* 247: 440–441 (Sept.) 1952.

Experimental studies are cited that indicate the main cause of cutting oil dermatitis is the lack of a cleansing agent which will effectively remove all of the oil from the worker's skin at the end of the work period.

(368) Petroleum dermatitis. Report of two cases. M. G. Rosenbaum. *Arch. Dermat. & Syph.* 48: 193, 1943.

Two cases of acute bullous dermatitis following contact with petroleum are reported. The blisters, which were flaccid in character, were canary-yellow in color and were surrounded by a bright red inflammatory areola.

(369) Dermatitis caused by anthracene oils. A. Feil. *Presse Med.* 51: 656 (Nov. 27) 1944.

Extracts of coal tar, used as substitutes for lubricating oils, contain anthracene, phenols, and acridine, which are skin irritants. Anthracene dermatitis is really a sunburn on areas sensitized by contact with the oils. These oils are also very irritating to the conjunctiva and respiratory mucous membrane, but do not cause serious results.

As preventive measures, the oils should be sterilized and the irritants removed, and the tanks should be cleaned and disinfected weekly with cresyl. The workrooms should be well ventilated, and washing facilities should be provided. The oils should not be used for work in the open with exposure to sunlight. The workers should wear rubber gloves and impermeable overalls and use protective ointments. Periodic inspection of workers is required, and work must be discontinued when the dermatitis recurs or is persistent.

(370) Dermatitis from diesel fuel oil. Queries and Minor Notes. *J. A. M. A.* 128: 1260 (Aug. 25) 1945.

Fuel oil used in diesel engines can cause dermatitis by the fat solvent action of the light petroleum distillates found in it. The heavy petroleum distillates which it contains may cause folliculitis and oil acne.

Prophylactic measures are directed toward keeping the oil off the skin or at least in contact a minimum length of time.

An ointment with a lonolin base tends to buffer the solvent action on the skin of light liquid petroleum distillates. An ointment leaving a dry oil repellent film on the skin tends to minimize contact with the oil.

(371) Oleogranuloma. The late effects of accidental injection of mineral oil under pressure. B. Moore. *Brit. J. Indust. Med.* 3: 250–252 (Oct.) 1946.

Previous reports concerning the late effects of parenterally introduced mineral oil on the tissues are reviewed. The clinical and pathologic findings in a late case of oleogranuloma of the perineum, caused by accidental injection of lubricating oil, are described.

(372) Dermatitis provoked by mineral oils. A. Tzanck, E. Sidi, and S. Dobkevitch. *Semaine d. hop. Paris* 24: 343 (Feb. 14) 1948.

The use of mineral oil for industrial, therapeutic, and cosmetic purposes may result in different cutaneous manifestations. The impurities of the oils or individuals sensitizations may be responsible. Precautionary measures are of no avail, and recovery results only from avoidance of contact. Four cases of Riehl's melanosis in workmen and two cases in women following the use of beauty creams are reported.

(373) Dermatoses caused by diesel oil among workers in an asbestos-cement factory. J. K. Engelbrigtsen, *Nord. hyg. tidskr.* 9: 250, 1951

A survey was made of an asbestos-cement factory where diesel oil is used as a molding oil. A very high percentage of the men exposed to the diesel oil and limewater developed folliculitis. The problem was solved by using a new type of oil, solid paraffin emulsified in water.

Drugs

ANESTHETICS

(374) Group specificity of epidermal allergy to procaine in man. S. Rothman, F. J. Orland and P. Flesch. *J. Invest. Dermat.* 6:191–199 (June) 1945.

An experimental study on a dentist who developed dermatitis from contact with solutions of procaine hydrochloride showed that reactions were elicited with p-aminobenzoic esters containing a secondary or tertiary amine in the side chain, the length of which was irrelevant. Substituting alkyl groups for H atoms in the side chain or of one H atom in the aromatic amino group did not abolish the antigenic effectiveness. Group specificity in epidermal allergy follows a pattern similar to that of serologic reactions.

(375) Drug eruption due to Sodium Pentothal. G. A. Peterkin. *Brit. M. J.* 2:52 (July 13) 1946.

A case of rash following the use of Pentothal anesthesia is reported. The rash had occurred twice previously. As is usual in this type of drug reaction, patch, scratch and intradermal tests with a 2.5 percent Pentothal were negative.

(376) Group sensitivity to local anesthetics. M. J. Strauss. *J. Invest. Dermat.* 8:403–407 (June) 1947.

The author reports two cases of acquired sensitivity to local anesthetics manifested as dermatitis of the hands. Patch tests on one of the patients were positive with pontocaine and apothesine, the latter a chemically unrelated anesthetic. The second patient gave positive results on patch testing to procaine, tutocaine, monocaine, larocaine, pontocaine, and butyn sulfate, which are chemically related.

Sensitization to an entire group of structurally related compounds may follow exposure to one of the group, but this does not invariably occur.

(377) Specificity of eczematous hypersensitivity to p-aminobenzoic acid butyl ester ("Butesin"). E. L. Laden and L. Rubin. *Proc. Soc. Exper. Biol. & Med.* 66:451–452, 1947.

A patient who had an acquired epidermal sensitivity to Butesin gave positive patch tests to six homologous p-aminobenzoic acid esters. The reactions were negative to the non-esterified p-aminobenzoic acid and to the alcohols. The specificity range was narrow. Quantitative testing revealed that the skin may become more sensitive to related compounds than to the original sensitizer. Compounds with straight alkyl side chains were more effective than the iso homologues.

(378) Epidermal sensitization to butesin. An experimental study on the range of specificity. E. L. Laden and L. Rubin. *J. Invest. Dermat.* 11:119–125 (Aug.) 1948.

A 15-year-old boy developed a dermatitis from the use of Butesin Picrate on a burn, and successive patch tests were carried out to determine the range of specificity. Homologous p-aminobenzoic acid alkyl esters also were tested and gave positive reactions. Local anesthetics containing a benzene ring were tested and yielded a negative reaction, apparently because of their difference in structural configuration. The authors discuss the literature and show that their findings are in agreement with previous experimental studies.

(379) Sensitivity to intracaine. C. R. Rein and N. B. Kanof. *J. Invest. Dermat.* 11:311–312 (Nov.) 1948.

A case of dermatitis from the use of Intracaine ointment for relief of pain and itching from hemorrhoids is presented. No other such case appears to be in the literature. Patch tests with Intracaine elicited a four-plus reaction.

(380) Contact dermatitis due to procaine: a common occupational disease of dentists. E. L. Laden and D. A. Wallace. *J. Invest. Dermat.* 12:299–306 (May) 1949.

From questionnaires sent to dentists and from individual tests, it is concluded that the use of local anesthetics by dentists causes many cases of eczematous contact dermatitis. Procaine and other esters of p-aminobenzoic acid having an amine nitrogen in the side chain were the causal agents. Tests with esters containing an amine nitrogen in the side chain, but having a different nucleus,

elicited negative reactions. Alkyl esters of p-aminobenzoic acid (no amine nitrogen) gave only one positive reaction.

(381) Clinical study of Quotane. F. W. Lynch and O. E. Ockuly. *A. M. A. Arch. Dermat. & Syph.* 65: 35–38 (Jan.) 1952.

Quotane [1-(β-dimethylaminoethoxy)-3-n-butylisoquinoline monohydrochloride] provided some relief of itching in 80 percent of 258 therapeutic applications and gave good results in 60 percent of the total. There was one case of sensitization to the product proved by patch test.

(382) Contact dermatitis due to "quotane." J. F. Daly. *A. M. A. Arch. Dermat. & Syph.* 66: 393–394 (Sept.) 1952.

A case of contact dermatitis due to the antipruritic preparation 1-(β-dimethylaminoethoxy)-3-n-butylisoquinoline monohydrochloride, Quotane, is reported.

ANTIBIOTICS

(383) Dermatitis from penicillin. G. W. Binkley and A. Brockmole. *Arch. Dermat. & Syph.* 50: 326–327 (Nov.) 1944.

Two cases of dermatitis from penicillin in physicians who had been administering the drug are reported. In case one, patch tests were positive. In case two, patch tests and intradermal tests were negative. In case two, upon avoidance of the drug, the dermatitis subsided; but upon intramuscular injection of penicilin, the eruption returned. Case two also differed in that there was a focus of dermatophytosis on the feet which became active. This may be due to a disturbance of the fungus-antigen relationship.

(384) Contact dermatitis from amorphous sodium penicillin. S. H. Silvers. *Arch. Dermat. & Syph.* 50: 328 (Nov.) 1944.

A case of contact dermatitis in a chemist doing research in the chemistry of penicillin is reported. Patch tests with *impure* yellow amorphous sodium penicillin were positive; with the pure white crystalline sodium pencillin, they were negative.

(385) Bullous dermatitis (dermatitis medicamentosa) from penicillin. G. E. Morris and J. G. Downing. *J. A. M. A.* 127: 711 (Mar. 24) 1945.

A man received 1,000,000 units of penicillin for a postoperative infection. Four days after the last injection, the patient noted itching of the left hand and arm, 24 hours later, erythema and edema of the left hand, arm and left side of the body appeared. On the sixth day after penicillin had been injected, there was tense pitting edema of the entire hand and forearm. These parts also showed erythema and multiple ruptured and unruptured bullae, filled with clear, thin, yellow fluid.

(386) A study of the types of hypersensitivity induced by penicillin. A Rostenberg, Jr., and H. Welch. *Am. J. M. Sc.* 210: 158 (Aug.) 1945.

An instance of hypersensitivity of the tuberculin type to crystalline penicillin sodium in a person who had had no previous contact with the drug led to a study revealing that 5 percent of 144 persons tested exhibited a positive reaction of the tuberculin type.

The reactions obtained following intradermal injection of penicillin sodium fall into two categories. In the spontaneously sensitive persons, all reactions were of the tuberculin type. In the persons originally without sensitivity, but who became hypersensitive after repeated intradermal injections of penicillin sodium, the reactions were transiently wheal-like before they eventually developed into a tuberculin type of hypersensitivity.

(387) Ocular dermatitis from local penicillin: report of two cases. A. Schultz. *Arch. Ophth.* 35: 145–149 (Feb.) 1946.

The lesions of two cases of ocular dermatitis are described. The patch or the cutaneous tests showed penicillin sensitivity. The author warns against local use of penicillin except in those conditions which are resistant to other methods of treatment. He recommends use of patch and cutaneous tests before beginning treatment with penicillin.

(388) Cheilitis from local use of penicillin solutions in mouth. L. Goldman. *Arch. Dermat. & Syph.* 53: 133–134 (Feb.) 1946.

In a patient under treatment with local applications of penicillin for chronic recurrent apthous stomatitis, cheilitis developed when solutions of sodium penicillin were used as a mouth wash. A stable calcium penicillin ointment produced no irritation and was of definite benefit. Contact tests on the skin elicited a positive reaction to the solution, but there was no reaction to three other brands of sodium penicillin solution and the penicillin ointment. Contact tests of the buccal mucosa elicited negative reactions both to the solutions and to the

ointment. Direct applications of sodium penicillin solution to the lips produced a cheilitis. No reaction was produced on the lips by the calcium penicillin ointment.

(389) Sensitization by topical application of sulfonamides. M. G. Sulzberger, A. Kanof, R. L. Baer, and C. Lowenber. *J. Allergy* 18: 92–103 (Mar.) 1947.

Two hundred fifty-four patients were treated with one of four sulfonamides on the sites of burns produced by the Henriquez-Moritz burn apparatus. The relative incidence of sensitization corresponds directly to the relative water-solubility of the compounds. Results of patch tests and oral administration of the sulfonamides are given.

(390) Anaphylactic purpura following intramuscular penicillin therapy. A. B. Anderson. *M. J. Australia* 1: 305–306 (Mar. 8) 1947.

A case of anaphylaxis with joint swelling, intestinal purpura, and toxic nephritis, which apparently resulted from penicillin therapy, is reported.

Fever developed following an osteotomy, and sulfadiazine was administered. When the incision became inflamed and discharged pus, 500,000 units of penicillin were given. The patient developed synovitis and was treated with 945,000 units of penicillin. He then developed acute upper abdominal pain and tenderness with painful raised areas on the arms and hands. Ephedrine was given 3 times a day and the condition cleared up after 15 days.

(391) Stomatitis after administration of penicillin. J. Farrington, D. Abbott, and J. M. Glenn. *J. Oral Surg.* 5: 149–53 (April) 1947.

The use of oral penicillin can cause cheilitis, stomatitis venenata, and glossitis. The British have been reporting black tongue and other signs of nicotinic acid deficiency associated with oral penicillin therapy. Care should be taken in ascribing penicillin as the cause, since there are other causes of stomatitis.

(392) Epidermal sensitization to streptomycin. M. J. Strauss and F. C. Warring, Jr. *J. Invest. Dermat.* 9: 99–106 (Aug.) 1947.

Four cases of clinical epidermal sensitization to streptomycin are reported in detail. There were two further cases of subclinical, but demonstrable (by patch test) sensitization. The cases occurred in a group of 12 nurses coming in contact with streptomycin in the course of administering the drug to patients. The sensitivity appears to be due to streptomycin itself, rather than to any impurity in the drug.

(393) Successful desensitization in penicillin sensitivity. S. Peck, S. Siegal, and R. Bergamini. *J. A. M. A.* 134: 1546–1547 (Aug. 30) 1947.

An erythematovesicular eruption followed the parenteral administration of penicillin. Desensitization was initiated by the injection of 400 units of noncrystalline penicillin. Subsequent dosages were doubled until 12,800 units were injected at the end of the second week. A few days later, 30,000 units resulted in a slight cutaneous reaction on the groin. With smaller increases complete desensitization was finally achieved.

(394) "Fixed" eruption of the mucous membrane and the skin caused by sulfadiazine. L. M. Cole. *Arch. Dermat. & Syph.* 54: 303 (Sept.) 1947.

Fixed eruptions to sulfadiazine are not common. Three cases are reported in which there was soreness of the mouth and cutaneous lesions of the penis after receiving sulfadiazine, initially and at intervals of months. Patch tests were negative.

(395) Cutaneous reactions to penicillin. H. J. Templeton, C. J. Lunsford, and H. V. Allington. *Arch. Dermat. & Syph.* 56: 325–338 (Sept.) 1947.

Cases of contact dermatitis arising from handling penicillin are mentioned. It is pointed out that, in the strengths usually applied to the skin, dermatitis should not occur unless the skin has been sensitized by previous application of penicillin or some other fungus.

Several cases of cheilitis, stomatitis, and conjunctivitis from use of penicillin are reviewed. Dermal and epidermal reactions, of which urticaria is the most common, are discussed. Some of the experimental studies that have been performed are given, and control of reactions is explained. It is concluded that penicillin should not be used in noninfectious dermatoses.

(396) Cutaneous eruptions from streptomycin. K. Steiner and W. Fishburn. *Arch. Dermat. & Syph.* 56: 511–516 (Oct.) 1947.

Published accounts of cutaneous eruptions from streptomycin are discussed. Special emphasis is placed on the contrast

between cases reported by the National Research Council and the authors' own observations.

The authors report on seven cases which developed eruptions on the seventh to ninth day after treatment. They conclude that the eruptions from streptomycin are of an allergic nature. Because of the mildness of the eruptions and the absence of untoward sequelae, these eruptions should not be considered as contraindications for further treatment with streptomycin.

(397) A case of exfoliative dermatitis due to penicilin. M. H. Hollander. *M. Bull. European Command* 4:18–19 (Nov.) 1947.

A case is presented of a white male who was treated with penicillin ointment, and later with penicillin by injection, for impetigo contagiosa. He developed a severe exfoliative dermatitis. His condition improved after a month, and he was discharged as cured after 7 weeks. This patient illustrated severe allergic response to penicillin.

(398) Dermatitis venenata due to streptomycin. O. Canizares and H. Shatin. *Arch. Dermat. & Syph.* 56:676–677 (Nov.) 1947.

A case of dermatitis around the neck and eyes of a worker handling streptomycin is presented. The dermatitis cleared when the patient was removed from contact with streptomycin.

(399) Bullous skin eruptions following sulfonamide administration. C. C. Thomas and M. K. Hardy. *J. Am. M. Women's A.* 3:1–3 (Jan.) 1948.

Case reports of five female patients with severe cutaneous, mucous membrane, and constitutional effects following sulfonamide therapy are presented and analyzed. The possibility that the sulfonamide acts as a trigger mechanism in activating a latent virus infection is considered.

(400) Occupational dermatitis due to penicillin. Queries and Minor Notes. *J. A. M. A.* 136:720 (Mar.) 1948.

Although the procedures for desensitization to penicillin produce dubious results, the following method is described. Beginning with 0.05 cc. of a solution containing 10 units per cc., the material is given 3 times weekly, increasing the dosage as in desensitization to pollen. If dermatitis occurs during treatment, the dose should be reduced. As an alternate method, local use of tripelenamine (Pyribenzamine) hydrochloride is suggested.

(401) Contact dermatitis due to streptomycin. S. I. Shapiro and R. G. Carney. *J. Iowa M. Soc.* 38:204 (May) 1948.

Four out of seven nurses engaged in the preparation of streptomycin for treatment of tuberculosis patients developed a contact dermatitis, which was shown to be due to streptomycin. There is a possibility that contact sensitization will prevent future internal use of the antibiotic.

(402) Generalized exfoliative dermatitis due to penicillin. J. O. Shaffer. *New England J. Med.* 238:660 (May 6) 1948.

A case of generalized exfoliative dermatitis following the use of penicillin is reported. Continued use of penicillin might have caused death. Penicillin ointment is contraindicated in the treatment of cutaneous lesions.

(403) Contact-type sensitization to antibiotic agents. M. Berke and M. E. Obermayer. *J. Invest. Dermat.* 11:253–258 (Oct.) 1948.

Cases of dermatitis arising from the use of streptomycin are reviewed in the literature.

Testing of 51 nurses revealed that 20 had contact-type hypersensitivity to streptomycin, 20 to procaine hydrochloride, 13 to penicillin, and 2 to tyrothricin. Fourteen of the 20 who reacted to streptomycin also reacted to procaine hydrochloride and/or penicillin, and 13 of the 20 had histories of previous eczema. The sensitivity that can be produced by the concomitant use of procaine hydrochloride with streptomycin is emphasized.

(404) Contact dermatitis from topical tyrothricin and associated with polyvalent hypersensitivity to various antibiotics. L. Goldman, M. D. Feldman, and W. A. Altemeier. *J. Invest. Dermat.* 11:243–244 (Oct.) 1948.

A case of dermatitis from the use of tyrothricin solution on a leg ulcer is presented. Patch tests gave positive reactions to tyrothricin, penicillin, and gliotoxin. As an antibiotic, topical tyrothricin is considered to be less effective than topical penicillin, streptomycin, or bacitracin.

(405) Clinical problems in penicillin sensitivity. S. M. Peck, S. Siegal, A. W. Glick, and A. Kurtin. *J. A. M. A.* 138:631–640 (Oct. 30) 1948.

Tests with penicillin and trichophytin were carried out on 406 adults and 93

children. The 48-hour cutaneous test with penicillin was found to be significant and of diagnostic value. Techniques of this and other tests are described.

Of 276 adults who had never had penicillin, 54 percent reacted *spontaneously* to the cutaneous test, whereas there was no reaction in 65 children. The spontaneous reaction caused by penicillin sensitivity was three times as frequent in those who had a positive trichophytin reaction. Of the men receiving penicillin, 34.2 percent developed eruptions, as compared to 8.3 percent of the women.

A discussion of the patients with urticaria is given. Parenteral and oral methods of desensitization are described and the results of eight cases presented.

(406) Streptomycin dermatitis in nurses. J. Crofton and H. M. Foreman. *J. A. M. A.* 138:1125 (Dec. 11) 1948.

Four cases of dermatitis among 80 nurses handling streptomycin in a London hospital are reported. It is concluded that persons handling streptomycin should wear rubber gloves.

(407) Contact dermatitis from streptomycin. S. J. Levin and S. S. Moss. *Arch. Dermat. & Syph.* 59:663–664 (June) 1949.

A graduate nurse working in a hospital for tuberculosis patients developed a weeping, pruritic eruption of the face and neck with edema of the eyelids. Removal from work cleared the eruption in 1 week; return to the job was followed by an immediate flare. Patch testing with a solution of streptomycin gave a four-plus reaction. The avoidance of contact with streptomycin at work has permitted her return to nursing, with no further difficulty.

(408) Skin lesions due to handling of or treatment with streptomycin. K. H. Schäfer and E. Oppermann. *Deutsche med. Wchnschr.* 74:1491 (Dec.) 1949.

Skin lesions seen in physicians and nurses handling streptomycin are described. The intensity of the attacks may be diminished by wearing rubber gloves and goggles when handling the medication. However, in severe hypersensitivity, avoidance of all contact may be necessary.

(409) Dermatitis from contact with streptomycin. A. Santos Almeida. *Alergia* 4:41 (July–Oct.) 1950.

Four cases of contact dermatitis in nurses handling streptomycin are reported. Clinically, there was evidence of erythema, edema, and scaling and fissuring of the hands and face. Removal from exposure was followed by a healing of the dermatitis. Re-exposure produced flares of the disease. Patch tests with streptomycin were positive in all cases.

It is recommended that, before anyone is accepted for employment at hospitals for tuberculosis, he be investigated for previous allergic diseases. Other recommendations call for the use of rubber gloves while streptomycin is being handled, and rotation of personnel through various services to avoid prolonged exposure to the drug.

(410) Allergic eczematous contact type sensitivity of equal degree to streptomycin and dihydrostreptomycin. M. B. Sulzberger and I. H. Distelheim. *A. M. A. Arch. Dermat. & Syph.* 62:706–707 (Nov.) 1950.

Although neural and renal toxicity and hypersensitivity have been regularly reported to be less with dihydrostreptomycin than with streptomycin administered parenterally, patch testing in this case indicated that the local allergic eczematous contact type reaction was the same for both drugs.

Also of interest were the fluctuations of sensitivity to penicillin, which at times suggested that this patient might be manifesting a cross sensitivity between penicillin and streptomycin. Patch testing with other antibiotics and fungus extracts yielded no evidence of polyvalent sensitivity or cross reactions in the patient.

(411) Crossed fixed drug eruptions from two antibiotics. A. L. Welsh. *A. M. A. Arch. Dermat. & Syph.* 65: 232 (Feb.) 1952.

A case is cited in which there were apparently cross fixed drug eruptions from two antibiotics—aureomycin and terramycin.

(412) Allergic eczematous sensitization to neomycin. R. L. Baer and J. S. Ludwig. *Ann. Allergy* 10: 136–137 (Mar.–Apr.) 1952.

A case of allergic eczematous contact type sensitization to neomycin, substantiated by positive patch tests, is reported.

(413) A study in the pathogenesis and classification of dermatologic penicillin reactions. W. A. Reyer. *Ann. Allergy* 10:270–277 (May–June) 1952.

Many types of penicillin reactions have been reported, including urticaria, pompholyx, vesicular eruptions, bullous dermatitis, miliaria, purpura, and flaring

of existing dermatoses. From reports in the literature, dermatitis reactions to penicillin have increased in frequency from 2 percent to 15 percent. Penicillin reactions from the standpoint of the pathogeneses are outlined as follows:

Group A.—Epidermal contact reactions with localized dermatitis, and with sensitizations restricted to areas of application.

Group B.—Dermal reactions, regardless of the route of administration.

1. Specific penicillin reactions limited to urticaria, a delayed reaction coming 7 to 20 days after drug administration.

2. Reactions to the vehicle, the base, or the culture media used to grow the penicillin.

3. Nonspecific reactions to the common mold antigen described by Jadassohn. The Trichophyton intradermal test is believed to be the most reliable to determine this sensitivity. Patients receiving penicillin who have a past history of fungus infection should have fungicidal preventive therapy started along with their penicillin.

4. Jarish-Herxheimer reactions to disintegration-toxins liberated from organisms killed by the penicillin therapy. Patients with chronic eczematous dermatoses probably should not have penicillin unless absolutely necessary.

5. Reactions caused by a disturbance of the *symbiotic balance* of skin organisms by the presence of penicillin. It is hoped that future investigations will deal with skin organisms and their inter-relationships.

(414) Occupational allergic reactions among workers in a penicillin-manufacturing plant. A. E. Roberts. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 8: 340–346 (Oct.) 1953.

Three cases of occupational allergy to penicillin are reported. Two workers had a respiratory allergy and one had specific, cutaneous hypersensitivity.

A simple method of preparing allergen suspensions for scratch-testing and hyposensitization is described.

ANTIHISTAMINES

(415) The pharmacology, physiology, and clinical evaluation of the new antihistaminic drugs (Pyribenzamine and Benadryl). C. E. Arbesman. *New York State J. Med.* 47: 1775–1781 (Aug. 15) 1947.

A comparison of the antihistaminic effect of Benadryl and Pyribenzamine was made on various allergic disorders. It is concluded that Pyribenzamine is more effective and less toxic than Benadryl and that, at best, the antihistaminic drugs are palliative. If permanent relief is to be obtained, the etiologic factors of allergic manifestations must still be determined and eliminated.

(416) Eczematoid dermatitis following ingestion of "Pyribenzamine Hydrochloride" N. N. R. tablets. M. C. Harris and N. Shure. *J. Allergy* 18: 408–412 (Nov.) 1947.

A review of the literature of the reactions due to Pyribenzamine is presented along with a case of dermatitis due to the drug. After the eruption cleared, the drug was again given, and a recurrence followed. Various skin tests using the tablet, including the placement of a tablet on the mucous membrane of the mouth, produced no reaction. Passive transfer tests were negative.

(417) Eczematous contact-type allergy to pyribenzamine. M. J. Strauss. *J. Invest. Dermat.* 11: 155 (Sept.) 1948.

A case of allergic reaction of the eczematous contact type to Pyribenzamine, as shown by patch test, is reported.

(418) Dermatitis due to antihistaminic agents. E. Epstein. *J. Invest. Dermat.* 12: 151 (Mar.) 1949.

The author presents a case in which an eruption that developed following the use of Trimeton became generalized after an intravenous injection of Benadryl. A review of the dermatoses due to antihistaminics is given.

(419) Local cutaneous sensitivity to methapyrilene. A. B. Loveman and M. T. Fleigelman. *A. M. A. Arch. Dermat. & Syph.* 63: 250–251 (Feb.) 1951.

A case of local cutaneous sensitivity to methapyrilene is reported. Patch test with 2 percent solution of methapyrilene gave a positive reaction, while a patch test with the base was negative. Patch tests with other antihistamine creams were negative. Methapyrilene and seven other antihistamine preparations given by mouth produced no observable cutaneous reactions in the patient.

(420) Professional dermatitis caused by chloromethylthiophene. C. L. Meneghini. *Rassegna di med. indust.* 20: 48–50, 1951.

The author reports a case of a pharmaceutical worker who developed a

dermatitis from contact with an antihistamine, chloromethylthiophene. The eruption could be elicited by inhalation of the chemical.

ANTIMALARIALS

(421) Quinacrine dihydrochloride. Occupational disorders and their control. R. M. Watrous. *Indust. Med.* 13: 887–891 (Oct.) 1944.

The final synthesis, purification, and manufacture into tablets of quinacrine dihydrochloride (Atabrine), under wartime conditions, presented a problem in industrial hygiene because of the irritating nature of the drug.

Occupational disorders observed in 42 workmen over a period of 8 months were found to consist solely of manifestations of local irritation of the mucous membranes and skin. In the order of frequency, these took the form of conjunctivitis, rhinitis, dermatitis, and stomatitis. Keratitis, epistaxis, pharyngitis, tracheitis, bronchitis, asthma, and dyspnea also were observed in a few cases. Character, duration, and treatment of these symptoms, as well as conditions of exposure, are described.

The industrial hygiene methods adopted to control this problem are discussed from the standpoint of (a) personal protective equipment, (b) worker morale, and (c) engineering safeguards. Despite an elaborate system of dust control, which reduced air levels of quinacrine to 0.4 to 4.2 micrograms per liter (4 to 41.5 μg per cubic meter of air), irritative symptoms persisted among the unskilled and undisciplined workers.

(422) Skin sensitivity due to Atabrine. R. Whitehall. *Bull. U. S. Army M. Dept.* 4: 724 (Dec.) 1945.

The author reports an eczematous dermatitis on the eyelids and behind the right ear, shown by patch test to be due to quinacrine hydrochloride.

(423) Dermatitis from Atabrine. L. M. Nelson. *Bull. U. S. Army M. Dept.* 4: 725 (Dec.) 1945.

Two cases of generalized dermatitis are reported, in which patch tests with quinacrine hydrochloride yielded positive results. Since eight patients with other dermatoses did not react similarly when tested the same way, the two cases were interpreted as specific hypersensitivity rather than primary irritation.

(424) Effects of industrial exposure to quinacrine hydrochloride. O. W. Barlow, L. W. Gorham, and A. J. Bedell. *Occup. Med.* 1: 482–490 (May) 1946.

Medical examinations of factory employees working with quinacrine hydrochloride (Atabrine) for periods up to 26 months revealed that, in spite of precautionary protection against quinacrine dust, many reactions were observed.

The greatest incidence of reactions was noted in the tablet manufacturing division. A majority of these workers experienced dermatitis, conjunctivitis, or rhinitis. No damage of a serious nature was found in a comprehensive clinical and laboratory study of a small group of employees heavily exposed to quinacrine over long periods. The urinary excretion of quinacrine by workers long exposed to the drug was such as to indicate a low average intake; this observation coincided with the lack of gastrointestinal symptoms.

The characteristic features which permit distinction between discoloration of the eyes due to quinacrine and that due to biliary jaundice are described and illustrated.

(425) Fluorescence of nails from quinacrine hydrochloride. R. R. Kierland, C. Sheard, H. L. Mason, and W. Lobitz. *J. A. M. A.* 131: 809–810 (July 6) 1946.

The authors discuss cases of fluorescence of nails under a Wood's light from use of quinacrine hydrochloride (Atabrine). They present details of light wave lengths and intensity involved.

(426) Wood's light fluorescence phenomenon in quinacrine medication. J. E. Ginsberg and P. L. Shallenberger. *J. A. M. A.* 131: 808–809 (July 6) 1946.

The yellow discloration of skin and the bluish pigmentation of the nails and palate following prolonged use of Atabrine are discussed. When given orally, Atabrine accumulates in the tissues and is slowly excreted. It may still be in the fingernails a year after discontinuation of the drug. The presence of a greenish-yellow fluorescence was first noticed by the senior author in his own fingernails under a Wood's light. The authors report on 511 cases which support their initial observation.

The fluorescence tends to disappear 3 to 6 months after the drug is stopped. Traces last up to a year.

(427) Fluorescence of nails. Queries and Minor Notes. *J. A. M. A.* 133: 1253 (Apr. 19) 1947.

The persistent fluorescence of the large toe nail for some time after the discontinuance of quinacrine may be explained on the basis of the slow growth of the nail on this toe. However, there has been some investigation of this subject, and the data afforded point toward the actual deposits of quinacrine in the nail bed.

(428) Dermatitis due to quinacrine hydrochloride ("Atabrine"). T. W. Nisbet. *J. A. M. A.* 134: 446–450 (May 31) 1947.

It is suggested that a large number of the cases called *jungle rot* were dermatoses caused by Atabrine administration. The eruptions due to Atabrine are divided into 3 groups: (1) Eczematoid, (2) lichenoid reactions, and (3) exfoliative. Evidence is presented to substantiate the conclusion that Atabrine is the etiologic agent in a large group of cutaneous conditions ocurring among the troops stationed in the tropics. In the mechanism of the production of this cutaneous syndrome, none of the generally accepted theories of drug-evoked eruptions appears adequate to explain the observed facts.

(429) Mepacrine dermatitis. I. Singh. *Brit. J. Dermat. & Syph.* 60: 90–105 (Mar.) 1948.

Mepacrine is the exciting cause of atypical lichen planus occurring in suppressive Mepacrine therapy. Eighty-three cases are recorded. The clinical features, with a description of the skin lesions, histopathology, and treatment, are described. Measures aiming at elimination of the drug, increased nutrition and repair of the skin, elimination of predisposing causes, and syptomatic relief are described. Etiological factors are discussed. The differences between lichen planus and Mepacrine dermatitis are considered.

(430) Analysis of quinacrine deposits in human skin. P. Y. Gerke. *Vestnik Venerol. Dermat.* 5: 21–23 (1948).

In quinacrine jaundice, histologic examination shows that the drug is deposited mainly in the epithelium. There is less deposition in the connective tissue; the fatty cells show the least effect. No quinacrine is found in the reticuloendothelial tissue.

(431) Present status of quinacrine (atabrine) dermatitis. C. L. Schmitt. *Arch. Dermat. & Syph.* 59: 16–21 (Jan.) 1949.

Six cases of quinacrine dermatitis are reported. All patients showed sequelae long after cessation of ingestion of quinacrine. The patients manifested persistent cutaneous hyperirritability to heat, friction, and the action of water and soaps. It is believed that a true polysensitization occurs and that the affected person represents an increased risk in any occupation requiring exposure to heat, friction, or chemicals.

NARCOTICS

(432) Cutaneous eruptions due to codeine. M. Seidmann. *Arch. Dermat. & Syph.* 47: 654, 1943.

A case report of a rash following the ingestion of 0.045 gm. codeine is presented. Patch tests with codeine, morphine, and opium were negative. The eruption was reproduced at will by the ingestion of codeine. The patient showed a blood eosinophilia of 15 percent.

(433) Contact dermatitis in a morphine factory. E. S. Dore, E. W. Thomas, and G. C. Green. *Brit. J. Dermat. & Syph.* 56: 177–182 (July–Aug.) 1944.

Nine cases of contact dermatitis occurring among 18 workers engaged in the commercial manufacture of morphine salts are reported. The dermatitis generally appeared 14½ weeks after exposure. The eruption began as an irritable erythematous dermatitis of the eyelids, with severe local edema. The regions next affected were usually the nape of the neck and collar area. The eruption was generally limited to exposed surfaces.

(434) Occurrence of "morphia rash" in manufacture of morphine salts from opium. G. C. Green. *Brit. J. Dermat. & Syph.* 56: 182 (July–Aug.) 1944.

The problem of morphia rash is discussed from the manufacturing standpoint. To satisfy the rigid checks required by the Dangerous Drugs Acts, and on account of the high cost of raw material, extreme precautions are taken to avoid loss through leakage and spilling during manufacture. For these reasons mechanical handling is avoided. Workers are subjected to a higher degree of contact exposure than they might be in a more mechanized operation.

At the factory with which the author is connected, no detailed case records had

been kept in the past, since the problem of replacement labor had never been acute until the recent war. It has been the practice at this factory to place a man who has developed *rash* on workmen's compensation until recovery. Then he is transferred elsewhere where there are no dermatitis hazards. It has been found by trial and error during more than a century that immunity is not acquired. Some workers contract the disease very soon after introduction to the opiates process. Others may appear to be immune only to develop the rash after 10 to 30 years of work.

Risks are best controlled by insistence on personal cleanliness, clean workrooms, a clean habit of working, and adequate ventilation. Great stress has been laid on a plentiful supply of water for washing. Rubber gloves were introduced wherever practicable in 1937, and protective cream has been provided since 1940. It cannot yet be claimed that there is evidence that the two latter precautions have reduced the incidence. The greatly increased incidence of industrial dermatitis since the war is attributed to the absence of *built-up* resistance in new employees.

(435) Contact dermatitis from morphine: A series of cases among workers in a drug factory. E. F. Corson and G. P. Rouse, Jr. *Pennsylvania M. J.*, 49: 968 (June) 1946.

Twelve cases of contact dermatitis are reported among women working in contact with morphine or codeine in a drug factory. An erythematous rash of an itchy, inflammatory nature appeared on various spots, 2 or more weeks after exposure. Irritation of the nares, rhinitis, asthma, and eruptions of nonexposed points were noted in some cases. In all cases where patch tests were made, the reactions were positive.

These reactions occurred in spite of attempts by management to provide protective measures, such as air conditioning, use of masks and respirators, use of glass shelves, and shorter hours. Insistence on full-length sleeves and rubber gloves and on training to avoid touching other exposed skin surfaces are suggested as additional prophylaxis.

(436) Exfoliative dermatitis due to codeine. J. H. Moyer, Jr. *New England J. Med.* 238: 469–470 (Apr. 1) 1948.

A case of exfoliative dermatitis due to codeine is reported in a 34-year-old white male admitted to the hospital with a diagnosis of scarlet fever. He had received codeine 6 weeks previously. After convalescence, patch tests were negative, but intradermal injection of 1:10,000 of codeine resulted in the development of giant urticaria in 30 seconds.

(437) Dermatoses due to the handling of narcotic drugs. International Labor Office, Industrial Hygiene Section. (July) 1948.

A history of cases of dermatitis due to narcotics is presented. The findings indicate that this type of dermatitis is gaining importance in industry. However, the number of workers concerned is too small to form a basis on which average incidence of the disease may be calculated. The period of incapacity is usually short, but can be long. The only sure cure for susceptible workers seems to be transfer from contact with narcotics. Protective measures are important and can do much toward preventing the outbreak of an allergic reaction.

SULFONAMIDES

(438) Aminothiazole: toxicity in industrial use. R. M. Watrous. *Indust. Med.* 12: 832–835 (Dec.) 1943.

Aminothiazole, an intermediate in the synthesis of sulfathiazole, has become a chemical of some industrial importance. Because of its physical properties, it may be absorbed readily by chemical workers who handle it.

A number of workmen exposed to air concentrations ranging from 0.1 to 3.0 mg. per cubic foot (0.0036 to 0.11 mg. per liter) complained of certain characteristic symptoms, the most common of which were brown pigmentation of the urine, anorexia, nausea, and vomiting.

A few workmen, probably having developed a special sensitivity, responded to ordinary exposure by a syndrome of sudden onset. This syndrome closely resembled serum sickness, with severe itching followed by severe migratory pains in the joints which incapacitated them for periods up to 5 weeks. Complete recovery without residual damage followed.

(439) Cutaneous hypersensitivity to sulfonamides. A report of 12 cases. R. G. Park. *Brit. M. J.* 2: 69, 1943.

Twelve cases are presented in which local sulfonamide therapy induced a cutaneous hypersensitivity to the drug. Following sensitization, dermatitis could be produced by various related members of the sulfonamide series. Reactions varied with the dose of the drug and the degree of sensitivity. The most severe reactions followed oral administration.

All of the patients developed acute cutaneous reactions following the ingestion of 0.5 gm. of sulfanilamide. Four of six cases tested could not tolerate sulfaguanidine. Symptoms usually began 8 hours after administration. In three cases, the dermatitis assumed a distribution typical of photosensitive conditions. In one case it was accompanied by drug fever. Reactions following local application were less marked and frequently were limited to the original eczematous area. Intracutaneous and patch tests were of little value in diagnosis.

The indiscriminate use of sulfonamides in the local treatment of skin diseases is decried, since sensitization may prevent subsequent use of these drugs in serious illnesses.

(440) Sensitivity to topical application of sulfathiazole ointment. R. A. Darke. *J. A. M. A.* 124: 403–404 (Feb. 12) 1944.

The author reports on 218 patients treated topically with 5 percent sulfathiazole ointment. Sensitivity to sulfathiazole was found in 12 cases (5.5 percent). The author warns that sulfonamide drugs are to be used topically only when there is a specific need. Otherwise, sensitizing the patient may preclude the use of sulfonamides in the therapy of meningitis and pneumonia. A brief review of the literature is presented.

MISCELLANEOUS

(441) Idiosyncrasy to mercury preparations in childhood: Report of two cases of reactions to 5 percent ammoniated mercury ointment and mercury bichloride solution (1: 4,000). H. Gibel and B. Krammer. *Am. J. Dis. Child.* 66: 155 (Aug.) 1943.

The authors report two cases of sensitivity to mercurial preparations in children. In one case, a generalized erythema and development of numerous bullae were noted. The patient was acutely ill, with a temperature of 104° F., a trace of albumin in the urine, and severe prostration.

In the second case, the eruption followed exposure to diapers rinsed in a 1: 4,000 solution of mercury bichloride. Starting in the diaper region, a generalized eruption with blisters in several areas involved the entire body. The temperature rose to 106.2° F., and suppression of the urine occurred.

The authors review the literature and comment that despite occasional severe reactions, no case of death caused by local application of a mercurial preparation to the unbroken skin has been reported.

(442) A generalized mercurial (cinnabar) reaction following tattooing. F. G. Novy. *Arch. Dermat. & Syph.* 49: 172–173 (Mar.) 1944.

A case report is given in which a patient suffered a generalized reaction following tattooing. In the area of tattooing the red areas alone showed vesiculation. One year previous to this time the patient had been tattooed. Patch testing with all the dyes (seven in all) revealed a positive reaction only to cinnabar and to ammoniated mercury ointment (U.S.P.) which also was used. It is concluded that tattooing with cinnabar (mercuric sulfide) can produce a generalized eruption in sensitive persons.

(443) Effects of arsenical compounds as administered in the United States Navy in 1943, with special reference to arsenical dermatitis. T. J. Carter, W. M. Chambers, and L. T. Anderson. *U. S. Nav. M. Bull.* 43: 787–799 (Oct.) 1944.

In 1943, medical officers of the Navy administered a total of 254,331 doses of arsenicals and reported the occurrence of 48 untoward reactions. Of these toxic reactions, there were 26 cases of arsenical dermatitis, a ratio of 1 to every 9,436 doses. Of interest in connection with a review of the causes of arsenical dermatitis are the instances in which premonitory signs are noted. These tend to indicate the necessity for careful examination and questioning of each patient before administering an arsenical.

(444) Dermatitis medicamentosa from the intravaginal use of floraquin. L. E. Gaul. *J. Iowa M. Soc.* 34: 493 (Dec.) 1944.

A case of dermatitis is described as occurring on the lower extremities and lasting 2 months following the intravaginal use of floraquin for treatment of *Trichomonas vaginalis*. Floraquin contains 63.9 percent iodine. Patch tests and scratch tests with the ingredients were performed, but were negative after 48 hours. The rash cleared 4 or 5 days after the drug was discontinued. Upon request, the drug was used again and after 4 days the rash reappeared.

(445) Dermatitis due to barbiturates. J. K. Potter and R. J. Whitacre. *Ann. Int. Med.* 21: 1041–1044 (Dec.) 1944.

A case of exfoliative dermatitis due to barbiturates is reported in a woman

46 years of age. Certain barbituric compounds cause dermatitis in 1 to 3 percent of cases and, occasionally, these reactions terminate fatally. Pentobarbital causes the most reactions. Pentothal and pentobarbital sodium rarely cause skin reactions.

In the case reported, the eruption began as a generalized erythema accompanied by chills, fever, and increased erythema whenever barbiturates were administered. Exfoliation began when the drugs were discontinued.

(446) A review of the literature for 1944: Drugs. E. A. Brown. *Ann. Allergy* 3:216–228 (May–June) 1945.

A review is presented of drugs used in the treatment of nasal allergy, bronchial asthma, and other allergies. Drugs which produce reactions of sensitivity, such as the sulfonamides and penicillin, are also discussed. Consideration is also given to barbiturates, plants and insects as causes of reactions; and to vasoconstrictors, histamine, and other drugs in the treatment of allergy.

(447) Boric acid ointment—a study of possible intoxication in the treatment of burns. C. C. Peiffer, L. F. Hallman, and I. Gersch. *J. A. M. A.* 128:266–274 (May 26) 1946.

Boric acid is absorbed in toxic quantities from ointments and from irrigations applied to burned or wounded areas involving loss or damage to large areas of skin. Boric acid is not toxic when administered in a single dose, but repeated doses result in accumulation in the brain, liver, body fat, and in both the white and gray matter of all parts of the central nervous system and in the peripheral nerves. The liver is only slightly affected histologically, the kidney shows tubular degeneration, and the skin shows polymorphonuclear infiltration and vascular engorgement.

Treatment of a burn involving only 4 percent of the surface area of the body with 10 percent ointment will produce pathologic changes. When large doses are given, death is due to a shocklike syndrome; in moderate dosage over several days, death may result from inanition due to convulsive tremors and meningismus. Large intravenous doses of isotonic solution of chlorides and plasma definitely antidote the toxicity. Because of the weak antiseptic value of boric acid, it is suggested that, for medicinal use, other more active and less potentially harmful therapeutic agents be employed.

Included also is an abstract of discussion of actual cases.

(448) A case of allergy to phenylhydrazine. B. Salmons. *Brit. J. Dermat. & Syph.* 58:235–237 (Sept.–Oct.) 1946.

A report is given of a case diagnosed as mild polycythaemia vera and treated with phenylhydrazine. The patient developed a diffuse and extremely irritable urticarial rash.

(449) Thallium poisoning in children. A. Kallner. *Ann. Paediat.* 167:188–189, 1946.

Accidental ingestion of thallium sulfate by 20 children resulted in arthralgia-myalgia-neuralgia, typical changes in the skin and nails, and transitory changes in other organs. Epilation of the scalp occurred in five cases. The toxic effects disappeared 4 months later.

(450) Sensitization dermatoses due to the ingestion of vitamin B Complex. J. C. White. *Bull. West. Suburb. Hosp.* 1:32–34 (Jan.) 1947.

A series of 26 cases are discussed in which vitamin B complex was shown to cause a lupus-type symmetric eruption of discrete, erythematous, scaly patches. References in the literature to vitamin B sensitivity are given.

(451) The sensitizing factor in Merthiolate. F. Ellis. *J. Allergy* 10:212–213 (May) 1947.

Patients with contact dermatitis were tested with thiosalicylate, ammoniated mercury, Merthiolate, and Sulfomerthiolate. It is concluded that the thiosalicylic radical is the usual sensitizing factor in Merthiolate sensitivity.

(452) Dermatitis from endocrine preparation. Queries and Minor Notes. *J. A. M. A.* 134:1515 (Aug. 23) 1947.

A dermatitis occurring after the ingestion of an elixir containing extracts of the urine of pregnant mares is probably of neurogenic origin due to increased nervousness and tension following the administration of rapidly absorbed estrogens. Allergic reaction to a contaminant may also be the cause. A purer oral estrogen is advised to better understand patient response.

(453) Allergic contact dermatitis due to wool fat and cholesterol. F. A. Ellis. *Arch. Dermat. & Syph.* 56:801–806 (Dec.) 1947.

A report is presented on nine patients who were sensitive to an oxycholesterol-petrolatum ointment base, Aquaphor.

Sensitivity to cholesterol, wool fat, Nivea Creme, and Qualatum were shown. Seven had used sulfathiazole ointment or had ingested sulfathiazole. It is thought that sulfathiazole acted as a sensitizer or had a synergistic sensitizing effect on the bases used in the ointment.

(454) Dermatitis following the use of nitrofurazone. W. R. Hill and W. E. Flood. *Arch. Dermat. & Syph.* 57: 124–128 (Jan.) 1948.

A case of dermatitis is described which developed following the use of 5-nitro-2-furaldehyde semicarbazone on a leg ulcer. The histologic picture is similar to that seen in psoriasiform eruptions due to drugs, and the course of the eruption supports the assumption that nitrofurazone is the causative agent.

(455) Hazards from phenothiazine. Queries and Minor Notes. *J. A. M. A.* 130: 182 (Jan. 19) 1948.

Phenothiazine may cause photosensitization. Except for this manifestation, other hazards are slight, but may include itching and reddening of the skin with occasional edema. Secondary anemia may sometimes occur if the drug is taken internally in therapeutic dosage.

(456) Argyria following prolonged intranasal medication with argyrol. R. L. Fisher and M. Zukerman. *J. Michigan M. Soc.* 47: 1229 (Nov.) 1948.

A case of argyria, arising from the use of argyrol for over 20 years, is described. The symptom noted was a slate blue color of the face, lips, buccal mucosa, chest wall, abdomen, and back.

(457) Dermatitis from mother liquor of aspirin. F. Chivovino. *Med. depor. y trab.* 13: 2126–2127 (Dec.) 1948.

Cases of dermatitis occurred in the process of making aspirin, especially from contact with the mother liquor from which aspirin had been removed. The liquor consists of acetic anhydride, acetic acid, and benzene, all of which have recognized actions on the skin. Local treatment with sodium bicarbonate, use of a protective ointment, and limitation of contact greatly reduced the number of cases.

(458) Boric acid poison. A. W. Fellows, J. S. Campbell, and R. C. Wadsworth. *Maine M. A. J.* 39: 339 (Dec.) 1948.

Three deaths are reported in which boric acid poisoning was suspected. Boric acid was found in the brain and liver at autopsy of two of the cases. Manifestations of boric acid poisoning are erythema of the skin followed by exfoliative dermatitis; ileitis; hemorrhagic papillary edema of the bladder mucosa; and degeneration in the central nervous system. Large doses of boric acid produce severe shock.

(459) Multiple cutaneous effects of potassium sulfocyanate. L. Hollander, G. F. Evans, and F. J. Krug. *Arch. Dermat. & Syph.* 59: 112–114 (Jan.) 1949.

A case is reported of cutaneous signs of toxicity from potassium sulfocyanate administered to control hypertension. Following a total of 10 weeks of therapy, the patient developed a rapid frontoparietal loss of hair, a severe pruritus ani, and a sensation of soreness of gingival mucous membrane. The mucous membrane showed numerous petechiae, but no true gingivitis.

(460) Contact dermatitis due to phenolphthalein. L. C. Skinner, Jr. *Arch. Dermat. & Syph.* 59: 338 (Mar.) 1949.

A case is reported of a contact dermatitis due to phenolphthalein. White phenolphthalein, 1 gr. to an ounce of 70 percent ethyl alcohol, added to discourage ingestion, was applied to a patient as an alcohol rub, resulting in a vesicular dermatitis. A patch test with 0.2 percent aqueous solution of the phenolphthalein also gave a vesicular reaction. The patient was not challenged with an orally administered dose of this material.

(461) Dermatitis medicamentosa (fixed type) from use of "666" for colds. E. B. Ritchie and W. F. Spiller. *Arch. Dermat. & Syph.* 59: 487–488 (Apr.) 1949.

A case of dermatitis medicamentosa from the use of *666* for colds is presented. The constitutents are given, one of which, antipyrine, resulted in a positive reaction when taken orally. Tripelennamine hydrochloride also reproduced the symptoms.

(462) Sensitivity to tetraethylammonium chloride. M. H. Samitz and P. N. Horvath. *Arch. Dermat. & Syph.* 59: 486–487 (Apr.) 1949.

A case of intense generalized pruritis from the use of tetraethylammonium chloride for thrombophlebitis is presented. The generalized vasodilation may be the reason for the pruritis. The authors know of no other report of cutaneous sensitivity to this drug.

(463) Drug allergy. W. B. Sherman. *J. A. M. A.* 140: 447 (June) 1949.

The author points out the reactions that drugs can produce, such as asthma, urticaria dermatitis, drug fever, granulocytopenia, rhinitis, and arthralgia. Aspirin is the drug most frequently causing asthma and rhinitis. Drugs of practically all types, crystalloids, proteins, and gums may cause urticaria and angioedema, penicillin causing urticaria more often than other drugs. Fever often follows administration of sulfonamide drugs. Rashes are the most common manifestations of drug allergy, and sulfonamides are again frequently the cause.

Recognition of early sensitization signs and discontinuation of the causative drug will usually prevent the more serious type of reaction.

(464) Contact dermatitis due to thiamine. F. C. Combes and J. Groopman. *Arch. Dermat. & Syph.* 61: 858–859 (May) 1950.

Two cases of contact dermatitis are reported in women working in a pharmaceutical manufacturing plant. The women affected had the job of filling the ampules and vials with solutions of thiamine hydrochloride. Both gave strong positive patch test reactions to thiamine, cleared upon removal from the job, and flared on return to work at the same machines. They were advised to change jobs and to avoid contact with thiamine.

(465) Appraisal of the toxicity of the gamma isomer of hexachlorocyclohexane in clinical usage. L. K. Halpern, W. E. Wooldridge, and R. S. Weiss. *A. M. A. Arch. Dermat. & Syph.* 62: 648–650 (Nov.) 1950.

The gamma isomer of hexachlorocyclohexane appears to be an excellent therapeutic agent with a wide margin of safety. On the basis of a small series of cases, it seems that the concentration of the agent in the vehicle may be reduced well below that of 1 percent without a sacrifice of clinical effectiveness.

(466) Eczematous reactions to "kwell" (gamma benzenehexachloride). A. J. Reiches. *A. M. A. Arch. Dermat. & Syph.* 64: 209 (Aug.) 1951.

Two cases of a papulovesicular eruption 24 hours after applying kwell ointment are reported. Although kwell is a valuable contribution to the treatment of scabies, it should be applied with caution. It might be advisable to perform a patch test with the medication before applying it therapeutically to a patient.

(467) Dermatological problems among pharmaceutical workers. J. E. Dalton and J. D. Peirce. *A. M. A. Arch. Dermat. & Syph.* 64: 667–675 (Dec.) 1951.

The incidence of industrial dermatitis in a large pharmaceutical house is reported as being surprisingly low. This record is attributed to a sound pre-employment screening program and to the maintenance of good housekeeping, the provision of protective devices, and the application of safety engineering principles.

In addition to a blood count, urinalysis, and chest X-ray, a complete history is taken, with special attention to allergic diseases. If an allergic history is obtained, prophetic patch tests are done. In one year, four persons were rejected; three because of an allergic history, one because of positive patch test reactions to substances to be handled at the proposed job.

Out of 126,129 visits to the plant dispensary, 1,488 calls, or 1.2 percent, were referable to either an occupational or non-occupational cutaneous ailment. Patch tests were done in 322 cases. There were 43 positive reactions as follows: penicillin, 28; thiamine hydrochloride, 9; mercurial antiseptics, 2; barbiturates, 2; acetylsalicylic acid, 1; and streptomycin, 1.

Males and females were equally affected. Incidence of contact dermatitis diminished with increasing age of workers. However, this fact does not prove *hardening*, but suggests that more experience leads to greater caution.

No workers had to leave the company because of contact dermatitis. In most instances, transfer to another department was not necessary; limiting exposure by changing work within the unit was sufficient. Only two patients with occupational dermatitis lost time from work because of their difficulties.

(468) Skin diseases caused by phenothiazine (thiodiphenilamine). M. Fleischhacker. *Arhiv. Hig. Rada.* 2: 303, 1951.

Four cases are reported of dermatitis occurring in pharmaceutical workers engaged in the making of tablets from phenothiazine. The dermatitis involved the exposed parts of the body, and was followed by desquamation. Two patients displayed a red coloring of the nails; and one, a red pigmentation of the hair. The toxicology of phenothiazine is reviewed

in connection with the skin manifestations of these patients.

(469) Contact dermatitis due to n-ethyl-o-crotonotoluide ointment (Eurax'). E. S. Bereston. *A. M. A. Arch. Dermat. & Syph.* 65:100–101 (Jan.) 1952.

A case of contact dermatitis due to n-ethyl-o-crotonotoluide (Eurax') ointment is reported. The ointment base alone gave a 1-plus patch test reaction in 48 hours, while the active chemical gave a 4-plus reaction in 72 hours.

(470) Cutaneous allergy from local contact with isonicotinic acid hydrazid. J. W. Jordan. *J. A. M. A.* 149:1316 (Aug. 2) 1952.

Development of dermatitis venenata from contact with isonicotinic acid hydrazid is reported. Patch tests indicated that isonicotinic acid hydrazid alone was the offending agent.

(471) Serious accidents owing to p-aminosalicylic acid. Foreign Letters. *J. A. M. A.* 150:506 (Oct. 4) 1952.

At a meeting of the Medical Society of the Paris Hospitals, A. Tzank and E. Sidi reported a case of cutaneous sensitization to p-aminosalicylic acid which occurred in a woman working in a laboratory of pharmaceutical products. Dermatitis developed on the face and hands of the patient.

Epidermal tests with p-aminosalicylic acid revealed a very noticeable positivity. The check by injection of a dose of 0.25 gm. of p-aminosalicylic acid brought about not only recurrence of the eruption, but also a resumption of positive results of the cutaneous tests and the reappearance of alarming general and febrile accidents. The authors conclude that even slight cutaneous sensitivity made the patient susceptible to serious accidents when the injection was made.

(472) Dermatitis medicamentosa simulating Hodgkin's Disease due to mercury compounds. Murry M. Robinson. *Ann. Allergy* 10:21–23 (Jan.–Feb.) 1952.

An explosive cutaneous response to local contact with mercury ointment is reported. The patient manifested such a profound sensitivity to mercury that the diagnosis of Hodgkin's disease was made because of the generalized lymphadenitis.

(473) Eczematous hypersensitivity to coal tar. C. R. Simon and R. Brandt. *A. M. A. Arch. Dermat. & Syph.* 68:584–586 (Nov.) 1953.

Three cases of allergic eczematous contact dermatitis from therapeutically applied coal tar are reported. In two patients, detailed patch tests were performed with various fractions of coal tar. The common aromatic fractions of coal tar gave negative reactions. Both patients had positive patch tests with crude shale oil. When the fractions of shale oil were tested, cracked residuum gave a positive reaction in one patient; heavy distillate gave a positive patch test in the second case. Since the content of the higher aromatic compounds increases with higher boiling point, these may be suspected as the sensitizing substances.

(474) Sensitivity to thiamine hydrochloride. Review of the literature and report of a case. V. C. Baird and H. T. Englehardt. *M. Bull., Standard Oil Co.* 6:364–366 (Oct.) 1946.

A case is reported of allergy in a woman who had received thiamine hydrochloride, nicotinamide, and riboflavin subcutaneously, followed by thiamine hydrochloride intravenously. The reaction to the latter administration is described. Presence of Prausnitz-Kustner antibodies was shown. All other reported cases of allergy to thiamine hydrochloride had similar reactions.

Dyes

(*See also Cosmetics*)

(475) Dermatitis of hands in Ditto machine operators. Queries and Minor Notes. *J. A. M. A.* 123:1149 (Dec. 25) 1943.

Dermatitis of the hands among Ditto machine operators is not of infrequent occurrence. The cause of the dermatitis, if occupational, is probably the cleaner used to remove the indelible dyes from the skin, rather than the carbon paper.

Dye removers for this purpose usually consist of a soap or vanishing cream base containing a solvent, such as carbitol or

carbon tetrachloride. Dermatitis may well be caused by the frequent use of a dye remover of this type. Not only does such a dye remover tend to remove the indelible dye from the epithelium, but it also tends to remove the fatty secretions of the skin.

The indelible inks used on Ditto machines consist of such dyes as methyl violet and crystal violet, as well as various oils and solvents. In rare instances, sensitivity may be present to one or more of these ingredients. A method is suggested for the removal of the indelible ink stains without the use of these solvents.

(476) Aniline: Skin contact or exposure to vapors due to equipment, accident, carelessness may cause serious or fatal poisoning. Controlling Chemical Hazards Series No. 5, U. S. Dept. of Labor, 1946.

Safety precautions are outlined for the industrial use of aniline in the aniline dye, pharmaceutical, rubber, and ink industries, and in the intermediate manufacture of many organic compounds. The physiologic response to various concentrations of aniline is discussed.

(477) Aniline poisoning. E. Merlevede. *Rev. med. Louvain* [No vol. number] No. 20, 309–317, 1946.

Three cases of severe industrial aniline poisoning are recorded—one from the vapor, one from liquid spattering on the clothing, and one from chloraniline. Several cases of poisoning from shoes or gloves also are reported. Aniline can penetrate the body by the respiratory, alimentary, or cutaneous route, the last being the most common. It is excreted by the lungs, urine, and feces.

Acute intoxication varies from slight cases with headache, anorexia, nausea, possibly angina, and just perceptible cyanosis, to severe cases with deep cyanosis, coma, and oliguria. Chronic intoxication may give any of a number of signs and symptoms, including secondary anemia, persistent headache, dermatitis, hepatitis, asthma, cutaneous dysplasia, cystitis, or tumors of the bladder.

In the treatment of severe acute intoxication, the author recommends injection of nikethamide, phlebotomy, intravenous injection of 1 percent methylene-blue solution, and transfusion of blood in an amount less than that removed by bleeding.

(478) Dermatitis following paratoluylenediamine hair dye. M. W. Lawrence. *J. Invest. Dermat.* 8:177–181 (Mar.) 1947.

Six cases of typical contact dermatitis following the use or handling of hair dyes containing paratoluylenediamine are described. No evidence of systemic absorption was shown. Results of patch tests are reported.

(479) Eczematous cross-hypersensitivity to azodyes in nylon stockings and to paraphenylendiamine. S. Dobkevitch and R. L. Baer. *J. Invest. Dermat.* 9:203–211 (Oct.) 1947.

The authors report on a series of patients with or without stockings dermatitis who were found to have cross-hypersensitivity to the dyes in nylon stockings and to paraphenylendiamine. R. L. Mayer's explanation of this cross-hypersensitivity is given.

(480) Aromatic amines and azodyes in allergy and cancer. R. L. Mayer. *J. Invest. Dermat.* 10:389–396 (May) 1948.

The mechanism of sensitization of the skin by the aromatic amines and azodyes is discussed. The relationship between hypersensitiveness to compounds of quinone structure and aniline cancer is reported in detail.

(481) Examples of cross sensitization in allergic eczematous dermatitis. R. L. Baer. *Arch. Dermat. & Syph.* 58:276–285 (Sept.) 1948.

Examples are presented of cross sensitizations among various compounds containing aniline as part of their molecule. A knowledge of this occurrence may help to explain the basis for multiple sensitizations and the causation of sensitization dermatitis by compounds which ordinarily have very low sensitizing indexes.

(482) Acute aniline poisoning, its clinical-hematologic course and its treatment. B. Jasinski. *Schweiz. med. Wchnschr.* 78:1282 (Dec.) 1948.

A case of acute aniline poisoning in a dyer is reported. During the removal of aniline from a container, the chemical splashed over the patient's clothes and was absorbed through the skin. On admission to the hospital, the patient was severely cyanotic. His blood was dark-brown in color; methemoglobin could not be demonstrated in the serum, but was found spectroscopically in a specimen of

hemolyzed blood. Following treatment with large doses of ascorbic acid, the patient made a complete recovery.

(483) Poisoning from aniline marking on diapers. *J. A. M. A.* 140:684 (June) 1949.

Aniline used in the inks for stamping diapers has been reported to produce intoxication in infants which may be fatal. It is absorbed through the skin and produces cyanosis through conversion of hemoglobin to methemoglobin. Infants, especially premature ones, are particularly susceptible to diminished supply of oxygen. Prevention of such accidents is recommended by boiling the diapers after they are stamped, followed by thorough drying.

(484) Induced sensitization to certified dye: hypersensitivity manifested on sixth exposure to commercial patch testing solutions. L. Jaffe. *Arch. Dermat. & Syph.* 62:418–421 (Sept.) 1950.

A case of specific sensitization to a certified dye used to identify patch testing solutions is reported. The induced sensitization manifested itself on the sixth exposure to the dye. The need to add a dye to test solutions may be questioned; but if a dye is added, patch tests with the colored diluent as a control should be performed. When possible, patch tests should be applied either simultaneously, or in as short a time as possible, to avoid induced hypersensitivity to components of the diluent.

(485) Bleeding and blood transfusions in percutaneous poisoning with aniline. A. Pignero. *Minerva med.* 70:135 (Sept.–Oct.) 1950.

Two cases of aniline poisoning are attributed to the wearing of shoes made of aniline-dyed material. Transfusion with whole blood was found to be of value in treatment after oxygen and intravenously injected methylene blue failed.

(486) Methemoglobinemia of acute aniline intoxication in experimental animals and human beings: cyanosis and anemia due to Heinz bodies. L. Ghiringhelli and C. Molina. *Med. d. lavoro* 42: 125 (Apr.) 1951.

A report is made on four cases of acute poisoning from aniline dye resulting from the use of shoes dyed black with aniline. The results of studies of animals injected with solutions of aniline are also described. The cyanosis produced was proportional to the methemoglobinemia. The slight anemia observed after injection was not proportional to the severity of the antecedent methemoglobinemia, but to the abundance of Heinz bodies found in the peripheral blood.

Explosives

(487) Some toxic reactions of common explosives. J. H. Eddy, Jr. *Indust. Med.* 12: 483–486 (July) 1943.

This paper is intended particularly for private practitioners, who are, in general, not familiar with the material treated. During World War II, fatal cases of poisoning due to TNT have been noted both in this country and in Europe. Evidences and results of exposure to TNT are given, with methods of treatment and measures for prevention. The effects from tetryl, while less serious than those associated with TNT, nevertheless call for similar preventive measures.

(488) Effects on the skin of irritant explosives. C. Swanston. *Proc. Roy. Soc. Med.* 36: 633–638 (Oct.) 1943.

Industrial or contact dermatitis is the cause of more lost time in British munition factories than any other industrial complaint, the time lost being only slightly less than that due to accidents. The principal irritant explosives are mercury fulminate and tetryl. TNT may be added to this list because of the severity, rather than the incidence, of the dermatitis produced. Symptoms produced by the various explosives are described.

Treatment involves: (1) Removal from contact, (2) avoidance of all skin irritants, including soap and water, after initial cleansing, and (3) allaying of irritation to avoid scratching and to give the patient sleep and rest. While there may be variations in individual treatments, regularity and close supervision are important. Dressings must be light. Prophylaxis includes: (1) Proper selection of workers, (2) Maintenance of hygienic working conditions, (3) wearing

of protective clothing, (4) thorough washing, and (5) use of barrier substances, such as creams and powders.

(489) Dermatitis from explosives. L. Schwartz. *J. A. M. A.* 125: 186–190 (May 20) 1944.

The following explosives are considered: Tetryl, TNT, amatol, ammonal, mercury fulminate, hexite, lead styphnate, sensol ammonium picrate, and picric acid. Factors discussed in each case are as follows: (1) Operations in which dermatitis occurs, (2) percentage of cases among workers, (3) parts of the body involved, (4) hardening from exposure, (5) form of treatment, and (6) preventive measures.

Black powder, smokeless powder, and lead azide rarely cause dermatitis. No cases of dermatitis or systemic poisoning caused by pentaerythratoltetranitrate (PETN) have yet been reported. Nitroglycerine causes no dermatitis but can be absorbed through the skin and can cause cardiovascular disease.

(490) Credit where it is due. P. V. McNutt. *Indust. Med.* 13: 18 (Sept.) 1944.

Industrial hygiene activities centering in the Public Health Service were greatly improved and intensified during World War II. During the First World War, in a single shell-loading plant operating for about 20 months, there were 7,000 cases of systemic poisoning from TNT and 105 deaths. During the Second World War in some 20 shell-loading plants, reports covering 18 months' experience indicate that there were 284 lost-time cases of systemic poisoning due to TNT and only 14 deaths. Skin diseases due to contact with TNT were almost universal in shell-loading plants during the First World War.

In the fiscal year 1942, 35 State and local unit rendered industrial hygiene services to nearly 6,000 establishments employing over 2¼ million workers, all in war industry.

(491) Sensitization to "tetryl". P. G. H. Gell. *Brit. J. Exper. Path.* 25: 174–192, 1944.

Tetryl causes much dermatitis among workers who handle it. Guinea pigs were successfully sensitized to tetryl; their protein reacts with tetryl to form an antigenic picrylprotein. Picrylproteins were made in vitro, but immunization experiments showed no correlation between circulating precipitins and the antibodies responsible for the skin reaction.

(492) Tetryl Dermatitis. H. M. L. Murray, R. W. Prunster, and R. D. Anderson. Tech. Rep. No. 2. Australia Dept. of Labour and National Service, Melbourne, 1944. 64 pp.

Tetryl, or trinitrophenylmethylnitramine, is a powerful explosive, known in Army nomenclature as *C. E.* (composition exploding). A very common effect of contact with this material is tetryl dermatitis, or *C. E. rash.*

This booklet embodies the results of a survey of two Australian fuse-filling plants. The biggest hazard lies in the actual handling of the material by hand. However, since that rarely occurs, the largest number of cases is found in the stemming and pelleting operations where the concentration of air-borne powder is greatest. The highest incidence occurs during the 14th to 24th day of service, decreasing thereafter to a stationary low level. This drop is attributed to the desensitization of the workers and probably also to the establishment of hygienic measures.

In addition to the rash, other symptoms are occasionally encountered; these include edema of the eyes, nosebleed, vomiting, nausea, dizziness, and headache. Prophylactic measures include showers, complete change of clothing after work, and the use of protective creams.

(493) Acute toxic manifestations of PETN. W. F. von Oettingen and D. C. Donahue. *In* Pub. Health Bull. No. 282, U. S. Public Health Service, 1944. p. 23.

In order to determine whether or not PETN causes irritation of the skin, 20 persons (18 males and 2 females) were patch tested with PETN. The material was applied directly to the skin and ¼-inch square gauze patches soaked with acetone were placed over the PETN, then sealed with cellophane and adhesive tape. All of the tests were negative when the patch was removed 48 hours later, and there were no delayed reactions. Twelve days later the 48-hour patch was repeated on 16 persons, and 16 days later on 4 persons, with negative results.

These results indicate that none of the 20 persons was sensitized under the conditions of these experiments and that PETN is neither a primary irritant nor a strong sensitizer.

(494) The occurrence of Heinz bodies in trinitrotoluene workers. B. L. Horecker. *J. Indust. Hyg. & Toxicol.* 27: 85–88 (Mar.) 1945.

An investigation was undertaken to determine whether the level of turbidity of

hemolyzed blood, reflecting the Heinz body content, could be correlated with the degree of exposure of TNT in ordnance workers. The analytical procedures and results are described in detail. It is concluded that turbidity can be detected at low levels by measuring the density of hemolyzed blood samples at suitable wave lengths before and after centrifugation, but that it remains to be determined whether or not this turbidity bears a definite relation to degree of exposure and extent of intoxication.

(495) Dermatitis in the American munitions industry. J. Q. Gant, Jr. *Virginia M. Monthly* 72: 158–163 (Apr.) 1945.

This article discusses the explosives which most often are responsible for dermatitis, namely, tetryl, fulminate of mercury, lead azide, lead styphnate, TNT, DNT, amatol, explosive D, hexite, PETN, and RDX. The characteristic symptoms and degree of danger from each chemical are described.

Protective measures include the wearing of proper clothing laundered by the plant, clean gloves, and closely fitting caps or hoods, the use of ointments, and the taking of shower baths at the close of work. Only new workers, those who do not become *hardened*, and workers having mild dermatitis need observe the protective measures.

Treatment procedures are the same as for any acute dermatitis. Workers with mild cases are usually kept under treatment while on the job and should be removed only if the dermatitis becomes severe or spreads.

(496) Round table discussion on industrial health. E. J. Kirk, Chairman; abstract from discussion of Ray Hill. *Indust. Med.* 14: 452 (May) 1945.

A small number of employees who work with TNT and tetryl develop dermatitis in 1 to 3 weeks after the first contact. If the workers are kept on the job, the dermatitis disappears in practically all cases (they become hardened). Hill does not consider it a true allergy.

(497) Studies on the effects of ammonium picrate on man and certain experimental animals. F. W. Sunderman, F. D. Weidman, and O. V. Batson. *J. Indust. Hyg. & Toxicol.* 27: 241–248 (Nov.) 1945.

Observations on a small, selected group of workers in ammonium picrate revealed the most common occupational health problem to be dermatitis. Upper respiratory disease was negligible. Among 71 workers studied over a period of 15 months, 7 exhibited a dermatitis which was believed to be caused by this agent. It appears that the picrate does not act as a primary irritant, but that sensitization to it may develop.

The staining of the skin and hair was a source of cosmetic annoyance, especially among women workers. It was apt to occur around the hair line of the forehead, the nape of the neck, and on the palms. Systemic toxicity was not recognized among the workers.

However, experimental animals that were severely exposed to ammonium picrate dust for periods up to 12 months revealed lesions that suggested definite injury to certain tissues. Histologic examination showed that brown granular deposits, presumably picrate, were widespread, particularly in lungs, liver, heart muscle, kidney, and the circulating blood.

The problem of preventing exposure to ammonium picrate would appear to be primarily one of controlling atmospheric contamination. Figures are given for the amount found in this study. Methods are described for the quantitative determinations of ammonium picrate in the atmosphere and for its microchemical identification in histologic sections.

(498) Urticaria due to trinitrotoluene. J. F. Preston, Jr., and C. A. Watkins. *Arch. Dermat. & Syph.* 53: 134–136 (Feb.) 1946.

The usual picture of trinitrotoluene dermatitis is that of a vesicular eruption of exposed parts, an eczematoid eruption, or a scarlatiniform eruption. However, a case report is presented of a 25-year-old female worker who developed an urticarial reaction.

Pre-employment history and examination were not pertinent. An itching, vesicular eruption of the hands appeared 9 days after she started work. While the dermatitis was responding to calamine lotion therapy, the patient began to suffer from a marked productive cough with asthmatic wheezes, and, finally, after 33 days, she developed a generalized urticaria. The urticaria was relieved by ephinephrine but recurred whenever the patient came into contact with trinitrotoluene. Work away from the offending substance has been without reaction.

(499) Occupational diseases in government-owned ordnance explosives plants. Observations on their prevalence and control during World War II. W. J. McConnell, R. H. Flinn, and A. D. Brandt. *Occup. Med.* 1: 551–618 (June) 1946.

The results of an extensive industrial health and hygiene program on the inci-

dence of occupational diseases in 101 Government-owned ordnance explosives establishments are presented. These plants manufactured 95 percent of all the Nation's supply of military explosives. They had an average of 309,000 operating employees potentially exposed to many toxic materials. The report covers 37 months of operations. Several Government organizations cooperated in research, plant surveys, and educational programs.

In 986,000 man-years of operations, there were only 28 fatalities from occupational disease, including 6 in the last 18 months of the war. Of the 28 (3 per 100,000 workers per year), 22 were caused by TNT, 3 by nitrogen oxides, 2 by carbon tetrachloride, and 1 by ethyl ether. For every thousand man-years of production, there were only 2.4 cases of occupational illness involving lost time. Dermatitis accounted for two-thirds of the cases. The rate for dermatitis also was progressively reduced during the period of the report.

Cases of mild or nondisabling occupational diseases also were reported. The trend and distribution of cases of mild dermatitis and other exposures were similar in pattern to the lost-time illness cases. Workers showing signs or symptoms of toxic exposures were transferred to other jobs until exposures could be controlled more effectively. The rate of transfer also decreased materially.

In all respects, the fatality and illness rates were a small fraction of those during World War I, when the total fatalities from TNT alone numbered 475. So far as is known, this is the first large-scale demonstration of what a vigorous industrial health and hygiene program can accomplish by preventing illness and conserving manpower in a large industry presenting exposure to many poisonous compounds.

(500) Tetryl exposure, analysis of four years of medical experience with tetryl. C. N. Fischer and H. D. Murdock. *Indust. Med.* 15: 428–429 (July) 1946.

Tetryl dermatitis is a major problem in the shell-loading industry, as indicated by the high number of cases. A total of 3,807 cases is reported in the 4-year period under study. *Hardening*, or acquired tolerance, to tetryl exposure has been difficult to evaluate, but no systemic diseases have resulted from such exposure. In dermatitis cases, removal from exposure is a production as well as a medical problem. The most satisfactory controls include process engineering, efficient housekeeping, and enforcement of hygienic measures.

(501) Tetryl dermatitis. I. Ultraviolet irradiation of tetryl (2,4,6-trinitrophenylmethylnitramine). I. A. Brownlie and W. M. Cumming. *Biochem. J.* 40: 20–27, 1946.

Picric acid and methylpicramide are possible irradiation products of tetryl. Methylpicramide is an active dermatitic agent, and 80 percent tetryl is converted to it by 3 hours of ultraviolet radiation (longer radiation of 16 hours completely destroys the methylpicramide). The absorption curves of picric acid and of methylpicramide are very similar, but evidence points to the latter as the irradiation product.

M-hydroxytetryl is not dermatitic and shows a characteristic absorption band by which its precursor m-nitrotetryl is easily recognizable in crude tetryl. Picramide, a known dermatitic agent, is not found either in the crude tetryl or in the irradiated tetryl. 2,4-dinitromonomethylaniline, 2,4-dinitrophenylmethylnitramine and 2,4,6-trinitrophenylnitramine are not formed by irridiation.

The absorption of ultraviolet rays by the epidermis is sufficiently great to make possible photochemical changes of tetryl. The conversion product, methylpicramide, reacts probably with the 1-cystine of keratin, and the altered tissue protein acts as an antigen on the surface skin layers. An antigen-antibody reaction takes place within the tissue cells.

(502) Clinical effects of tetryl. H. B. Troup. *Brit. J. Indust. Med.* 3: 20–23, 1946.

Tetryl, or trinitrophenylmethylnitramine, is a potent agent in producing dermatitis characterized by erythema of the face and the neck. This condition is more common and more severe in men than in women. Respiratory and gastric complaints are of minor importance. The main causal factor appears to be personal idiosyncrasy. Provocative or secondary causes are lack of personal cleanliness, careless use of barrier substances and poor general health.

The main factor in prevention is personal and shop cleanliness. The dissemination of health information, the use of barrier substances, hair protection, the provision of adequate shop ventilation, and guarding by *lighthouses* are additional preventive measures.

(503) Exposure to TNT. Queries and Minor Notes. *J. A. M. A.* 135: 878 (Nov. 29) 1947.

The literature on protective care of workers exposed to TNT advises that a 5- to 10-percent solution of sodium sulfite

be used before the soap and water cleansing. The correspondent asks whether this solution acts as a cleansing agent or merely as an indicator. The reply states that it acts as both. It helps to dissolve TNT and acquires an orange color if TNT is present. A liquid soap is mentioned in which 5 to 10 percent of potassium sulfite and 5 percent to 15 percent of a wetting agent are dissolved. But potassium or sodium sulfite solution can be used before the water cleansing.

(504) Tetryl dermatitis and its prevention. W. M. Cumming and I. A. Brownlie. *In* **Dust in Industry.** Society of Chemical Industries, London, 1948. P. 147.

Tetryl dermatitis may be due to an oxidation product formed by the sunlight or ultraviolet light. Tetryl is oxidized to N-methyl picramide which forms an antigen on reacting with skin protein. Most barrier creams are not effective against tetryl or TNT, but Camraild is effective.

(505) Evidence of systemic effect of tetryl. H. L. Hardy and C. C. Maloof. *Arch. Indust. Hyg. & Occup. Med.* 1: 545 (May) 1950.

The fact that tetryl is a potent sensitizer and causes dermatitis accounts for a rapid turnover in personnel and renders prolonged exposure to high environmental concentrations of tetryl unlikely, even in poorly run converted plants. Scrupulous care and protection in government ordnance plants also accounts for the low incidence of cutaneous and systemic problems from handling tetryl.

Eight cases of permanent damage from handling tetryl in a small wartime explosive plant are reported. In addition to a contact type of dermatitis, tetryl caused a yellowish pigmentation of the skin and hair, irritation of the respiratory tract with actual asthmatic dyspnea, and liver damage.

(506) Tetryl toxicity: a summary of 10 years' experience. B. B. Bergman. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 5: 10–20 (Jan.) 1952.

The history, properties, and manufacture of tetryl are reviewed. During a 10-year period, the author encountered no constitutional poisoning attributable to tetryl. The most common problems are those related to the skin. Workers exposed to tetryl experience a yellowish pigmentation of skin and hair which disappears slowly after exposure ceases. Tetryl is an agent to which some workers become exquisitely sensitive, and these must be removed from exposure.

Hygienic problems associated with tetryl handling are reviewed.

(507) Chronic exposure to nitroglycerin. Queries and minor notes. *J. A. M. A.* 149: 315 (May 17) 1952.

Glyceryl trinitrate is a direct irritant to the skin and more so to the mucous membranes. Like mercury fulminate, another explosive, it has a way of working in under the nails, with destructive results. Otherwise, it leads to skin drying and ulceration, notably of the palms. Handling of the male genitalia with contaminated fingers could lead to penile irritation. Glyceryl trinitrate is readily absorbed through the skin with ensuing constitutional effects. The characteristic feature of systemic involvement, whatever the portal of entry, is headache. In the absence of headaches, other constitutional characteristics may be doubted. Diarrhea as a manifestation of enteritis is common, otherwise the disturbances are those associated with low blood pressure.

Fibers

FIBERGLASS

(508) Glass fiber: Pathology and hygiene of workshops. J. Champeix. *Arch. d. mal. profess.* 6: 99, 1945.

Development of the glass fiber industry in France has brought with it the question of injurious effects upon the workers. These are the same as those reported in this country, namely: mechanical irritation, consisting of cutaneous erythema with pruritus; blepharitis, and rhinopharyngeal irritation. No evidence of pulmonary changes was observed.

(509) Investigations on the effect of glass fibers (glass silk, glass wool) on the skin. M. Leder. *Dermatologica* 91: 138, 1945.

Glass silk with a diameter of about 0.03 mm. and glass wool with a diameter of about 0.02 mm. are now widely used

for purposes of insulation. Twenty persons working with this material developed scattered red nodules, the size of a pinhead. These were found usually, though not exclusively, in the follicles in the interdigital spaces, on the wrists, and on the flexor side of the forearm. The nodules caused itching and burning sensations, sometimes of high intensity. These phenomena could be provoked experimentally. Histologic examination revealed minute lesions which were not of an allergic eczematous character, leading to the conclusion that infectious folliculitis may occur, but never an eczema.

(510) Dermatoses from glasswool. J. Pellerat and J. Coudert. *Arch d. mal. profess.* 7: 23, 1946.

Dermatosis from glasswool is not serious, but may cause marked pruritus. Primary lesion is a small red papule which rarely becomes infected. Preventive measures recommended are (1) change clothes and underwear after work, (2) take showers, and (3) wear loose garments at work.

(511) Fiberglass plastics. J. R. Erwin. *Indust. Med.* 16: 439–441 (Sept.) 1947.

Fiberglass is used in plastics as an effective low weight insulating material, a substitute for fabrics, and for many medical purposes. Some of the latter are as a blood plasma filter, surgical suture material, bandages for burns to determine the nitrogen loss in the exudate, a tracer thread which is opaque to X-ray in surgical sponges, and as lightweight artificial limbs. These make it imperative that industrial physicians be familiar with the substances used, the possible complications that can arise from their processing, and their comparative safety when properly controlled. The majority of cases of industrial medical significance are adequately controlled by the hygienic measures outlined.

(512) Dermatoses from glass wool. J. Pellerat. *Ann. Dermat. & Syph.* 7: 25, 1947.

The lesions occurring in glass wool workers and suggestions for preventing skin contact with the spicules of glass are discussed.

TEXTILES

(513) The incidence and prevention of dermatitis from textile finishes. L. Schwartz. *Tr. 32d Nat. Safety Congr.* 1: 658–660, 1943.

Several years ago, following a number of outbreaks of dermatitis which were traced to resin finishes on clothing, a method for testing any new material of that nature was advocated. It consisted first of animal experiments, followed by patch tests for primary and secondary sensitivity. Manufacturers of finishes have progressed a long way since the time that sulfonated oils and starches were used to give fabrics selling appeal. We now have, among others, crease-proof, run-proof, crease-retaining, waterproof, and fireproof finishes. All the chemicals needed for finishes may potentially cause dermatitis, and before they are put out for use by the public, they should all be tested in the manner described herein.

(514) Textile dermatitis. J. H. T. Davies, and A. N. Varker. *Brit. J. Dermat.* 56: 33 (Feb.) 1944.

Of the 670 admissions to the dermatologic wards of a military hospital, 16.4 percent were for dermatoses, proved by patch tests to be wholly or partly due to woolen textiles.

The first of these cases was discovered among patients repeatedly referred for treatment of scabies. There is a very close resemblance in the symptoms of scabies and textile dermatitis.

Treatment consists largely in removing the irritant. The patient sleeps between sheets and wears cotton or linen shirts, pajamas, and underclothes. Calamine lotion is as effective as anything for local relief.

Eruptions of long standing, with strongly positive reactions of patch tests, especially if there are positive reactions to other substances (e. g., respirator rubber, quinine, elastoplast), must be regarded as incurable. The mild and moderate cases tend to relapse.

(515) Fire-retardant treatment for fabrics. Industrial Data Sheet No. D. T. 2. National Safety Council, Chicago, 1944.

The *fireproofing* of fabrics by chemical means makes them fire-retardant only, protecting only from light sparks, small flames or temperatures up to 400–500° F. For many purposes, such fireproofed material is preferable to asbestos or leather. There are two types of fire-retardant treatments: (*a*) water soluble, and (*b*) weather-resistant or water insoluble. The materials for the water-soluble treatment are inexpensive, easily obtained, and easily applied. The treatment must be repeated after laundering.

Several frequently used formulas are listed with properties of each material including flame-resistance, afterglow depressing, corrosion of metal parts, and durability, strength and flexibility of the

treated fabric. The water-insoluble treatments are less used, but are very effective for particular types of garments or other material. Most effective results are obtained with mixtures of chlorinated hydrocarbons and inorganic salts. The chlorinated hydrocarbons liberate hydrogen chloride, not in sufficient quantities to be toxic but sufficient to blanket the flame. Stannic oxide is also effective against weather and fire, but does not impart resistance to afterglow. Suppliers of treated fabrics or treating compounds should be asked to submit specifications as to the flame retardant and water-resistant qualities of their products. Users of fabrics should also apply the approved test, which is given briefly in the data sheet and fully in the National Fireproofing Association publications. [NAT. SAFETY NEWS]

(516) The industry of artificial fibers and its dangers. J. Auffret. *Arch. d. mal. profess.* 7: 181–196, 1946.

The major occupational diseases found in the production of artificial fibers, such as rayon, which dominates in importance in France, are carbon disulfide poisoning, keratoconjunctivitis, and hand dermatitis. These are discussed in connection with basic manufacturing processes, incidence, and measures necessary for their control.

(517) Is there an occupational poisoning associated with the production of artificial silk by the cuprammonium method? E. Zanetti. *Med. d. lavoro* 37: 31 (1946).

Ammonia, in the cuprammonium method of production of rayon, causes irritation of the mucous membranes of the respiratory tract and the conjunctivas. Sulfuric acid causes irritation and slight ulcerations of the skin. Other workers' complaints, such as gastritis, emaciation, headache, and sleeplessness, are believed to be caused mainly by night work.

OTHER

(518) A note on occupational dermatitis in the jute industry M. N. Rao. *Indian M. Gaz.* 78: 54–57 (Jan.) 1943.

In Bengal, dermatitis has been observed among workers in various processes in the jute industry. Patch tests have shown that a mixture of mineral oil and soap, used to soften the raw jute, is the cause of the dermatitis. It occurs less often in warmer seasons, probably due to the fact that the oil is more volatile in warm weather and therefore adheres less to the skin. The dermatitis appears on parts likely to be in contact with the treated jute. The condition is attributed to mechanical blocking of the orifices of the sebaceous glands by plugs of the unexfoliated stratum corneum.

(519) Hazards of rope making. J. A. Smiley. *Brit. J. Indust. Med.* 8: 265 (Oct.) 1951.

Cutaneous problems in the rope-making industry result from the trauma of braiding the rope, and from contact with pitches and tars which are applied to the ropes as preservatives. The fact that pitches and tars are used in an early stage of the manufacture means that almost all workers in a plant are exposed to these substances.

Food Handlers

CITRUS

(520) Dermatitis among workers employed in the citrus by-product industry. M. Seidmann. *Harefuah* (J. Palestine Jewish M. A.) Nov. 1946. P. 39.

Palestine workers in the citrus byproduct industry who come into contact with the different parts of the fruit may experience paronychia, necrosis or dermatitis.

Tests have been made to determine the relative harmfulness of different parts of the fruits; and studies were made on the varieties of eruption, the results of patch tests, and protective measures.

Only some workers experience dermatitis; the majority do not. New workers suffer more frequently than veterans. The dermatitis is more widely distributed among young persons, women and European Jews. The texture of the skin seems to play a role. [OCCUP. MED.]

(521) Investigation of occupational dermatoses in the citrus fruit canning industry. D. J. Birmingham; P. C. Campbell, Jr.; H. N. Doyle; and J. M. McDonald. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 3: 57–63 (Jan.) 1951.

The Division of Industrial Hygiene, United States Public Health Service, surveyed 1,200 workers employed in 11 typical plants to determine the incidence and

types of dermatitis. The dermatoses consisted largely of contact dermatitis, onychia, paronychia, burns and callosities of the palms, erosio interdigitalis blastomycetica, and knife blade lacerations.

Patch tests to orange and grapefruit pulp were negative in dermatitis patients, indicating that specific hypersensitivity did not appear to play a large role in the contact dermatitis. Tests with the broken peel indicate that this material acts as a primary irritant. Two patch test reactions to the alkali-treated fruit pulp are attributed to insufficient washing to remove the alkali after the immersion of the peeled fruit in an alkali bath to soften the membranes. Patch tests to the dye F. D. and C. Red 32, which is used to color citrus fruit, gave no indication of hypersensitivity.

Operators of juicing machines showed little dermatitis, because of their minimal contact with the juices and citrus oils.

Recommendations for preventing occupational dermatitis among cannery workers are listed.

(522) Occupational dermatitis due to onion and garlic. J. F. Burgess. *Canad. M. A. J.* 66: 275 (Mar.) 1952.

A case of occupational dermatitis was caused by contact with onion and garlic. The individual was a cook and had unilateral dermatitis on the tips of all the fingers and the thumb of the left hand and slightly on the same palm. Patch tests with onion and garlic produced a reaction; scratch tests also elicited reaction.

(523) Pineapple dermatosis. I. Polunin. *Brit. J. Dermat.* 63: 441 (Dec.) 1952.

The rarity of cutaneous disease in the Hawaiian pineapple industry is attributable to the use of machinery in most operations, as well as the wearing of personal protective devices. In Malaya, the workers who cut the fruit by hand experience a dermatitis which starts with the first exposure to the juice, and subsides rapidly upon cessation of exposure. The fingers show superficial abraded areas which are tender for the first few days, but which then become painless. The lesions at this point develop an opaque, white appearance.

Bromelin, a proteolytic enzyme in pineapple juice, produces similar lesions when applied to the skin. It was not possible to prevent the action of proteolytic enzymes on the skin by the use of high concentrations of antihistamine drugs.

MEAT AND FISH

(524) "Red moss" dermatitis. Contact with sponges affecting oystermen. E. F. Corson and A. G. Pratt. *Arch. Dermat. & Syph.* 4: 574–579 (Apr.) 1943.

Another type of occupational hazard for oystermen is *red moss* dermatitis. Red moss (red beard sponge) is a submarine growth, with a thick, firm, elastic body and papillary projections made up of siliceous spicules.

(525) Dermatitis in the fish industry. L. Schwartz and I. R. Tabershaw. *J. Indust. Hyg. & Toxicol.* 27: 27–30 (Jan.) 1945.

Dermatitis is the chief occupational hazard in the fish industry. It is influenced by climate, type of fish handled, dietary habits, sanitation, and other factors. Methods of fishing, processing, and manufacturing are discussed. The dermatological conditions include abrasions, lacerations, fissures, secondary infections, bites, stings, *redfeed* dermatitis (*redfeed* is a reddish-orange crustacean), skin cancer and allergy. In addition, Weil's disease occurs through infection by infested rats. Treatment and prevention of dermatitis in this industry also are discussed.

(526) Chicken picker's dermatitis. Queries and Minor Notes. *J. A. M. A.* 132: 894 (Dec. 7) 1946.

Dermatitis among handlers of chickens and other types of fowl is not uncommon. Two types occur: animal scabies and gamasoidosis, or fowl mite disease. Animal scabies appears as pinhead size papules, developing in a few hours to 2 days after contact. It usually disappears about 3 weeks after contact ceases. The lesions from fowl mite disease resemble urticarial papules, and the parasites may be seen as dark moving specks on the skin. They nest in the sweat and sebaceous ducts, which gape and become inflamed. This is followed by erythematous exudative folliculitis. Prevention consists in wearing impervious sleeves, aprons, and rubber gloves. Various sprays may be applied to the fowl, and to workers' clothes and exposed skin.

(527) Dermatitis in meat handler. Queries and Minor Notes. *J. A. M. A.* 134: 489 (May) 1947.

A woman worker in a lunch packing factory developed a severe acute contact dermatitis involving the face, neck, and arms whenever she was at work, but was free of skin irritation after remaining at

home for 2 weeks. To find the actual irritant, an exhaustive study of the substances with which she comes in contact should be made. Preventive measures also are suggested.

(528) Dermatological hazards. The poultry industry. M. H. Samitz. *Indust. Med.* 16: 489–490 (Oct.) 1947.

The dermatologist may achieve better understanding of industrial skin diseases through studies of industrial plants, such as a large modern poultry establishment, employing approximately 200 people and processing some 15,000 chickens daily. The entire operation is described, revealing a negligible number of dermatologic cases. This was attributed to the use of protective clothing, and to the fact that chemical agents are not used in the processing.

(529) Skin lesions among fishermen at Houtman's Abrolhos, Western Australia, with an account of erysipeloid of Rosenbach. K. Sheard and H. G. Dicks. *M. J. Australia* 2: 352 (Sept.) 1949.

Forty-three fishermen who were examined showed the presence of multiple wounds infected with staphylococci, streptococci, and erysipelothrix. The lesions were most common on the extremities. The preventive measures introduced included glove protection of the hands, improved personal hygiene, and improved diet. Penicillin was the most efficacious treatment.

Erysipeloid of Rosenbach, which may be masked by superinfection with common pyogenic bacteria, may be a common disease in Australian fishing communities.

(530) Erythematous dermatosis of fish workers. M. Nun. *Arch. d. mal. profess.* 12: 187, 1951.

An erythematous dermatitis occurred with mild edema on the palm and palmar surface of the fingers of women workers employed in cleaning mackerel in French fish canneries. The lesions were extremely painful, with bleeding fissures; bullae and ulcerations were not seen. Barrier creams seemed most helpful in preventing the dermatosis.

This dermatosis occurs during the second half of the fishing season, at a time when the fish viscera are filled with zooplankton, rather than the phytoplankton that seems to be their diet during the early part of the season. When the fish were delivered to the canneries eviscerated, there were no outbreaks of dermatitis.

(531) Salt-water boils. W. B. Evans. *Lancet* 2: 737 (Oct. 11) 1952.

A letter from one of the readers to the editor states that deep-sea fishermen suffer from boils of the wrists and forearms commonly called *salt-water boils.* They are alleged to be due to friction of oilskin on forearms sodden with salt water. An additional abrasive element, especially in the case of bosuns, is sludge brought up with the catch from the sea bed.

VEGETABLES

(532) Sensitization to edible mushrooms. S. Hellerstrom. *Acta dermat.-venereol.* 22: 331 (Sept.) 1941.

An eruption with considerable edema appeared on the hands and face of 2 women who had handled raw mushrooms for 20 years without reaction. In one case, sensitivity was shown on eating fried mushrooms. Boiling appeared to inactivate the allergenic properties of the fungi. Patch tests showed the causative agents.

(533) Dermatitis among canners. Queries & Minor Notes. *J. A. M. A.* 123: 124 (Sept. 11) 1943.

Dermatitis among fruit and vegetable canners is common and of practically one type, regardless of the product canned. The best protection is afforded by rubber gloves and impervious sleeves and aprons. Names of manufacturers of impervious sleeves and aprons are given.

(534) Dermatitis from carrots. S. M. Peck, L. W. Spolyar, and H. S. Mason. *Arch. Dermat. & Syph.* 49: 266–269 (Apr.) 1944.

An irritant which can produce allergic dermatitis is found in raw carrot, in dried carrot residue, in carrot juice, and in heated carrot. The active principle is soluble in ether and in water. Recommendations for prevention include frequently changed protective clothing, frequent washing of the hands, avoidance of touching the face, cleansing of work tables at each shift, and provision of extra tables so that workers may be moved from soiled tables at least once during a shift.

(535) Dermatitis from dehydration of potatoes. S. M. Peck and H. C. Clare. *Arch. Dermat. & Syph.* 52: 9–10 (July) 1945.

Dermatitis seen in the process of dehydrating potatoes is occupational and

due to exposure to water and potato juice; secondary invasion by monilia and cocci completes the clinical picture. Methods of prevention are outlined.

(536) Percutaneous photo sensitization due to handling of parsnips. V. Starck. *Acta dermat.-venereol.* 25: 179–188 (Sept.) 1944.

Thirteen cases of acute dermatitis occurred on the dorsa of the hands of persons handling parsnips. The cause was due to light sensitization and the fact that the parsnip root contains a substance that renders the skin sensitive to light. It was also shown that the juice of the parsnip did not perceptibly irritate the skin.

(537) Phyto-photo-dermatitis, due to parsnips. C. H. Whittle. *Brit. J. Dermat. & Syph.* 60: 107 (Mar.) 1948.

A worker who dug parsnips had a bluish-red eruption, tending to blister. Patch test to the leaf was negative. Exposure to sunlight for two hours after contact with the leaf for 4 hours gave a positive reaction, an erythema with blistering.

(538) Dermatitis caused by garlic. A. J. Edelstein. *Arch. Dermat. & Syph.* 61: 111 (Jan.) 1950.

A meat grinder in a packing plant developed a vesicular dermatitis of the left forearm. During a 6-month absence from work the dermatitis cleared spontaneously, only to recur immediately after he resumed work. The dermatitis was made worse when he ground garlic into the meat. A patch test with garlic produced a vesicular eruption within 5 minutes, and was visible for 1 month. Ingestion of garlic produced no cutaneous lesions, but severe cardiospasm. The location of the dermatitis was explained by the fact that the patient cleaned the debris from the guard of the meat grinder by passing his left forearm over it. Thereafter, when the patient worked he covered his arm with a protective paste, and in 3 weeks the dermatitis cleared.

(539) Castor bean pomace exposure. M. A. Snell. *Arch. Indust. Hyg. & Occup. Med.* 6: 113–115 (Aug.) 1952.

With the increased need for oils, and with the increased use of large quantities of castor oil for jet engines, industrial problems from the processing of castor beans will increase in magnitude.

Dermatological problems in the processing of the castor bean, which contains the toxin ricin and several strongly allergenic principles as well, arise from the dust of the pomace, and are manifested as dermatitis and asthma. Adequate ventilation and exhaust fans are recommended control measures.

(540) Mushroom dermatitis: Report of a case. H. H. Hopkins. *A. M. A. Arch. Dermat. & Syph.* 67: 632–633 (June) 1953.

A man worked in a mushroom house growing *Agaricus campestris.* His job consisted of working the beds, picking mushrooms, and packing them in baskets. A vesicular dermatitis occurred involving the hands and face and was associated with peri-orbital edema. Removal from work was followed by a subsidence of the eruption; but upon resuming his work, the eruption reoccurred. Patch tests with *Agaricus campestris* were positive.

MISCELLANEOUS

(541) Trade dermatitis, with particular reference to baker's eczema. F. Jager. *Arch. Gewerbepath. Gewerbehyg.* 11: 579–587 (Dec. 31) 1942.

The clinical aspects of cases of baker's eczema are described. Typical reactions show dry scaling changes with some patchy moist areas. In some cases partial lichenification, deep infiltration, wider spread of the lesions and marked seasonal variations suggest the importance of endogenous factors. Both observations and skin tests show the primary causes to be dough, flour, salt, bran, acid fruit juices, oatmeal and sawdust.

(542) Occupational dermatitis in the food industry. L. Schwartz. *Indust. Med.* 13: 899–900 (Nov.) 1944.

This discussion concerns workers who develop contact dermatitis from handling foods. Occupational dermatitis has been reported as occurring in almost every one of the food industries including meat, fish, pastry, candy, fruit and vegetables. Forms of dermatitis occurring in each of these industries and the causes of disturbances are discussed. Methods for prevention include personal and environmental cleanliness and the wearing of rubber gloves and impervious sleeves and aprons. Clean, protective clothing should be furnished daily to all food handlers.

(543) Allergy to chemicals in flour: A case of dermatitis due to benzoic acid. K. A. Baird. *J. Allergy* 16:195 (July) 1945.

The case of a young baker with recurrent dermatitis involving the face, neck, shoulders, arms, and chest is reported. Benzoic acid, a residue from the bleaching of flour by benzoyl peroxide, is considered the offending allergen.

Patch tests were positive for products in which *improvers* were used, and negative for nonimproved flour. Liquid petrolatum and potassium bromate acid in liquid petrolatum gave a positive test. After a cure was obtained, a dermatitis promptly recurred on exposure to improved flour.

(544) Finger infections in egg powdering plant. Queries and Minor Notes. *J. A. M. A.* 132: 753 (Nov. 23) 1946.

Some employees of an egg-powdering plant developed infections of the fingers, a few requiring amputation. Similar infections in other workers engaged in powdering eggs have not been reported. Studies of the occupational process are recommended. Use of rubber gloves and impervious sleeves and aprons, frequent washing of hands, and use of a mild antiseptic solution are the most important preventive measures.

(545) Skin testing with fractions of chocolate. B. Zohn. *New York Ann. Allergy* 5:344–348 (July–Aug.) 1947.

Although allergists have found chocolate one of the most common offenders in the production of allergic symptoms, the authors failed to get positive skin reactions in the majority of cases. The various chocolate extracts used in the tests are given.

(546) On allergic rhinitis and bronchial asthma in bakers. E. Linko. *Ann. med. int. Fenniae* 36: 98–111, 1947.

Flour dust has long been recognized to cause rhinitis and asthma in bakers, who become sensitized after long periods of exposure. Of a total of 328 persons examined who come into contact with flour dust, 76 gave indications of certain or probable allergy to flour. The dust causes smarting in the nose, with sneezing and mucous production; it frequently induces an attack of asthma. Examination revealed no pathology in either the sinuses or lungs. A large number were positive to skin tests. Symptoms appeared on the average 11 years after entering the occupation of baking.

(547) Dermatitis from Orange *I* in a candy factory. N. R. Goldsmith. *A. M. A. Arch. Dermat. & Syph.* 62:495–496 (Nov.) 1950.

An outbreak of contact dermatitis in a candy factory occurred among workers who squeezed marshmallow from cloth bags, and then manually formed stars and other shapes. These were then coated with a mixture of dye and granulated sugar.

Patch tests to marshmallow, the sugar and 3 dyes were negative. However, the sugar with Orange *I* gave a positive patch test reaction. Examination showed that the bags had become coated with the orange-sugar mixture.

F. D. & C. Orange No. *1* has been known to cause contact dermatitis. Therefore, other orange dyes were substituted, and there has been no further trouble.

(548) Contact dermatitis due to cinnamon. Recurrence of dermatitis following oral administration of cinnamon oil. W. Leifer. *A. M. A. Arch. Dermat. & Syph.* 64: 52–54, 1953.

A report is made of a case of proven sensitivity to cinnamon oil. Elicitation of a distinctive dermatitis due to tooth paste flavored with cinnamon oil led to clarification of a chronic vesicular contact type dermatitis of the hands of 5 years' duration. The hand eruption first appeared following repeated contact with cinnamon powder. Patch tests with cinnamon oil, 1 percent in alcohol, gave a strong positive reaction. Cure of the entire eruption followed withdrawal of cinnamon from the environment.

The lips and buccal mucous membranes did not participate in the sensitization; the implication of these observations are discussed. Ingestion of cinnamon powder was followed by itching of the hands in 12 hours. Ingestion of cinnamon oil was followed by itching and vesiculation of the hands after 5 days on 1 occasion, and after 12 hours on another.

Fungicides

(549) Toxicity studies with the fungicide tetra-chloro-para-benzoquinone (Spergon). T. H. McGavack, L. J. Boyd, R. Terranova, and D. Lehr. *J. Indust. Hyg. & Toxicol.* 25: 98–111 (Mar.) 1943.

The reported fungicidal properties of tetra-chloro-para-benzoquinone are of such magnitude that the chemical can be utilized as a protection for cotton and other seed without danger of intoxicating those who handle it or those who consume the products preserved by it.

(550) The fungistatic and fungicidal effect of sodium propionate on common pathogens. E. L. Keeney. *Bull. Johns Hopkins Hosp.* 83: 379–390 (Nov.) 1943.

The fungistatic activity of sodium propionate for various strains of common pathogenic fungi has been determined according to the method suggested by Schamberg and Kolmer. Adjusted at a pH of 5.5, sodium propionate was found to be fungistatic in a 1.25 percent solution for *Trichophyton purpureum, Epidermophyton inguinale, Microsporum audouini, Candida albicans, Torula histolytica, Coccidioides immitis, Aspergillus flavus.* It was effective in a 0.125-percent solution for *Trichophyton schoenleini,* and *Microsporum lanosum;* and in a 0.0125-percent solution for *Blastomyces dermatitides.* In a solution of 2 percent, it hindered growth of *Actinomyces bovis.*

After 3 weeks' contact with the fungus mats, sodium propionate adjusted to a pH of 5.5 was fungicidal in a 0.125-percent solution for *Trichophyton schoenleini* and *Microsporum lanosum;* in a 1.25-percent solution for *Trichophyton gypseum, Trichophyton purpureum, Trichophyton violaceum, Epidermophyton interdigitale, Microsporum audouini, Torula histolytica, Blastomyces dermatitidis, Aspergillus fumigatus* and *Aspergillus flavus;* in a 5-percent solution for *Candida albicans;* and in a 10-percent solution for *Coccidioides immitis.*

The technique of Burlingame and Reddish was also employed to determine the fungicidal activity of sodium propionate. By this method, optimum fungicidal activity existed only in solutions of 10 and 20 percent adjusted at pH 5.5, 6.0 and 6.5 for *Trichophyton purpureum, Trichophyton schoenleini, Epidermophyton rubrum, Epidermophyton interdigitale, Microsporum lanosum* and *Microsporum audouini.* No fungicidal activity was demonstrated for *Trichophyton gypseum, Trichophyton violaceum, Epidermophyton inguinale, Candida albicans, Blastomyces dermatitidis, Coccidioides immitis, Torula histolytica, Aspergillus fumigatus* and *Aspergillus flavus.*

(551) Hazard of phenylmercuric salts. L. H. Cotter. *Occup. Med.* 4: 305–309, 1947.

Phenylmercuric salts are being used for mildew proofing, as fungicides and as agricultural sprays and bacteriostatic agents. The manufacturing processes can be hazardous. Observations on 10 people who were exposed revealed scarring from burns, leucopenia, and some degree of hepatic damage. Protective cellophane garments and vacuum cleaning of the processing areas will eliminate contact with the powder. Periodic examinations, vigilance, and frequent holidays are recommended. No permanent damage results from protracted exposure.

(552) Cutaneous toxicity of dihydroxydichlorodiphenylmethane: new fungicide for athlete's foot. L. E. Gaul and G. B. Underwood. *J. Indiana M. A.* 42: 22–24 (Jan.) 1949.

A case is reported of severe dermatitis following treatment of what the patient considered athlete's foot with a fungicide containing dihydroxydichlorodiphenylmethane. Patch tests made with the fungicide and with materials from a pair of sleeves were positive. It was concluded that the patient had a contact dermatitis from materials in the sleeves, complicated by irritations from the fungicide.

(553) Left arm dermatitis. N. Scott. *Indust. Hyg. Newsletter* 9: 9 (Mar.) 1949.

In Washington and Oregon, fruit packers have found 2-chloro 6-phenyl phenol to be the most effective material for prevention of mold on apples and pears, and used it extensively in 1948 under the trade name *Stop Mold.* About 50 cases of dermatitis have been reported in workers using this material, mostly sorters who handled the fruit wet with a 0.6 percent solution of the fungicide.

The left arm was usually affected because the sorter guided the fruit, as it rolled along, with his left arm. A few cases of eye irritation and of nausea occurred where the vapor concentration was high. In the next packing season, it is hoped that improved ventilation and personal hygiene will prevent the difficulty.

(554) Dermatoses from impregnation of wood. J. M. Tomé Bona. *Folia med.* 32: 289, 1949.

Lesions were attributed to the following agents used in impregnating wood: zinc chloride, mercuric chloride, sodium fluoride and tar oil. [CHEM. ABSTR.]

Fur Industry

(555) Dermatitis acquired by handling of ursole treated furs. G. Fischer. *Nord. hyg. tidskr.* 23: 287–296, 1942.

Allergic reactions manifested by dermatitis, conjunctivitis, and asthma are caused by contact with ursoles (the common name for a number of similarly composed aromatic compounds, e. g. p-phenylene-diamine). The writer has observed 9 cases among 21 workers in a single workshop.

(556) Studies on hypersensitivity due to substances employed in the fur industry. I. The significance of cutaneous reactions to fur dye dust extracts. H. H. Shilkret and H. F. Swartz. *J. Allergy* 14: 538–543, 1943.

An extract of a mixture of dusts from numerous fur shops was used to test workers and nonworkers in the industry. No practical use for the extract resulted, though some positive tests were obtained. The allergen in this extract was thought not to be related to aniline dye or to paraphenylenediamine or to their alteration products.

(557) Survey made of health problems in the fur industry of New York. H. Heimann. *Indust. Bull.* 23: 217–220 (June) 1944.

Based on a medical study of 694 workers in the fur industry, the following conclusions were reached:

1. Traumatic affections of the skin appear characteristically among the occupational groups of fleshers, unhairers, hand-stretchers, and nailers.

2. The cases of dermatoses appear among the workers that handle the dyed furs and are not related to cleanliness, hand-cleaners, or the complexion of the worker.

3. All cases of dermatoses gave a positive reaction to patch tests applied with the appropriate dye in the proper concentration, emphasizing again the diagnostic value of these tests.

4. When dyes of the paraphenylenediamine series are used for test materials, cases of asthma among fur workers may show negative scratch tests, while the patch tests are positive.

5. There is no evidence that pulmonary tuberculosis is more frequent among fur workers than in the general population.

6. The relative frequency of acute and chronic and nonspecific upper respiratory disease among fur workers may be due to the dust present in the environmental air.

(558) Studies with paraphenylenediamine in fur workers. Reaction to skin tests with dyes in asthmatics. M. G. Silverberg and H. Heimann. *Month. Rev.*, New York State Dept. of Labor 25: 4 (Mar. 15) 1946.

Scratch tests with paraphenylenediamine in asthmatics in the fur industry were negative. In 1 of 10 asthmatics, scratch tests with animal epidermals were positive. Four of the 10 asthmatics (3 of whom had no dermatitis or history of dermatitis) gave a positive reaction to a patch test with paraphenylenediamine. Patch tests with paraphenylenediamine on fur workers who had neither asthma nor occupational dermatitis were negative.

(559) Skin hazards in the fur industry. M. H. Samitz and P. Mori. *Indust. Med. & Surg.* 19: 198 (Apr.) 1950.

Among workers employed in the processes of fur dressing, dyeing, and manufacturing, the commonest cutaneous problems are those of trauma, followed by irritation from formaldehyde and chromates. Specific cutaneous hypersensitivity to natural and dyed fur is infrequent.

Gases (Warfare)

(560) The use of turkey red oil and other agents for the removal of liquid mustard from the skin. A. J. Koontz and A. E. Wilkes. Publication Board Reports No. 6295, U. S. Dept. of Commerce (Feb. 20), 1931.

Investigations were made to determine the efficiency of turkey red oil in removing liquid mustard from the skin and to compare this with the efficiency of kerosene and alkalis for the same purpose. It is believed that turkey red oil should be used in first-aid treatment instead of kerosene or sodium bicarbonate.

(561) Vesicant tests on man of pure, thiodiglycol, and Levinstein mustards in the vapor phase, unevaporated, and 25 percent evaporated samples. G. N. Jarman. Publication Board Reports No. 6276, U. S. Dept. of Commerce, 1932.

Studies of the vapor concentrations of pure, thiodiglycol, and Levinstein mustards were made to determine the amount required to produce distinct redness of human skin after a 1-hour application. There was little difference in the vesicant effect of these 3 types of mustard. The concentration of mustard vapors in air of 60 percent humidity, which will produce redness of normal skin, is tabulated. There was no significant difference between any of the samples tested. The effect of differences in vapor pressure is also considered.

(562) Clinical and laboratory evidence of the nontoxic effects of lewisite vesicle fluid on the skin. M. I. J. Davis. Publication Board Reports No. PB 11380, U. S. Dept. of Commerce (Mar. 12), 1943.

Studies were made to determine if lewisite vesicle fluid is capable of causing irritations of human skin and to determine the toxicity and arsenic content of the fluid. It is recommended that lewisite blisters be left unopened until they can be opened under sterile technic.

(563) Evaluation of solvents for removal of liquid mustard from the skin. C. B. Marquand, T. W. Kethley, O. E. McElroy, and S. Himmelfarb. Publication Board Reports No. PB 11381, U. S. Dept. of Commerce (Mar. 26), 1943.

Applications of about 13 mg each of liquid mustard were made to the bare skin of rabbits and a solvent applied to the site 15 minutes later. The percentage reduction in the damaged area is reported for each of the solvents used. The best solvents were hydrogenated vegetable oils.

(564) The treatment of chemical casualties; mustard burns of the skin treated with isoamyl salicylate. B. B. Gilpin, Jr. Publication Board Reports No. PB 11387, U. S. Dept. of Commerce (May 21), 1943.

The results obtained by treatment of mustard burns of the skin with iso-amyl salicylate and normal salicylate are compared with those obtained with former methods of denudation and application of tannic or picric acid or sulfadiazine spray. Either salicylate is recommended for the treatment of mustard burns of the skin.

(565) Induced hypersensitivity to bis (β-chloroethyl) sulphide mustard gas and to BAL in guinea pigs. J. G. Kidd and K. Landsteiner. Publication Board Reports No. PB 6520, U. S. Dept. of Commerce (Jan.) 1944.

Practically all of 70 guinea pigs treated with 1/10 or 1/20 percent solution of mustard gas in ligroin on the skin became hypersensitive. They were hypersensitive also to purified thiodiglycol mustard and redistilled Levinstein mustard, but several did not react to bis (β-choroethyl) ether and bis (β-hydroxyethyl) sulfide. Attempts to desensitize were ineffectual. Hypersensitiveness to BAL was successfully accomplished.

(566) The mechanism of cutaneous injury by mustard gas. An experimental study using mustard prepared with radioactive sulfur, to November 10, 1943. F. C. Henriques, A. R. Mortiz, H. S. Breyfogle, and L. A. Paterson. Publication Board Reports No. 5930, U. S. Dept. of Commerce (May 9) 1944.

Results of study of the penetration and reaction of mustard gas with radioactive sulfur tracer into animal and human skins are presented. The mechanism of damage to the skin is described. Therapeutic measures are considered.

(567) Nonirritant protective ointments. P. L. Zalberg, W. A. Lazier, and W. J. Peppel. Publication Board Reports No. 4232, U. S. Dept. of Commerce (July 1), 1944.

Results are reported of an investigation to develop a satisfactory nonirritant ointment for the protection of exposed skin against vesicant compounds. No protective ointment was found which satisfactorily filled all requirements.

(568) The dermatologic aspects of the vesicant war gases. M. I. J. Davis. *J. A. M. A.* 126: 209 (Sept. 23) 1944.

The action of mustard gas and lewisite and the pathologic aspects of lesions produced are reviewed. Prophylactic treatment is the individual soldier's responsibility and treatment of the burn is the physician's responsibility. Treatment of burns by these gases differs but little from treatment of thermal burns, and the healing of lesions produced by vesicant gases is not greatly affected by the type of treatment. The delayed period for the development of a vesicant burn is the major difference from the thermal burn. The types of treatment are listed.

(569) Five hundred men commended for part in tests of new gas ointment. *J. A. M. A.* 126: 501–502 (Oct. 21) 1944.

Five hundred officers and enlisted men were recently commended by the Chemical Warfare Service of the Army Service Forces for voluntarily exposing themselves to lethal gases to test a new antigas protective ointment. As a result of these tests, during which men entered gas-filled chambers and contaminated areas, medical officers and research scientists have conclusive evidence that the M5 protective ointment, or *gasproof makeup kit*, will be effective in the event that the enemy resorts to gas warfare. The men subjected to the gas-chamber tests were protected by gas masks and liberal quantities of the new ointment. Others tested the substance by entering ground areas which had been contaminated with lethal agents. To minimize danger to the personnel, tests were made only after exhaustive experiments with the ointment. None of the volunteers suffered any ill effects.

(570) Analysis of ointment, protective. J. T. Collins. Publication Board Reports (Medical) No. 28470, U. S. Dept. of Commerce (Jan. 26) 1945.

A protective ointment on hand in forward and combat areas was examined to determine its fitness for emergency decontamination. Procedures for chlorine and acid determinations are described. It appears that acidity of the ointment is inconsequential and that only the determination of active chlorine is necessary to pass on fitness of the ointment.

(571) The penetration of vesicant vapors into human skin. M. Morgmann, J. S. Frutan; C. Golumbic, S. M. Nagy, M. M. Stahmann, and W. H. Stein. Publication Board Reports No. PB 5882, U. S. Dept. of Commerce (Mar. 24) 1945.

These studies were made to determine why the vesication produced by chemically similar agents differs so widely. An apparatus for applying vesicant vapors to unit areas of skin is described. Studies were made of factors influencing the rate of penetration of vesicant vapors into the skin. An evaluation of the lesions produced in these experiments is presented.

(572) A method for the visible demonstration of lewisite in skin. R. L. Ferguson and S. D. Silver. Publication Board Reports No. 31270, U. S. Dept. of Commerce, (July 8) 1946.

The development of a specific method to demonstrate visually the presence of lewisite oxide in the skin at various times after its application by following its penetration into the skin is described. Results of experiments in which liquid lewisite was placed on the bared skin of guinea pigs are reported.

(573) Gangrene of the lower extremity following carbon monoxide asphyxia. N. Enzer and S. Spilberg. *Amer. J. Clin. Path.* 16: 111–116, 1946.

Gangrene developed in an arteriosclerotic leg after transient carbon monoxide asphyxia. Thrombi were found, but none was believed old enough to have been the cause of gangrene.

(574) Sensitivity to burnt coal-gas. P. B. Mumford and G. Auckland. *Brit. J. Dermat. & Syph.* 59: 169–172 (Apr.–May) 1947.

This is a case report of a woman who was apparently sensitive to burnt coal-gas. It was thought that the aldehydes formed by incomplete combustion were the offending agents. Patch tests and exposure were the methods used to substantiate this conclusion.

(575) Skin sensitization to vesicant agents of chemical warfare. M. B. Sulzberger, R. L. Baer, and A. Kanof. *J. Invest. Dermat.* 8: 365–393 (June) 1947.

A detailed review of the literature on this subject includes a discussion of individual variations in susceptibility to initial damage to the skin and susceptibility to later sensitization. The clinical pictures produced by mustard gas, lewisite, and phenyldichlorarsine are described.

(576) Observations on the role of water in the susceptibility of human skin to injury by vesicant vapors. B. Renshaw. *J. Invest. Dermat.* 9: 75–85 (Aug.) 1947.

To extend observations made with mustard gas (H) during the First World War, experiments were performed by applying the saturated vapor of H or of a nitrogen mustard, ethyl-bis (β–chloroethyl) amine (EBA), to small areas of skin. The effect of sodium chloride on the solubility of H was also considered. The experiments are reported in detail. It is concluded that large amounts of water are to a considerable degree responsible for the increased susceptibility of hot, sweating skin to the vapors of such vesicants of H and EBA.

(577) Sulfur dioxide. *Indust. Health Bull.*, New Jersey Dept. of Health 3: 1–8, 1948.

Sulfur dioxide is an irritant to the skin and respiratory system, but its effects are usually mild. Some observers have noted a beneficial effect in very low concentrations from its bactericidal action. However, in high concentrations, either it paralyzes the respiratory center or is oxidized to sulfuric acid on the mucous membrane. Chronic poisoning is known. Dangerous exposure may be avoided by proper engineering and medical methods.

(578) The clinical reaction of the skin to mustard gas vapors. D. C. Sinclair. *Brit. J. Dermat. & Syph.* 61: 113–125 (Apr.) 1949.

The development and course of lesions occurring on the skin of 143 men exposed to the vapor of mustard gas in the tropics is explained as well as the clinical importance of the different lesions and of influences acting at the time of exposure and during development of the lesions. The resemblance between mustard vapor and actinic burns is considered.

(579) Cutaneous hypersensitivity to tear gas (chloroacetophenone). J. F. Madden. *A. M. A. Arch. Dermat. & Syph.* 63: 133–134 (Jan.) 1951.

Incidence of contact dermatitis from chloroacetophenone is low, with only three reported cases. A War Department technical bulletin states that tear gas may cause immediate burning and erythema when the ambient temperature is high and the skin is moist. A policeman who used tear gas for rodent-control, and who wore shorts while doing this, developed a vesicular dermatitis of the legs. A subsequent test exposure to a small amount of gas reproduced the disease at the test site.

Industrial Dermatoses

DIAGNOSIS

(580) Contact dermatitis; its diagnosis and treatment. N. Tobias. *J. Missouri M. A.* 40: 272–276 (Sept.) 1943.

Contact dermatitis, its clinical types and etiology and diagnostic methods are outlined. The common types of dermatitis, complications, differential diagnosis, and prognosis are considered. Methods of treatment to relieve itching and to hasten resolution are also given.

(581) Actual causes of certain occupational dermatoses. J. V. Klauder. *Arch. Dermat. & Syph.* 48: 579–600 (Dec.) 1943.

A study was made of 1,113 cases of cutaneous diseases in patients claiming compensation, of which 527 were diagnosed as occupational in origin. The causes of the occupational dermatoses were divided into the following groups: (1) Trauma and accidental injury, (2) primary irritants (acids, alkalis, non-

aqueous solvents), (3) cleansing agents applied to the skin, (4) sensitizing substances, (5) petroleum products, and (6) wet work (water alone, soap and water, and alkaline salt detergents). In addition there were cases of occupational folliculitis caused by chlorinated hydrocarbons, vegetable oils and dusts. The role of solvents as primary irritants is stressed. These classifications are discussed in detail.

(582) Irritation of the nasal mucosa in industry. W. Dixon. *Ohio State M. J.* 40: 36–37 (Jan.) 1944.

Industrial irritants of the nasal mucosa fall generally into two classes: (1) Dusts, including mineral, plant, and animal, and (2) vapors. The particles of dust which do damage to the respiratory system are invisible to the naked eye and are less than 10 microns in size. The vapors most frequently encountered as irritants are the oils and alkaline watery solutions used in grinding. In the dust-producing industries, the dust itself may not be irritating, but the particles may contain oils, resins, glucocides, and alkaloids which may be irritating or cause allergic reactions. The nasal mucosa is red and irritated early. Later, dryness of the mucosa is seen, with subsequent crusting and bleeding. Many of the workers suffer from repeated colds.

(583) Dermatoses incident to industrial and domestic occupations. E. S. Lain. *Ann. Int. Med.* 20: 390–394 (Mar.) 1944.

The more common agents which produce occupational dermatoses are listed. Criteria for diagnosis are a detailed history and a thorough examination.

(584) The asbestos corn. H. S. Alden and W. M. Howell. *Arch. Dermat. & Syph.* 49: 312–314 (May) 1944.

Men employed in lagging pipes in shipbuilding yards with the use of *amosite*, a natural form of asbestos, were found to develop corns on their fingers. Investigation revealed that 99 out of 167 men presented one or more of these lesions. Small splinter-like bits of amosite penetrate the skin; about 10 days later, if the foreign body is not removed, a small hard cornlike tumor appears and slowly grows, often attaining the size of a small split pea. The affected area does not become normal again until the hard central plug has been removed. Fibers of amosite may be detected in an excised corn. Under the microscope a corn is seen to be formed of fibrous tissue, without evidence of inflammation.

Although a reaction takes place in the lungs to dust particles of asbestos, no cases of asbestosis were found among these men. Some men worked with amosite for as long as 7 years without developing corns. However, the majority developed corns within the first 3 or 4 months. Removal of spicules with forceps after work is useful in prevention. Cure can be obtained by simple paring of the cornified areas until all excess keratin is removed.

(585) Herpetic keratitis as an industrial accident. J. Sellas and J. Casanevas. *Arch. Soc. oftal. hispano-am.* 5: 262–272 (Apr.) 1945.

A review of the literature on the role of trauma in the etiology of herpetic keratitis and the problem of compensation includes reference to the work of Gruter, Schieck, and Amman. They take a careful history of each injury, examine the patient on the day of the injury, and keep a carefully charted record of the extent and progress of the traumatic lesion. Herpetic lesions that appear earlier than the second day after the injury are regarded as pre-existent to the injury. Herpes that develops after the second day and within 6 months after injury is regarded as traumatic. Recurrence of a keratitis following an injury, in a patient with a history of herpetic keratitis, is also regarded as traumatic.

(586) Dermatoses of the hands. C. G. Lane, E. M. Rockwood, C. S. Sawyer and I. H. Blank. *J. A. M. A.* 128: 987–992 (Aug.) 1945.

During the last 3 years 475 cases of *eczematoid* dermatoses of the hands have been surveyed. In very few cases was it possible to confirm the diagnosis of dermatomycosis, dermatophytid, contact dermatitis, or soap dermatitis. A large number of patients showed recurrent attacks of a papular, vesicular, and crusted eruption, limited primarily to the hands.

The following factors are presented as an explanation of the pathogenesis of the disease entity appearing in these patients: (1) Various inciting factors; (2) complicating factors such as: excessive soap and water, vasomotor instability, trauma, menstruation, hot or cold weather or focus of infection; (3) alteration of the host-bacteria relationship, (4) superficial bacterial invasion of the skin, with or without sensitization; (5) the inciting factor may be removed but the eruption may persist as infectious eczematoid dermatitis, a recurrent superficial invasion of the skin by bacteria of low virulence which relapses when the host-bacteria relationship is disturbed by

one or more of the aforementioned complicating factors. In the acute phases, mild antiseptic soaks or compresses and a soapless regimen have proved successful.

(587) The diagnosis of occupational eczema. A., Marin. *Canadian M. A. J.* 53: 578, 1945.

Curative measures for the lesions found in acute, subacute, and chronic occupational dermatitis depend on removal of the causative agent. Patch tests are not conclusive evidence alone, but form a link in the chain of diagnostic aids.

(588) Eczema of the hands—is it a diagnosis of ignorance? H. Goodman. *Urol. & Cutan. Rev.* 50: 62–66 (Jan.) 1946.

Observations are made on recurrent, vesicular eruption of the hands in some 100 women, over a study period of 20 years. The group discussed excludes all those cases clinically proved: dermatitis venenata, dermatophytid, psoriasis, dermatitis repens and dyshidrosis.

The discussion includes all treatment methods, emphasizing the good and bad points connected with treatments such as wet dressings, ointments, heliotherapy, sulfonamides, antibiotics and X-ray.

(589) Actual causes of certain occupational dermatoses: A further study of five hundred and thirty-two cases with special reference to dermatitis caused by certain petroleum solvents. J. Klauder and M. Hardy. *Occup. Med.* 1: 168–181 (Feb.) 1946.

In a study of 532 cases of dermatoses, 44 percent were diagnosed as of occupational origin. The etiological agents are discussed and special cases are considered. The report includes a study of compensation problems which come to the attention of a dermatologist engaged in industrial work.

(590) Contact dermatitis. J. B. Howell. *Arch. Dermat. & Syph.* 53: 265–277 (Mar.) 1946.

Eczematous dermatitis is probably the most common of all recognized allergic disease in man.

Records were kept for a year on all cases in which the offending allergen was discovered, several of which are presented to illustrate common sensitizing substances. Cases of contact dermatitis from topical applications such as mercurial compounds and the sulfonamides, and cases which have an occupational origin, are discussed. These include sensitization to vegetation as well as to specific chemicals in industry.

The oral administration of specific weed oleoresins is of great help to farmers and ranchers who develop a weed dermatitis. Hypersensitivity to such objects as bay rum, cocobolo wood, Iowa honey, primrose, adhesive tape, khaki clothing, carbon tetrachloride, and a green dye are demonstrated.

(591) Neurodermatitis and occupational dermatitis. O. L. Levin and H. T. Behrman. *New York State J. Med.* 46: 2160–2163 (Oct. 1) 1946.

Several cases are reported of ordinary occupational or contact dermatitis associated with, or followed by, an eruption of the antecubital spaces and clinically indicative of neurodermatitis. The authors have observed cases where the neurodermatitis existed prior to the occupational dermatitis and merely showed an exacerbation. In other instances, its previous existence was denied and it was claimed that the occupational dermatitis and neurodermatitis had appeared simultaneously. When this occurs, the occupational dermatitis may involute, but the underlying neurodermatitis may persist or recur to constitute a source of dispute.

(592) Clinical experiences with chemical hazards in industry. G. H. Gehrmann. *New York State J. Med.* 46: 2409–11 (Nov. 1) 1946.

Gehrmann discusses the problems of controlling occupational disease and warns of the dangers of ignoring potential hazards or of being a party to inadequate methods of medical supervision in industry.

(593) Diagnosis and treatment of eczema. J. E. M. Wigley. *Post-Grad. M. J.* 22: 103–112, 1946.

Eczema is not, strictly speaking, a disease but rather a state resulting from an abnormal reaction of the skin to a variety of specific substances, either from local contact or from absorption by way of the gastroenteric or respiratory tracts. Eczema and dermatitis are indistinguishable, but unfortunately are not considered so in the Workmen's Compensation Act. Four types of eczema are discussed and treatment for each is given. Some agents inducing eczema are listed.

(594) Contact dermatitis. An analysis or tabulation of all cases proved in a single year. J. B. Howell. *Arch. Dermat. & Syph.* 53: 265–277, 1946.

The cause responsible for dermatitis was proved in 250 patients. Five tables list the offending substances.

(595) Occupational disorders. W. Schweisheimer. *Am. Miller & Processor* 74: 42–44, 1946.

Hands and forearms are effected primarily in certain workers employed in the flour and grain industry. Prolonged exposure to the dust of grain or flour may produce hyperkeratosis, scaling of the skin, formation of vesicles and ridging of finger nails. Improvement may be rapid if the worker is protected from further exposure. Personal cleanliness as well as the wearing of protective garments is important. Patch tests are recommended.

(596) Skin tests in dermatology. B. Kanee. *Canad. M. A. J.* 56: 529–534 (May) 1947.

Skin tests are discussed, with special attention to distinctions between the four main types of dermatologic allergy, namely: (1) Contact allergy; (2) atopy; (3) allergy of infection; and (4) drug allergy. Skin tests have greatest diagnostic value in cases of contact allergy. With the aid of patch tests, 30 to 50 percent of all suitably selected cases can be clarified as to contact causes. Directions are given for patch tests, scratch tests, intradermal tests, and for Prausnitz-Kuestner tests used in cases of atopy. Allergy of infection is discussed briefly with mention of a number of tests for specific infections. Skin testing in drug allergy is usually limited to patch tests.

(597) Occupational dermatitis, with special reference to eczema-dermatitis of the hands. J. A. Tolmach. *New York J. Allergy* 18: 179–180 (May) 1947.

The hands are most frequently involved in industrial dermatitis and it is therefore necessary to rule out nonindustrial dermatoses such as pompholyx, psoriasis, lichen planus, infections, and nummular eczema which may also manifest themselves on the hands. The cause of eczematous dermatitis is usually nonspecific and the backs of the hands are usually involved. It is important to know whether the dermatitis is caused by an allergen or by an irritant.

(598) Herpes zoster appearing after trauma. J. V. Klauder. *J. A. M. A.* 134: 245 (May 17) 1947.

A blow to any part of the body may affect the nerves supplying the injured part and produce herpes zoster. He observed eight patients in whom herpes zoster appeared after injury. The disease in the majority of patients pursues an uneventful course to recovery. Pain is not sufficiently severe to incapacitate, except perhaps in patients above middle age.

(599) Two unusual outbreaks of occupational dermatitis. P. C. Campbell and L. Schwartz. *Occup. Med.* 3: 570–573 (June) 1947.

Two outbreaks of dermatitis caused by air-borne irritants are reported. The first was caused by acid and alkaline solutions; the second, by an organic solvent. In both cases the irritant took the form of a mist, which spread some distance from its source. Recommended measures were installation of a solid partition between the source and the workers, and use of exhaust hoods and protective clothing for employees working close to the origin of the material. Undoubtedly airborne dermatitis occurs more frequently than is now recognized.

(600) Industrial dermatitis. Causes and prevention reviewed. *Chem. Age* 57: 420 (Sept. 27) 1947.

This is an abstract of a comprehensive review of industrial dermatitis recently made by the Technical Service Department of Aero Research, Ltd., of Duxford, Cambridge, England. The most injurious chemical substances in regard to dermatitis are given in the following order of toxicity: (1) Petroleum products; (2) alkalis and their components; (3) fat solvents and degreasing agents; (4) metals and metal plating compounds; (5) lubricants, soluble and insoluble; (6) paints and paint solvents; (7) chromates and chromic acid; (8) dyes; (9) synthetic resins; and (10) rubber and its compounds.

Special attention is given to synthetic resins, in which both formaldehyde and phenol are particularly injurious. Recommendations for handling formaldehyde glues include prevention of contact; thorough washing of the skin, with washing facilities close to the operation; use of a chemical neutralizer; and application of a barrier cream. Women are more susceptable than men, dry skins more sensitive than oily ones, and persons with

fair skins more susceptible than those with dark skins. Emotional factors also aggravate dermatitis and impede recovery.

(601) Occupational dermatitis. *Month. Rev.*, New York State Dept. of Labor 26: 48 (Nov.) 1947.

This brief note brings out the fact that dermatoses may be produced by vapors condensing upon the exposed skin, giving the same effect as liquid contact. The only remedy is installation of a proper ventilating system to remove the contaminants at their source.

(602) Skin hazards of longshoremen and harbor workers. M. H. Samitz and T. E. Gibson. *Indust. Med.* 16: 576–577 (Dec.) 1947.

A review of medical case histories among employees of two large stevedoring companies from 1928 to 1947 reveals that 3.5 percent of the cases were of skin disease. The etiological factors are given. Potential exposure to noxious substances in import cargoes is compared with that of export cargoes.

(603) Dermatitis of the hands. B. H. Winston. *Arch. Dermat. & Syph.* 57: 357–367 (Mar.) 1948.

Complex causes of dermatitis and complications of infection are discussed. Improvements in methods of treatment are described.

(604) Contact dermatitis of the hands. C. W. Lane. *Mississippi Valley M. J.* 70: 47–49 (Mar.) 1948.

The usual development and symptoms of contact dermatitis are reviewed, and the frequent difficulty in discovering the cause is mentioned. Lane gives facts for differentiating between mycotic and yeast infections and infectious eczematoid dermatitis. He concludes with a brief description of patch tests and treatment with lotions, ointments, X-ray, or topical antihistaminic drugs.

(605) Causative diagnosis of contact dermatitis. G. L. Waldbott and J. J. Shea. *Arch. Dermat. & Syph.* 57: 975–984 (June) 1948.

Careful observation of the localization and exact outline of the lesion may establish the causation of contact dermatitis. Important factors are the power of the grip, the shape of the hand and the size and consistency of the object; the presence of secondary infection, secondary contact and atopic sensitization. With this in mind a classification of dermatitis of the hands is presented, with the purpose of aiding in the detection and cataloguing of new causative agents.

(606) Causes of occupational dermatitis. L. Schwartz and D. J. Birmingham. *Safety Eng.* 98: 56 (July) 1949.

Occupational dermatitis occurs among 10 to 15 percent of the workers in certain industries. Predisposing factors affecting the occurrence of dermatitis are age, sex, perspiration, season, uncleanliness and the presence of skin diseases. Chemicals are primarily the direct cause of dermatitis; they may be primary irritants or sensitizers. Other causes may be mechanical, physical or biological. A program which enforces proper prevention will reduce the incidence of dermatitis to a minimum.

(607) Non-eczematous industrial dermatitis. J. Summons. *M. J. Australia* 2: 202 (Aug.) 1949.

The author stresses the significance of dermatoses of industrial nature which are not the classical contact type of vesicular dermatitis. He discusses such problems as *solar dermatitis* in farmers, the chronic dermatitis of arc welders from intense ultra-violet radiation, erythema ab igne as seen in stokers, insect infestations, and the paronychias and onychomycoses seen in cannery workers.

(608) The relative infrequecy of occupational dermatoses in automobile workers. J. R. Rogin and M. W. Jocz. *Indust. Med. & Surg.* 19: 219 (May) 1950.

Of the cases of cutaneous disease seen in workers in the automobile industry, only one-third are considered to be of industrial origin. The incidence of cutaneous disease was 1.43 percent and that of occupational dermatitis was 0.66 percent. In a group of 76,000 workers, only nine dermatologic patients received compensation, and in their cases the average cost of compensation was one-seventh the cost of the average non-dermatologic compensated case.

(609) Dermatitis of the hands in industry. N. N. Epstein and J. R. Allen. *California Med.* 75: 300 (Oct.) 1951.

Of 218 workers with dermatological conditions attributable at least in part to occupation, 128 (59 percent) had contact dermatitis due to sensitization or primary irritation. Of these 128, 121 (94.5 percent) had involvement of the

hands and forearms, and 83 (65 percent) had no other involvement. The patients with eruptions of industrial origin were employed in 58 different occupations. The most common, in decreasing frequency, were cook, painter, mechanic, brewery worker, dishwasher, domestic, janitor, teamster, photographer, printer, carpenter, candy maker, florist, cleaner, baker, bartender, waitress and lubricator.

Of 2,260 patients observed in non-industrial practice, 201 (9 percent) had lesions of the hand. Of the 201, only 68 had contact dermatitis. The other 133 patients with hand lesions were suffering from 1 of 15 different diseases, indicating the complexities of differential diagnosis.

Only through a complete knowledge of the work exposure, history, physical examination, patch tests, and mycologic studies can a diagnosis be reached. The physician must constantly avoid prejudice in his work, so that neither the worker nor the insurance carrier is treated unfairly.

(610) Contact dermatitis of the face due to matches. J. F. Burgess and R. R. Forsey. *A. M. A. Arch. Dermat. & Syph.* 64: 636 (Nov.) 1951.

The author presents two cases of recurring dermatitis of the face due to indirect contact with *strike anywhere* matches.

(611) Periorbital dermatitis. B. Swinny. *Ann. Allergy* 9: 774–778 (Nov.–Dec.) 1951.

Investigation, diagnosis and management of 63 consecutive cases of periorbital dermatitis are discussed. Cosmetics were the most frequent cause, and occupational causes were in the minority.

(612) Evaluation of industrial dermatitis by analyzing its pattern. George Waldbott. *Ann. Allergy* 10: 755–758 (Nov.–Dec.) 1952.

By placing more emphasis upon the pattern of dermatitis, the physician may be better able to supplement the history-taking and patch-testing in making a diagnosis of occupational dermatitis.

A number of case examples in which the method is employed is contained within the article.

PREVENTION

(613) Army camouflage. Drug and Cosmetic Industry 52: 619 (June) 1943.

New specifications have been issued by the Army for face paint camouflage in stick form. These specifications are dated June 8, and a new color, *sand*, is added to the light green and loam called for in the previous specifications of January 8. The new specifications give complete formulas for the material, as well as complete analyses of the raw materials to be used. Insect repellent No. 612, manufactured by the National Carbon Company, or 25 percent by weight of this insect repellent, plus 5 percent by weight of dimethly phthalate, is used to afford maximum protection from mosquitoes, flies, and similar injurious insects. For antiseptic properties, phenyl mercuric benzoate is used at the rate of 1 part of the antiseptic by weight to 25,000 parts of the face paint.

The formulas are:

Hydrogenated castor oil	25 grams
No. 612 repellent	30 grams
Color mixture	38 grams
Phenyl mercuric benzoate	0.004 gram
Beeswax, yellow	4 grams
Lanolin, anhydrous	3 grams

Hydrogenated castor oil	25 grams
No. 612 repellent	25 grams
Color mixture	38 grams
Phenyl mercuric benzoate	0.004 gram
Dimethyl phthalate	5 grams
Beeswax, yellow	4 grams
Lanolin, anhydrous	3 grams

(614) Prevention of industrial dermatitis. S. Horner. *Proc. Roy. Soc. Med.* 36: 633 (Oct.) 1943.

Principles of prevention are selection, protection, inspection, and cleanliness. The selection of the right personnel in dermatitis hazards should be attempted, despite present labor conditions. The part played by diet and vitamins in the prevention and cure of industrial dermatitis has yet to be determined.

(615) An efficient protector against occupational dermatitis. J. J. Eller and B. P. Persky. *Urol. & Cutan. Rev.* 47: 41–42, 1943.

Industrial dermatoses constitute over 60 percent of industrial diseases and are on the increase. However, occupational dermatoses can be reduced by cleanliness, protective creams and protective clothing. Gloves, arm guards, and aprons have been made which protect the worker. Patch tests showed that these guards are not irritable to the skin.

(616) Dermatology and the public health. R. Klaber. *J. Roy. Inst. Pub. Health & Hyg.* 7: 8–13 (Jan.) 1944.

The most effective means of prevention of industrial dermatitis are mechanical and technical control, protective clothing, adequate washing facilities, barrier creams, and proper education of the worker in hygienic habits and precautions. In addition to the industrial causes of dermatitis, several social or domestic causes are discussed. Some are various contagious diseases of the skin or with skin reaction, scabies, pediculosis, ringworm, and other fungus infections. Emphasis is laid upon taking proper precautions to reduce the incidence of industrial and contagious diseases of the skin.

(617) Prevention of industrial dermatitis. N. H. Mummery. *Brit. M. J.* 1: 660 (May 13) 1944.

In a British aircraft factory, the incidence of oil acne and paraffin dermatitis, which had given rise to a high incidence of disability, was greatly reduced by use of a substitute for ordinary soap. This cleanser consisted of neutral sulfonated castor oil containing 2 percent of a wetting agent. Oil acne affecting the front of the thighs was prevented by waist-high metal guards on the cutting tools.

(618) The prevention of occupational dermatitis. L. Schwartz. *Soap & Sanit. Chemicals* 20: 31–33, 74 (June) 1944.

This is a statement of principles in the prevention of industrial dermatitis and dermatitis among consumers of manufactured goods. The public should be educated to demand information as to the toxic and skin-irritating properties of the materials which they buy and to demand that this be printed on the packages in which the materials are contained, together with methods for safe usage.

(619) Prevention of epidemics of dermatitis in industry including dermatophytosis. S. M. Peck. *J. Michigan M. Soc.* 43: 568–574 (July) 1944.

Although protective ointments are not as good as protective clothing, they must be used in those cases where clothing is a hindrance. No one ointment protects against all irritants so it is important to know the irritant in question and the mechanism by which the irritant produces dermatitis before prescribing an ointment. The worker should be educated as to the hazards in his job and how to avoid them. The frequency, cause, and prevention of epidermophytosis is discussed.

(620) Prevention of flash burns by a protective glove film. G. B. Fauley. *U. S. Nav. M. Bull.* 43: 209–215 (Aug.) 1944.

A technic has been devised for testing mixtures used to prevent flash burns from gun firing. This consists of a standard size and degree of burn produced by igniting a charge of magnesium powder in a miniature cannon. An ointment containing 50 percent titanium dioxide and a glove film with 37 percent titanium dioxide proved effective in preventing flash burns under conditions that are probably as severe as those occurring on board ship. A glove film may offer more protection than either an undershirt or an ointment. The ointment is superior when profuse sweating occurs, but for most conditions the film is preferable. No tests under battle conditions have been reported, but materials for trial have been issued.

(621) The prevention of industrial dermatoses. C. Leggo. *Ohio State M. J.* 40: 1035–1040 (Nov.) 1944.

Preventive measures all classified under the following headings: Cleanliness, clothing, creams, change and closure. Under *cleanliness*, he points out that insufficient washing may be due to the employee's carelessness or to lack of suitable facilities. *Change* includes experimental change to determine whether dermatitis recurs on a second exposure and final transfer to other work if the irritant cannot be tolerated. *Closure* includes the engineering remedies of enclosure and exhaust. A few specific cases are discussed where one or more preventive methods apply.

(622) Protective flash burn cream. *Hosp. Corps Quart.* 18: 46 (May) 1945.

A flash burn cream which was found to protect against flash burn of over 1,000° C was developed after 4 months of research at the Naval Medical Research Institute.

The cream is gray in color, requires about 5 minutes to dry following application, and will protect for about 6 to 8 hours. It contains no toxic or allergic properties and is easily removed with soap and water. The formula is not given.

(623) Use of Paraprol in the prevention of industrial dermatitis. M. Parkes. *Indust. Med.* 14: 565–566 (July) 1945.

A proprietary preparation, Paraprol, which consists of urea, sodium alkyl sulfonate, benzyl alcohol, and tragacanth in a special aromatized vehicle, was used on workers exposed to cutting oil compounds. The use of Paraprol in the prevention of follicular dermatitis caused by these compounds has been shown to be effective and safe, is worthy of further clinical trial, and will have a place in preventive dermatology. Its effectiveness does not obviate the necessity of good industrial hygiene, use of clean oil and clean wash cloths, and frequent washing of hands.

(624) Methods for the prevention of industrial dermatoses. L. Schwartz. *Indust. Med.* 15: 174–176 (Feb.) 1946.

The usual preventive measures are discussed, namely: Preemployment examinations, ventilation, protective clothing, ointments, and cleanliness. A new type of protective clothing, made of some of the synthetic resin films such as Pliofilm and Koroseal, is impervious not only to dust and fumes but also to strong acids, alkalis, and petroleum distillates. These materials are comparatively cheap, nonflammable, easily cleaned with soap and water, and transparent. Like rubber, they must have vent-holes to allow circulation of air, but their tensile strength is such that they will tear if caught in a cog before the arm can be drawn into the machinery. The films are affected by trichloroethylene and carbon tetrachloride, and therefore are not suitable for protection against these two substances. However, polyvinyl alcohols are proof against these substances, and are used in the manufacture of gloves, under the trade name Resistoflex.

Protective ointments are divided into six classes: (1) Simple vanishing cream which fills the pores with soap and facilitates the removal of soil when washing; (2) the type which leaves a thin film of resin or wax on the skin and thus prevents the irritant from touching the skin (these may be water-soluble or water-insoluble); (3) those which cover the skin and fill the pores with a harmless fat to repel water-soluble irritants and prevent entrance into the pores of harmful petroleum used as protectives against cutting oils and other harmful substances; (4) those which contain a nonirritant chemical intended to detoxify or neutralize the industrial irritant; (5) those which cause inert powders to adhere to the skin, forming a protective covering against skin irritants; and (6) those which protect against photosensitizing substances, which contain such physical light screens as methyl salicylate, aesculin, quinin, anthranilates, and tannates. Most of the protective creams, emulsions, and lotions on the market are combinations of these six types.

(625) A method for the evaluation of protective ointments. L. Schwartz, H. S. Mason, and H. R. Albritton. *Occup. Med.* 1: 376–385 (Apr.) 1946.

A technic for the preparation of thin ointment films has been developed. Technics for the measurement of penetrability of these films to acid, alkali, and liquid petrolatum are described. The penetrability to acid, alkali, and liquid petrolatum of 3 standard substances and 27 commercial protective ointments has been determined. The significance of the results obtained is discussed in terms of the utility of the ointments involved.

(626) Occupational dermatitis: Its control and prevention by cooperation of the industrial physician, engineer and chemist. S. M. Peck. *Compens. Med.* 1: 13 (May) 1946.

The problem of occupational dermatitis is the responsibility of the industrial physician and of the nonmedical personnel charged with safety measures in the plant. The distinction between primary irritants and sensitizers is drawn; the factors forming the basis for diagnosis of industrial dermatitis are discussed; and practical suggestions for control of dermatitis are given.

(627) The evaluation of barrier creams. C. G. A. Sadler and R. H. Marriott. *Brit. M. J.* 2: 769 (Nov. 23) 1946.

Barrier creams are expected to form a barrier against deleterious substances. They must be easy to apply and have a coherent film. Investigation reveals that 4 types of barrier creams are necessary for 4 classes of hazards. The hazards are: (1) Irritant dusts, (2) aqueous materials, (3) solvents and oil, and (4) aqueous and oil-containing substances.

This paper enumerates and briefly describes several laboratory methods for testing the efficiency of the creams and also states that these tests compare very favorably with clinical tests. However, the authors point out that the final decision as to quality must rest on the clinical testing of the creams.

(628) Heat-protecting metal garments. Z. A. Yashumova. *Gigiena i. Sanit.* 11: 15–19, 1946.

Tests were made on garments of aluminum foil, tin, asbestos, aluminized cloth, sacking cloth, civilian cloth, and army coat cloth. Best protection from radiant heat was afforded by linen cloth covered with overlapping shields (30–50 sq. mm.) of tin plates.

(629) Prevention of mercury poisoning in the manufacture of organic mercury compounds. N. P. Malyshev. *Gigiena i. Sanit.* 11: 20–23, 1946.

In the preparation of organic mercury compounds, poisoning is due to the relatively high vapor pressure of mercury at the high temperature of the process. By introducing protective clothing, improving the ventilation, and increasing the mechanization it was possible to reduce the hazard. Removal of mercury adsorbed on walls and floors produced a drop of mercury concentration in the air from 0.30–0.08 mg. per cubic meter in 1943 to 0.12– traces in 1945. To remove mercury, the floors (Metlach tiles) were wetted with a solution of 1 part of bleaching solution in 4 parts water, and after 2–3 hours, when all the mercury was converted into mercuric chloride, they were rinsed with water. Next, both floors and oil painted walls were washed with a 5–10 percent sodium sulfide solution, preferably with an excess 10 percent sulfur, and after 24 hours rinsed with soap and water. Mercury was thus converted into mercuric sulfide and removed in this form. Humidity and temperature do not affect the mercury concentration in the air of these plants.

(630) Some possibilities in the prevention of disorders of the skin. B. Russell. *J. Roy. Inst. Pub. Health & Hyg.* 10: 191 (June) 1947.

Of 7,149 cases of cutaneous disorders, 6.3 percent were contact dermatitides. Of the latter, two-thirds were of occupational origin. Also discussed are the forms due to universal irritants and the allergic dermatitides. Methods of prevention of both types are considered.

(631) Occupational dermatitis and methods of prevention. L. Schwartz and P. C. Campbell, Jr. *Indust. Hyg. Newsletter* 7: 6 (June) 1947.

Preplacement physical examinations are stressed for personal protection from irritants. Applicants with cutaneous eruptions should not be placed in jobs where there is an unavoidable skin hazard. Preemployment patch tests to weed out those sensitive to the chemicals with which they are to work are neither practicable nor advisable because sensitization of the worker may result. *Hardening* usually disappears with discontinuation of exposure. Also, exposure to a greater concentration of the sensitizing chemical than that to which tolerance has been established may cause a recurrence of the dermatitis, until a further decrease in sensitivity occurs. The location and extent of lesions should be noted in young persons with acne vulgaris. Applicants with dry skin should not be placed at jobs where they must immerse their hands in fluids that defat the skin.

(632) A method for the study of the penetrability of liquid and semisolid films used in skin protection. H. Eisner. *J. Invest. Dermat.* 10: 273–279 (Apr.) 1948.

The procedure for determining the penetrability of liquid films is described. It was demonstrated by this method that films of baby oil, about ⅛ mm. thick, prevented for a 2-hour period the penetration of aqueous solutions of pH values within and beyond the limits of those attained by normal and pathological body secretions. Similar results were obtained using urine and a suspension of feces as carriers for strong acid and alkali. Films of oil-in-water emulsions permitted immediate and facile penetration of the aqueous electrolyte solutions tested.

(633) Industrial dermatitis control. N. Francis. *Ann. Allergy* 7: 374–376 (May–June) 1949.

Controlling the incidence of industrial dermatitis is possible by the combined efforts of the engineering and medical departments in the selection of workers, screening of chemicals and education of employees. General and local methods of treatment are discussed.

(634) "Barrier Ointment" for protection of skin of rubber workers. P. Cirla. *Med. d. lavoro* 40: 178 (June–July) 1949.

Barrier cream is successfully used as a protection measure in the rubber industry. Industrial dermatitis in the rubber industry was prevented by using a water-insoluble cream consisting of resin, a benzoinate resin, bees wax, paraffin, hydrous wool fat, and organic solvents. The cream cannot be removed by washing of the hands after work, but it is spontaneously detached from the skin 3 hours after washing, since it absorbs moisture from the skin.

(635) Prevention of occupational dermatitis. D. J. Birmingham and P. C. Campbell, Jr. *Mod. Sanit.* 1:25–26 (Aug.) 1949.

Occupational dermatitis can be prevented. The ideal preventive measures to be instituted in the control of occupational dermatitis involve both engineering and medical phases. The medical phases must be concentrated upon cleanliness, protective clothing and, if necessary, protective ointment. There is no therapeutic substitute which can be compared to an effective preventive program in a modern, healthful working environment.

(636) Occupational dermatoses. P. Vitali. *Med. d. lavoro.* 41:136 (Apr.) 1950.

The regular use of barrier creams effected a reduction in the incidence of acne and folliculitis among workers exposed to cutting oils. It similarly reduced the incidence of chrome-dermatitis and ulcers in a chromium-plating department, and helped solve the problem of eczema in workers employed in spraying varnish.

(637) Preventive aspects of occupational dermatoses. C. G. Lane and B. C. Gray. *Arch. Indust. Hyg. & Occup. Med.* 2:312–324 (Sept.) 1950.

In the prevention of industrial dermatoses the first step is a detailed survey of the plant, with a thorough examination of the workers to determine the type of lesions present, and to determine the distribution according to operation. In the plant survey, an actual viewing of the entire process, with a knowledge of possible irritants and sensitizers involved, is an essential part of the program. Particular attention must be paid to plant hygiene, as well as to personal hygiene and available washing facilities.

Next, hazards must be eliminated either through the use of harmless substitutes where possible, or else through better safety engineering and safety devices.

Personnel, from the supervisors and foremen through the workers themselves, must be educated as to hazards, precautions, good work habits and the necessity for use of hygienic facilities and protective devices provided.

Personnel who are to be exposed to potent sensitizers, or to solvents, should be screened. In this way workers with an allergic history will not run the risk of sensitization to strongly eczematic substances, and excessively dry skinned personnel will be kept from working with solvents which they will not tolerate.

Routine inspections to determine early cutaneous problems and adequate therapy are an important part of the program. In addition to regular examination of the workers, regular inspections to see that safety regulations are carried out are an integral part of the program.

(638) New trends in rubber and plastic clothing. D. F. West. *Safety Maint. & Prod.* 103: 18–19, 55–57 (June) 1952.

Plastics must now be counted as one of the leading safety clothing materials. The types of basic rubber and plastic safety clothing materials are given and a chart shows the effectiveness of natural rubber, synthetic rubber and plastics against various agents. A recent development in the plastic field is the use of plastisols, which are defined as vinyl mixed in liquid plasticizers. Plastisols enable the coating of a variety of materials for protective purposes.

MISCELLANEOUS

(639) The problem of the sailor's skin. R. Forsey. *Canad. M. A. J.* 48: 212–213 (Mar.) 1943.

Problems of the dermatologist in the British Navy are lack of bathing water, prevalence of oil and dirt, strong soaps, the tight wool uniform, and crowded quarters which produce special difficulties in prevention and treatment.

(640) Occupational disease cases. *Indust. Hyg. Digest* 7:1 (Aug.) 1943.

Connecticut's occupational disease report for June, 1943 lists a total of 208 cases. Cases of dermatitis from oils numbered 141, while acids, alkalis, chlorine, metal dusts, dyes and inks, poisonous plants, soaps and glues, and synthetic resins raise the total number of skin diseases to 179. Pneumoconiosis, including silicosis and tuberculosis, accounted for 14 cases; poisoning from carbon tetrachloride, 1; abnormal pressure, 1; inorganic dust, 1; fumigants, insecticides and disinfectants, 1; lead, 1; solvents (N. O. C.), 2; and sulfur dioxide, 1.

(641) New developments in industrial dermatoses. L. Schwartz. *Pennsylvania M. J.* 47:559–561 (Mar.) 1944.

Among the new industrial skin irritants which have been discovered are the following: (1) The rubber antioxidant monobenzyl ether of hydroquinone, which also can cause leukoderma; (2) the photosensitizing action of brom-fluorescin, a

dye used in indelible lipstick; (3) the synthetic resins and the plasticizers used in nail polish and in wrist watch straps, which can cause sensitization dermatitis; and (4) the new fabric finishes for making fabrics waterproof, flameproof and mildewproof. Twenty-eight States now have coverage under their compensation laws for occupational and related contact dermatoses. Medical schools have inaugurated under-graduate and post-graduate courses in these subjects, and dermatologists are now recognizing that occupational dermatoses are a specialty in dermatology. The cause of many eczemas may be sensitivity to environmental substances. Treatment, and the building of immunity by exposure are discussed.

(642) Occupational diseases of the skin in Maine. L. Bablian. *J. Maine M. A.* 35: 41–46, 59 (Mar.) 1944.

This article presents a comprehensive review of the subject of occupational dermatitis, with special reference to the cases and conditions observed in Maine since the industrial expansion of World War II. Diagnosis of these lesions is established through history, physical characteristics and by patch tests; the history is the most important element. The characteristic lesions of certain occupations are given. The author discusses patch tests and lists various measures for personal and general protection from irritants, cautioning against the tendency toward over-treatment.

(643) Dermatitis of wartime industries in general practice. H. R. Foerster, *J. Michigan M. Soc.* 43: 307–315 (Apr.) 1944.

General causes of industrial dermatitis are discussed, followed by the procedure in making patch tests and the measures for the prevention and control of industrial dermatitis.

(644) Dermatitis cases reported among employed males and females in seven States. H. P. Brinton. *Indust. Med.* 13: 514–522 (June) 1944.

In a study of 32,512 cases of dermatitis reported to the United States Public Health Service by seven States from July 1938 through October 1943, the female rate was found to be the same as the male rate except in certain types of industry, such as food products, iron and steel, transportation equipment and others, where the female rate was higher. Conclusions as to sex differences in susceptibility to dermatitis cannot be drawn unless working conditions are the same and the number of persons exposed to each hazard is accurately known.

(645) Occupational skin diseases. A rapidly developing problem in South Africa. J. Frootko. *South African M. J.* 18: 209–211 (June 24) 1944.

Industry in South Africa is expanding rapidly; health units are needed and control of skin hazards in industry will help maintain efficient industrial development. The medical profession should aid in solving health problems arising from this industrial progress.

(646) Allergic occupational dermatitis in our war industries. L. Schwartz. *Ann. Allergy* 2: 385–387 (Sept.–Oct.) 1944.

The chemical causes of occupational dermatoses may be divided into primary cutaneous irritants and cutaneous sensitizers, which, along with the term "war industries," are defined specifically for this article. Everyone is sensitive to primary irritants to some degree, but certain persons, for physiologic, anatomic or traumatic reasons, are hypersensitive, this hypersensitivity being non-specific, but localized in vulnerable areas. A primary irritant may also be a sensitizer. The terms hypersensitivity and allergy should be carefully distinguished. Dermatitis should be called allergic only if it occurs as a result of an induced generalized sensitivity after a period following exposure to a substance which is not a primary irritant in the concentration to which exposure occurred. Allergy is often followed by tolerance. Under certain conditions, dermatitis becomes generalized.

The occurrence, prevention, and treatment of allergic dermatoses in our war industries are discussed, particularly with regard to the explosives, cutting oils, and fabrics which cause allergic dermatitis in the manufacture of arms, ammunition, airplanes, ships, synthetic rubber, and wearing apparel for use in the armed forces. Tolerance develops in most workers who develop allergic dermatitis, if they are treated while working.

Diagnosis of all occupational allergic dermatitis is made by considering the occupational history, knowing the sensitizing properties of the chemicals occupationally encountered, and performing patch tests.

Schwartz's paper is followed by a discussion by Dr. S. M. Peck, who emphasizes the importance of hypersensitivity, in the broad sense, to chemical irritants on a nonallergic basis, and to the differences in individuals in the natural bar-

riers to the action of these irritants. Some of the natural protective barriers are enumerated. Breaks in these barriers due to one means or another are important. All the contributory factors to the development of hypersensitivity, and environmental or anatomical reasons for localization must be studied. Variations in physiochemical barriers over the body are probably responsible for localized sensitivity. The mechanism of production of tolerance needs further study.

(647) Industrial medical and hygiene problems. E. W. Probst. *Indust. Med.* 13: 773–775 (Oct.) 1944.

Most cases of skin irritation are due to carelessness and lack of personal hygiene, not to allergy. The following control rules are given: Minimize manual contact with chemicals; establish a local exhaust system; instruct workers in personal hygiene, and advise the use of cleansing tissue instead of handkerchiefs; issue protective clothing to workers; use a special indicator soap; and use a nonskid wax on floors. The author advises thorough plant surveys, inspections, medical supervision, and industrial hygiene and safety programs.

(648) Dermatology and industry. J. G. Downing. *Clinics* 3: 774–788 (Dec.) 1944.

This article discusses *ergodermatitis*, a term suggested to replace industrial dermatitis. The causative agents may be physical, chemical or bacterial. Diagnosis may be confirmed in most cases by patch tests. Treatment and preventive medication are suggested.

(649) Occupational and related dermatoses. L. Schwartz and N. R. Goldsmith. Pub. Health Bull. No. 284, U. S. Public Health Service, 1944.

This bulletin is a continuation of Public Health Bulletin No. 226, which contains abstracts from the literature on occupational dermatitis from 1935 to 1939. Like its predecessor, it presents routine work of the Dermatoses Section of the Industrial Hygiene Division, United States Public Health Service.

(650) A practical approach to the dermatitis problem. A. F. Hall. Tr. 33d Nat. Safety Cong. 1: 31–34, 1944.

The early recognition of sentitization dermatitis is really the common ground between the physician's field of diagnosis and the safety engineer's field of prevention.

The practical approach can be summarized: (1) Exact diagnosis is imperative. Every effort should be directed toward determining whether or not each case of dermatitis is of industrial origin and, if so, toward identifying the exact causative factor. (2) When the causative factor has been identified, effective steps can be taken by the safety engineer to protect the affected worker and to prevent the development of similar trouble in the future.

(651) The industrial dermatitis problem. A practical approach. A. F. Hall. *Indust. Med.* 14: 88–91 (Feb.) 1945.

The nature and types of contact dermatitis and the value and the limitations of patch tests are discussed. Exact diagnosis is imperative to determine whether or not a given case of dermatitis is of industrial origin, and, if it is, to identify the specific causative factor. In cooperation with the safety engineer, steps should be taken to protect the affected worker and to prevent development of similar trouble by eliminating, where possible, exposure to unnecessary hazards. Care should be taken not to employ persons with a history of previous sensitization dermatitis.

(652) Occupational dermatitis—its diagnosis, prevention and treatment. I. R. Tabershaw. *Indust. Nursing* 4: 13–16 (June) 1945.

Occupational dermatitis is due to primary skin irritants, allergens, or a combination of the two. Its diagnosis must include the history of the onset and the course of the disease. The site of the dermatitis is always on an exposed part and the appearance of the lesion often tells what irritant is to blame. Therefore, it is important that the nature of all chemicals used in the plant be known, in order to consider every possible contact. Treatment is twofold: Remove the patient to avoid further contact and relieve the pain, swelling and itching. Prevention, likewise, is twofold: Avoid contact with the irritating chemical; and, if it does touch the skin, wash the skin at once.

(653) Progress in industrial dermatology. S. M. Peck. *J. Indiana M. A.* 38: 383–385 (Oct.) 1945.

There is a need for supplementing ordinary dermatologic training by field work in industrial plants. Industrial derma-

tology is a speciality within a speciality and requires specific training in the postgraduate school. Limited courses of lectures to acquaint industrial physicians with special problems may be given also. These lectures should be available to industrial nurses, safety men and the workers themselves. Industry should support a properly planned research program in the field of industrial dermatoses. The problem of acquainting the small plant with new data in industrial dermatology is difficult because of the scarcity of properly trained dermatologists. It is suggested that the teaching staff and graduate students of medical schools offer their services to small plants.

(654) Occupational dermatoses. L. Schwartz. *J. Missouri M. A.* 42: 771–776 (Dec.) 1945.

Discussed are these topics—the mechanical, physical and chemical causes of occupational dermatitis; the types of occupational skin reactions; diagnostic methods for differentiating occupational dermatitis and nonoccupational contact dermatitis; and protective measures and methods of handling cases of dermatitis.

(655) A discussion of the commoner industrial dermatoses. S. M. Peck. *Indust. Med.* 14: 960–964 (Dec.) 1945.

Three classes of substances have accounted for 38 percent of industrial dermatoses over a 5-year period. They are (1) petroleum products and greases, especially cutting oils, (2) cement and alkalies, and (3) solvents.

(656) Skin diseases in industry. B. Crosthwaite. *Brit. J. Phys. Med.* 9: 34–38 (Mar.–Apr.) 1946.

In a large hydraulic brake company, of which the author is chief medical officer, an average of 20,000 skin treatments are given each year to approximately 2,000 employees. Diseases are due largely to irritant agents such as machine lubricants and coolants, solvents and degreasing agents, anti-rust compounds, aluminum alloy swarf and similar metallic fragments, paraffin oil in honing operations, metal and grinding dusts, and cleaning compounds used in the workshop and in laboratory cleaning. Occasionally, cases are caused by actinic radiation in electric arc and acetylene welding. Most of these lesions are treated in the very early stages and respond rapidly without the necessity of absence from work or of any change in occupation. The author describes some factors in the etiology of occupational skin disorders and methods found effective in preventing them. Radiation therapy in dermatology is briefly considered.

(657) Occupational dermatitis. A. T. Jones. *Brit. J. Indust. Med.* 3: 83–97 (Apr.) 1946.

A review is given of 92 cases of occupational dermatitis occurring in a period of 10 years in a chemical works employing 2,000 people. Sixty-seven cases were produced by primary skin irritants and 25 by secondary skin irritants. The diagnosis of occupational dermatitis may be difficult and depends on a full consideration of the mode of development of the eruption, its distribution in relation to areas exposed to irritation, the exact nature of the work and the materials used to cleanse the hands, together with the patient's previous skin history. In a high proportion of cases it is impossible to establish a diagnosis from the appearance of the eruption.

Certain criteria should be satisfied: the causative agent identified, if possible, and classified skin diseases excluded. Patch tests are of corroborative but rarely of primary diagnostic value. A list is given of the chief skin diseases to be considered in differential diagnosis. An account is given of the legal situation and suggestions made for closer cooperation between the medical practitioners concerned in the settlement of cases. Methods of preventing the disease are discussed. No single method is effective, and consideration must be given to all types of protection. Examination of prospective employees, instruction and inspection of employees, attention to factory hygiene and design of plant, and the provision of barrier substances are important measures. Adequate washing facilities, cloakrooms and clothes should be provided. Adverse effects frequently result from the use of improper cleansing agents and consideration is given to the provision of efficient materials. The principles of treatment are reviewed and the value of the opinion of an experienced dermatologist is stressed. The benefits of rest and hospitalization for severe cases are striking. The literature is reviewed.

(658) Some modern trends in dermatology. H. C. Semon. *M. World* 64: 487–489 (May 31) 1946.

The effects of local application of cosmetics, sulfonamides, penicillin and calciferol are discussed. The author believes that too much stress has been laid on psychologic factors in skin manifesta-

tions of doubtful etiology. Likewise, the diagnosis of vitamin deficiency is considered overdone.

(659) Medical progress: occupational dermatoses. J. G. Downing and S. J. Messina. *New England J. Med.* 235: 416 (Sept. 19) 1946; Ibid., 235: 472 (Sept. 26) 1946.

A summary of the literature of the last few years on occupational dermatology is followed by these classifications. Dermatitis may be due to (1) Mechanical and physical agents, (2) flowering plants and their products, (3) vital agents, and (4) chemical agents. Also discussed is diagnosis, differential diagnosis, patch tests, legal aspects, and treatment.

(660) Occupational dermatitis. C. Shaw. *J. M. A. Georgia* 33: 307 (Nov.) 1946.

In this general discussion on occupational dermatitis, Shaw points out that cleanliness is the preventive measure of most value. Daily baths with mild soaps, daily change of clothing, a clean locker and shower room, and a clean plant will do more to prevent dermatitis than anything else. Indeed, the chief virtue of the so-called protective ointment is that the employee will always wash it off from his skin before he goes home, thus removing not only the ointment, but the offending substances which might cause dermatitis.

(661) Reporting industrial dermatitis: proposing a new form to properly evaluate a case. S. M. Peck. *Compens. Med.* 1: 3–8, 1946.

This article presents a new form, for use as an aid in the diagnosis, evaluation and reporting of cases of industrial dermatitis.

(662) Health of the workers. F. J. Tourangeau. *Canadian M. A. J.* 54: 325–358, 1946.

A survey of 3,384 industrial establishments employing 146,469 workers was undertaken in the Province of Quebec to determine health conditions of workers in various industries and to identify industrial health hazards. Such conditions as dust, noise, and temperature were classified according to degree. Over 22,000 workers, of whom 10,000 were in the textile industry, were exposed to excessive heat. More than 6,000 workers were found to be exposed to dust hazards; silica and asbestos were the chief offenders. More than 16,000 workers were exposed to various irritants in their work. Lead, benzol, and mercury were found to be seriously hazardous materials. Approximately 75 percent of claims referred to the Workmen's Compensation Commission of Quebec are based on industrial dermatitis.

(663) Lessons learned from the war. J. G. Townsend. *Occup. Med.* 3: 366–375 (Apr.) 1947.

The year 1936 marked the beginning of good industrial hygiene practice through official agencies and by 1940 there were 30 such units in 27 States. By 1947, $2,500,000 of public funds were being spent for industrial hygiene. Today, 50 million workers are protected by the service; however, these available services have not reached more than 10 percent of the workers in any one year.

The numerous advances made in sanitary engineering, dermatology, toxicology, and ophthalmology in industry are discussed, together with the necessity and advantages of preplacement examinations, oral hygiene and mental hygiene units.

These advances have come about through the cooperation and teamwork of the public health officers, community health organizations, the members of the professions, industrial employers, and industrial workers themselves.

(664) Industrial medicine in Japan. J. S. Felton. *Occup. Med.* 3: 465–496 (May) 1947.

The statutory background of industrial medical care and industrial hygiene in Japan is outlined. The in-plant medical programs in two wartime Japanese industries and associated employee facilities are described. In the main, from the evidence presented, the war worker in Nippon had good medical attention for himself and his family, and adequate in-plant facilities to help him in his factory existence. However, the sanitary conditions were very poor.

(665) Cutaneous diseases in Army Air Force personnel. O. Canizares. *Arch. Dermat. & Syph.* 56: 364–372 (Sept.) 1947.

This study was conducted at two air fields on 2,327 patients. Cutaneous disease was present in 48.94 percent of the cases. Dermatitis venenata accounted for 17.37 percent; pyodermas for 15.17 percent; fungous infections and dermatophytosis for 8.4 percent, and warts of all types for 8 percent.

The author shows how the various skin diseases interfere with flying.

(666) Dermatological hazards. M. H. Samitz. *Indust. Med.* 16:489 (Oct.) 1947.

All the processes in a given plant must be known before a dermatologist can make valid conclusions. The very small number of dermatological cases in the poultry industry is due to lack of any harmful chemical agent, use of protective clothing, and good cleansing facilities.

(667) Industrial dermatitis. H. O. Mackey. *J. A. M. A.* 21:59–63 (Oct.) 1947.

Industrial substances that cause dermatitis are acids, alkalies, corrosive salts, fat solvents, dehydrators, and hydrocarbons. Skin lesions are traumatic, dermatitis venenata, and true eczema. Careful histories should be taken. Some recommended protective measures are personal cleanliness, protective clothing, and ventilation. Early diagnosis and treatment are necessary to prevent chronic dermatitis.

(668) Occupational dermatoses in the Philippines. J. S. Santillan and A. G. Hernandez. *J. Philippine M. A.* 24:351 (July) 1948.

Explained are six cases of compensable, occupationally determined dermatitis. In case 1, eruptions similar to ringworm developed after the patient had been exposed to sodium carbonate and sodium hydroxide in the finishing department of a textile factory.

In another case, erythematous papular lesions developed on the forearm of a laundry worker. Removal from work resulted in a clearing of the dermatitis, while reexposure caused recurrence.

In other cases, vesicular lesions developed when the patients came into contact with paints; a dermatitis followed contact with sodium bichromate; exacerbation of a preexisting tinea pedis was attributed to moisture from melting ice; furunculosis followed an occupational burn.

Good hygiene and protective clothing are important factors in the prevention of industrial dermatoses.

(669) Modern Trends in Dermatology. R. M. B. MacKenna (editor). Paul B. Hoeber, Inc., New York, 1948. 410 pp.

Seventeen of the 18 chapters in this book consider different aspects of dermatology and each chapter is written by one or two American or British specialists. Chapter 12, entitled *Occupational Dermatoses*, is by Louis Schwartz. It describes predisposing causes such as diet and uncleanliness; deals with allergy; and discusses actual causes such as friction, chemicals, and biologic agents. It also discusses pathogeny, symptomatology, diagnosis, treatment, and prevention. Brief case histories of occupational leucoderma, industrial acne, occupational cancer, and dermatophytosis are given. Differential diagnosis of occupational acne is outlined in a table.

The final chapter is devoted to the use of statistics.

(670) Some common industrial diseases of the skin. P. B. Mumford. *Practitioner* 160:353, 1948.

The irritative reactions to cleansing agents and lubricants and the mechanisms by which they are produced are discussed, with emphasis on the effects of constant immersion of the hands in water. Emulsifiers added to oil-water mixtures for stabilization may render the skin susceptible to the detergent action of soap.

(671) Some experiences of wartime industrial dermatoses. P. Bonnevie. *Acta dermat.-venereol* 28:231, 1948.

During the war in Denmark shortages and substitutes of petrol, turpentine, soap, and shellac resulted in a diminution in the incidence of dermatitis. Ammunition was not manufactured extensively and did not give rise to much industrial eczema. Increases in dermatitis arose chiefly from the increased chemical risks common to most western countries. Bakelite, rubber processes, and the increased use of coal tar derivatives provided most of the cases in this group.

(672) Occupational dermatoses. G. Bamber. *Practitioner* 164:385 (May) 1950.

Although dermatitis is the common cutaneous occupational problem, infection is also an important cause of occupational disease. Occupationally connected infections include anthrax, erysipeloid, tuberculosis, cowpox, orf, actinomycosis, and infections by yeastlike fungi in confectioners and sugar workers. Exposures to irritants such as ultraviolet light and tars are important sources of carcinoma. The clinical features of the cutaneous lesions and their diagnosis, treatment, and prevention are discussed.

(673) Dermatitis due to ticks and dermatitis due to vegetable substances; notes and observations on some cases encountered in Somaliland. E. Lipparoni. *Arch. ital. Sci. med. trop.* 32:913–922, 1951.

Report of a tick-borne dermatitis observed in eight European hunters in a

district of Somaliland called *Dafet*. This form of dermatitis was characterized by small papular elevations, depressed at the center, where a small blackish crust of blood appeared. In addition, urticate patches of erythema were observed, which, like the papules, finally covered the entire surface of the skin. There was a violent pruritus and the condition persisted for about 10 days. Apparently the ticks belonged to the Ixodes or Argas genus. In workers engaged in cutting spurge, the first contact results in the appearance on the areas of skin not covered by clothes of a dermatitis characterized by an extremely marked erythema and edema, accompanied by vesiculation and a burning sensation. These manifestations disappear within 3 to 10 days and are followed by an extremely intense pigmentation which continues for 2 to 3 months. During the period of excessive pigmentation the workers, even though exposing themselves to the same injurious action, sustain no damage whatever. The dermatitis is caused by juice from the bark of the spurge and especially by the resin (hydrocarbons) which it contains.

Gerutti—Siena [EXCERPTA MEDICA]

(674) The industrial health movement with special reference to dermatoses. J. E. Dalton. *J. A. M. A.* 147: 799 (Oct.) 1951.

Industrial dermatoses have played an important part in the history of industrial health surveys and in the development of the employer-employee relationship, and continue to be an important cause of industrial disability. In the United States, industrial dermatoses account for from 60 to 65 percent of all occupational illness. They cost $100,000,000 annually in compensation, and an almost equal amount in medical care costs.

(675) Occupational and industrial dermatoses: Statistical and analytic survey of 3,042 cases. B. M. James and J. Bleiberg. *J. M. Soc. New Jersey* 48: 448 (Oct.) 1951.

The authors review the records of 3,042 patients who had dermatoses allegedly the result of occupation. The diagnoses were made on the basis of the history and the physical examination, supplemented by patch tests where indicated. The authors saw numerous nonoccupational dermatoses misdiagnosed, and treated as occupational.

The patients with a true occupational dermatitis were classified in relation to the following categories: trauma, primary irritants, sensitizers, wet work, infections, and a miscellaneous group. The lesions produced by primary irritants ranged from mild erythema to a widespread exfoliative dermatitis.

The authors report a survey of contact dermatitis due to hypersensitivity to the grass-fiber bags in which crude chocolate was shipped. In this factory, over 80 percent of the personnel had dermatitis and urticaria.

Trauma from glass wool used in insulation caused many cases of pruritus, as well as secondary infections. Wet work caused lesions most commonly in those with histories of atopy. The dermatoses caused by petroleum products were erythema, vesiculo-bulbous eruptions, exfoliative dermatitis, acne, folliculitis, abscesses, keratoses, epithelioma, melanosis, leucoderma, sebaceous cysts, atrophy and telangiectasia.

Pre-employment examinations should screen out persons with dermatoses likely to tolerate poorly controlled industrial exposures. Industrial exposure is reduced by good hygiene in the plant. Education of the workers has made them aware of health hazards, and has reduced the number of cases of industrial dermatoses wherever it has been tried.

(676) Examination of the action of injurious substances in industry on the physiological function of the skin and of the prevention of injury by protective ointments. I. Testing the alterations in the capacity of the skin to absorb water. O. Jacobi. *Centralbl. Arbeitsmed. u. Arbeitsschutz* 1: 126–130 (Nov.) 1951.

Many references are given to work on the effects of alkali, soaps, organic solvents, and other substances on the skin, and on the mode of action of various protective ointments. The author maintains, however, that in order to get a clear picture of the action of various irritants there should be detailed examinations of their effect on the function and properties of the skin. This would necessitate the measurement of capacity to absorb water, carbonic acid excretion, insensible perspiration, elasticity, capillary changes, capacity for neutralizing acid and alkali, fat content, temperature, and other characters. The author describes some of his work on the effect of a number of substances on the power of the skin to take up water.

[INDUST. HYG. DIGEST]

(677) Clinical, social, and occupational aspects of industrial dermatitis. M. Hewitt. *Lancet* 2: 1105 (Dec.) 1951.

Seventy percent of unemployed, disabled people at employment offices claimed to have an industrial dermatitis. However, unsatisfactory work records and emotional difficulties were much

more prominent than the degree of cutaneous involvement. Therefore, a study of the social environment of 70 such patients was initiated.

Lax thinking and careless diagnosis of any dermatitis as an industrial-determined disease was a factor of prime importance. Physicians, plant safety men, nurses, and men in the trade union were all equally culpable.

Another important factor was the problem of over-treatment by employing excessively strong and irritating medications by first-aid workers. Many of the patients had seborrheic dermatitis prior to their employment, but concealed this fact. In other persons there was a strong familial history of eczema. Many patients kept morbidly complete diaries of their disease, and would manifest flares attributable to stress at the time of review by a compensation board.

Purely local therapy was of little value to these patients. More can be accomplished by keeping an accurate history and explaining the disease to the patient to gain his cooperation.

(678) Occupational dermatoses and the Swiss Accident Insurance Institute. M. Winkler. *Dermatological* 103: 183, 1951.

The author discusses 123 cases that were passed on by the Institute during the last 15 years. In 22 patients (18 percent), the occupational origin was legally recognized and full compensation was granted; 67 patients (54.4 percent) were voluntarily accepted; that is, they received the same privileges as those whose cases were legally accepted, except that their recurrences did not have to be completely paid for. The rest of the claimants were given either a partial settlement or were not accepted.

(679) Significance of the silicones in dermatology. M. Schoog. *Arzneimittel-Forsch.* 1: 167–169, 1951.

Silicones were chosen as indifferent ointment bases instead of vaseline, which possesses irritant properties. Because of this irritation there is a trend away from the use of vaseline. The silicones (polyorganosiloxanes) are preferable to vaseline because their chemical composition is fixed. There are three groups: Oil, rubberlike compounds, and silicone resins. The silicones possess to a greater extent the properties desired in an ointment base. Patch tests for skin tolerance of silicones were carried out for 24 to 48 hours on 93 patients with various skin lesions and on 16 normal controls. No case of irritation was noticed. No drugs were incorporated. Further tests for tolerance with silicone pastes are being carried out. A large part of the paper is concerned with a discussion of chemical compounds of the silicones.

Dreyer—Burlington [EXCERPTA MEDICA]

(680) Some practical observations on cases of occupational dermatitis. F. A. E. Silcock. *Med. prat.* 226: 538–541, 1951.

Barrier creams or other protective substances are of no value against cutting oils and suds which usually affect new workers. Cotton gloves are not practical, and rubber gloves may keep the irritant out, but they keep the perspiration in. Best protection is frequent removal of the offending oil with sulphonated fatty alcohols such as lauryl, stearyl or cetyl. The pH value of such detergents should be between 5 and 7. Frequent change and washing of greasy overalls is important. Atopic eczema may imitate contact dermatitis, the occupational allergen being only the trigger factor. Cases exemplify common pitfalls in the handling of occupational dermatitis.

Wiener—Milwaukee [EXCERPTA MEDICA]

(681) Skin condition in industry. W. J. O'Donovan. *Trans. A. Indust. M. Officers* 2: 34 (Apr.) 1952.

In dealing with patients attributing their cutaneous disease to their occupation, the physician must have a knowledge of the nature of their work. Before making a diagnosis of occupational dermatitis, the physician must rule out endogenous disease, and eliminate the possibility of exposure to an allergen or irritant, either at a second place of employment or as a hobby.

Occupational dermatitis can be reduced by means of mechanical processes of measuring and filling, good ventilation, protective clothing, and barrier creams.

(682) Chronicity and relapse of industrial dermatitis. A. J. Rook. *Trans. A. Indust. M. Officers* 2: 66 (July) 1952.

Various pathologic and physiologic factors which make for chronicity are discussed. Avoiding trauma and irritation, treating associated infections, and avoiding the degreasing of the skin by too frequent cleansings are of importance in preventing relapse. The physician must not overlook the psychological factors, the stresses and tensions, which can be of great importance in determining a relapse.

(683) Contact dermatitis following the wearing of new hats. W. Straub. *Muchen. med. Wchnschr.* 94: 598–600, 1952.

Besides the already known cases of contact dermatitis (leather, chromic com-

pounds and aniline dyes), the author discusses another possibility. The felt of some hats is treated with ol. lauri expressum (to make it slightly fat). Sweating of the skin draws the oil through the leather band, and may cause contact dermatitis. Patch tests with ol. lauri, felt and leather of hats that had been worn were respectively +++, ++, and +. Patch tests with leather of new hats were negative.

Vette—Amsterdam [EXCERPTA MEDICA]

(684) Results of an investigation of "*epidermophytosis*" and eczema caused by shoe-linings, and eczema caused by rubber, leather, plastic and metal parts. R. D. G. Simons. *Nederl. tijdschr. u. geneesk.* 96: 2182–2188, 1952.

Detailed investigation of 65 patients who had been treated for several months by general practitioners for epidermophytosis, revealed the following facts: In 44 patients, mycelia were found in scrapings, after repeated microscopic examination. (Repeated at least 3 times.) Cultures of these 44 patients showed *Epidermophyton floccosum* only in 12 patients. *Tr. mentagrophytes* were found in 23 patients and *Tr. rubrum* in 7 patients. Patch tests of the 21 negative patients revealed that 4 patients with symmetrical plantar dermatitis had a contact-type dermatitis due to artificial leather, rubber or plastic, which were part of the shoes. Sweat had to be applied to elucidate the positive patch test. The other cases were due to pyogenics. This investigation shows that the term *epidermophytosis*, as used by the medical profession, is a *diagnostic wastebasket.*

Schipper—Fort Worth [EXCERPTA MEDICA]

Insecticides and Economic Poisons

(685) Delousing of clothing by fumigation. W. A. L. David. *Brit. M. J.* 2: 108 (July 24) 1943.

Of seven fumigants tested for small-scale delousing of clothing, three proved to be suitable: methyl formate, ethyl formate, and methylallyl chloride.

(686) Exposure to dinitrocresol. *Baltimore Health News* 20: 169–170 (Sept.) 1943.

A non-fatal occupational illness of a colored worker exposed to a dust containing dinitrocresol, used in the manufacture of an insecticide, is reported. Analysis indicated an exposure of 4.7 mg. of dinitrocresol per cubic meter of air (47 mg. per 10 cubic meters). The clinical picture revealed a temperature of 102° F., phenomenal basal metabolism of 400 plus, rapid pulse, rapid respiration, profuse sweating, shortness of breath, and cough. The skin on the hands and feet was canary yellow. The patient had sustained a loss of 20 pounds. This is believed to be the first recognized instance of industrial poisoning from this substance in this country.

(687) Evaluation of mosquito repellents. P. Granett, W. Rudolfs, and G. C. Furness. *Chem. Industries* 53: 850–852 (Dec.) 1943.

For satisfactory use, a repellent must have certain attributes. It must prevent insects from biting and be harmless to the user. Other desirable characteristics include availability of the chemicals, absence of a disagreeable odor, stability to various environments and handling methods, and harmlessness in contact with various fabrics, leather goods, and other such materials. The authors speak well of Formula 612, developed at Rutgers University under a research program.

(688) Pathology of experimental poisoning in cats, rabbits, and rats with 2,2 bis-parachlorphenyl-1, 1, 1 trichlorethane. *Pub. Health Rep.* 59: 979–984 (July 28) 1944.

Histological findings in the various organs of cats, rats, and rabbits poisoned with DDT are presented. The principal changes were found in the liver.

(689) The pharmacologic action of 2,2 bis (ρ-chlorophenyl) 1, 1, 1 trichlorethane and its estimation in the tissues and body fluids. *Pub. Health Rep.* 59: 984–993 (July 28) 1944.

A method of testing and estimating the amount of DDT in body tissues and fluids is described. The signs and symptoms of DDT poisoning in test animals are also presented.

(690) The story of DDT. V. Froelicher. *Soap & Sanit. Chem.* 20: 115 (July) 1944.

This is the story of the wonder insecticide which was used to check the

typhus plague in Italy. Dichloro-diphenyl-trichloroethane (DDT) is a white powder with a faint fruity odor. It is practically isoluble in water; however, it is quite soluble in cyclohexanone, benzene, toluene and xylene, as well as in petroleum oils and solvents. DDT is effective in killing flies, beetles, roaches, ants, fleas, chiggers, bedbugs, and moths. It is both a contact and a stomach poison. DDT is effective after one application for periods of time up to several months.

The toxicity of DDT to man is being studied [19-4] by the U. S. Public Health Service and by the Kettering Laboratory at the University of Cincinnati. Data obtained by Swiss authorities indicate that between 5 and 7½ gm. of DDT cause no toxic symptoms if taken by mouth. American data tend to confirm this claim, but the only proved fact is that the dry powder is not absorbed through the skin and is non-irritating. Millions of men and women have been treated with a 10 percent louse powder, without any known cases of harm. The LD 50 by mouth in rats is 0.25 gm. per kilogram when dissolved in olive oil, and 2.1 gm. per kilogram if suspended in milk. No one today can say what these data indicate regarding the toxicity to man. Mice are affected by inhalation of a 5 percent DDT dust, but guinea pigs, rabbits and cats show no reaction. Caution is advised in the use of this new product until it may be thoroughly tested, especially since some reports indicate that DDT is toxic if taken by mouth.

(691) Tick repellents. Queries & Minor Notes. *J. A. M. A.* 126: 268 (Sept.) 1944.

Indalone is well recommended as a tick repellent. This synthetic compound is alpha, alphadimethyl-alpha-carbobutoxy-dihydro-gamma-pyrone. Another tick repellent, developed for use by the armed forces, is known as 622.

(692) Allergy from timbo (Lonchocarpus h. b. k.) report of a case. A. Oliverira Lima. *J. Lab. & Clin. Med.* 29: 939 (Sept.) 1944.

A case of bronchial asthma and contact dermatitis from Timbo used as insect spray is presented. Both Derris (Cube) and Lonchocarpus (Timbo) are Leguminosae and are used as insecticides. Animal experimentation indicates cross reactions between Derris and Lonchocarpus.

(693) DDT T. F. West and G. A. Campbell. *Indust. Chemist* 20: 461–465 (Sept.) 1944.

The chemical and insecticidal properties of DDT, its effect on farm animals (including bees) and on vegetable products, and its toxicology to human beings are considered. In concentrations in regular use, very little toxic action is likely to be experienced by humans. The powder and aqueous spray form are not absorbed by the skin and do not induce skin irritations even when abrasions are present. Toxic symptoms may follow long exposure of large skin areas.

(694) Toxicity and potential dangers of aerosols, mists, and dusting powders containing DDT. P. A. Neal, W. F. von Oettingen, W. W. Smith, R. B. Malmo, R. C. Dunn, H. E. Moran, T. R. Sweeney, D. W. Armstrong, and W. C White. Pub. Health Rep. Supp. No. 177, 1944.

In spite of the inherent toxicity of DDT, no serious health hazards should result from its use as an insecticide in a 1 to 5 percent solution in 10 percent cyclohexanone, with 89 or 85 percent of Freon as aerosol. It should be pointed out that the solution of DDT in fatty oils definitely increases its toxicity and, therefore, the effects of a solution in cyclohexanone are not necessarily comparable to those produced by a solution in oil.

The use of DDT in concentrations up to 10 percent in inert powders for dusting clothes, as in the extermination of lice, appears to offer no serious hazards. Because of the relative insolubility of DDT and the large particle size of the dust, it does not reach the alveolar spaces. A large proportion of the dust is retained in the uppermost sections of the respiratory tract. The remainder is swallowed. It is thought that only a small fraction is absorbed.

The use of a 1 percent DDT neobase mixture was found to be non-toxic to rabbits with heavy exposure for 48 minutes daily, over a period of 4 weeks. Consequently, it is believed safe for use as a fly spray, where only temporary and comparatively moderate exposure to much lower concentrations is involved. However, due to the fat-solvent properties of most petroleum distillates, irritation of the skin may occur following heavy exposure.

While this study deals only with the potential dangers of DDT when inhaled as aerosol, dust or mist, it should be pointed out that ingestion of massive doses of DDT will cause a toxic reaction. Therefore, it should be used only under conditions which exclude heavy contamination of food. Since these experiments were concluded, a thorough clinical and laboratory study has been made of three men, each of whom had several months' continuous occupational exposure to DDT in various insecticidal forms. An evaluation of the results fails to indicate any

definite evidence of toxic effects from DDT in these men.

(695) The effect of DDT on cutaneous sensations in man. Y. Chin and C. T'ant. *Science* 103: 654 (May 24) 1946.

Oil facilitates the penetration of DDT into the skin. DDT dissolved in olive oil, or in mixture with vaseline, was found to diminish tactile sensations in most cases, although no difference in pain, cold, and heat sensations could be detected.

(696) Dermatitis resulting from exposure to DDT: A preliminary report. G. V. Stryker and B. Godfroy. *J. Missouri M. A.* 43: 384–86 (June) 1946.

Six cases of dermatitis from DDT developed in different forms. In each case, the onset occurred following exposure in the summer when the patients were perspiring. All cases responded to intravenously injected ascorbic acid and removal from contact with DDT.

(697) Nephrosis probably due to excessive use of "Sta-way" insect repellent. D. Hoehn. *J. A. M. A.* 128: 513 (June) 1946.

This report presents a case of severe nephrosis in a 3-year-old white boy from external applications of an insect repellent (Sta-way). Prior to the nephrosis, the child had developed a generalized dermatitis from the repellent. In spite of the dermatitis, the parents continued to apply the repellent. The author believes that if applications had been discontinued when the rash appeared, kidney damage probably would not have resulted. Further studies with rabbits show that Sta-way causes severe kidney and liver damage.

(698) Two new effective insect repellents, NMR1–201 and NMR1–448. L. A. Jackowski, Jr. *Science* 104: 266–269 (Sept. 20), 1946.

The effectiveness is shown of NMR1–201, consisting of 2-phenyl cyclohexanol and β-tetralol, against nocturnal mosquitoes, Aedes, chiggers, and sand flies. Primary irritation resulted in 6 of 59 subjects. A substitute mixture (NMR1–448), consisting of 2-phenyl cyclohexanol and 2-cyclohexyl cyclohexanol, was even more effective and produced no skin irritation.

(699) The occupational hazard of DDT spraying. I. Gordon. *Brit. J. Indust. Med.* 3: 245–249 (Oct.) 1946.

On examination, 27 African DDT sprayers showed no symptoms of DDT poisoning, although no precautions were taken against skin absorption. When DDT was used in kerosene, rashes were common at first, but after some months the sprayers became desensitized. Patch tests revealed the irritation was due primarily to the kerosene but was aggravated by the DDT. A plea is made for the discontinuance of kerosene as a solvent for DDT, which is innocuous alone.

(700) Skin-sensitizing properties of DDT for the guinea pig. J. E. Dunn, R. C. Dunn, and Barbara S. Smith. *Pub. Health Rep.* 61: 1614–1620 (Nov. 8) 1946.

Attempts to induce cutaneous hypersensitivity to DDT in guinea pigs were unsuccessful, despite the use of several methods. A possible explanation is presented for the previously reported induction of cutaneous hypersensitivity to DDT in the guinea pig. Histopathologic changes in the skin following injection of DDT in corn oil and of corn oil alone are described.

(701) Antiparasitic preparations from xantogenic compounds. E. L. Olifson. *Gigiena i. Sanit.* (Moscow) 10; 38–40, 1946.

The author records the results of insecticidal tests against lice with the following preparations: (1) 50 percent potassium xanthogenate and 50 percent water; (2) 40 percent potassium xanthogenate, 40 percent water, and 20 percent soap; (3) 30 percent potassium xanthogenate, 40 percent water, 20 percent soap, and 10 percent paradichlorobenzol; (4) 50 percent potassium xanthogenate and 50 percent soap; (5) 50 percent xanthic disulphide (= bis-ethylxanthogen), and 50 percent soap.

From the results, given in four tables, the following conclusions are drawn:

Potassium xanthogenate can be successfully employed as an insecticide, provided that its concentration in the preparation is not lower than 5 percent. While soap is a necessary constitutent of such preparations, the addition of paradichlorobenzol does not increase their insecticidal properties. Preparations containing potassium xanthogenate can be used (1) for destroying lice in the head; (2) for destroying lice in clothing; and (3) for prophylactic impregnation of underwear.

(702) Allergic eczematous contact-type dermatitis caused by DDT. M. Leider. *J. Invest. Dermat.* 8: 125–126 (Mar.) 1947.

A case of eczematous dermatitis caused by DDT is reported. The author feels

that this is the first adequately proved case in which the necessary criteria of exposure, incubation period, recurrent lesions (of the exposed face, upper trunk and extremities), and an indisputable eczematous reaction to patch test with DDT have been demonstrated. In addition, by testing 50 patients with 5 percent DDT in acetone, it was shown that this combination has no primary irritancy and therefore is established as suitable for patch testing for eczematous hypersensitivity.

(703) Hexaethyl tetraphosphate. Queries and Minor Notes. *J. A. M. A.* 134: 742 (June 21) 1947.

Hexaethyl tetraphosphate is an insecticide highly toxic to animals and to most insects unharmed by DDT. It is thought to be injurious to man. When diluted with water, as used for spraying fruit trees, it rapidly becomes innocuous through hydrolysis. To avoid skin contact and inhalation, respirators and protective clothing should be used if necessary. Contaminated skin areas should be washed with water thoroughly and immediately.

(704) Information on two of the newer insecticides. *Ind. Hyg. Newsletter* 9: 9 (Feb.) 1949.

A new series of compounds, the organic phosphates, recently brought into use as powerful insecticides, represent a potential threat to human beings. Hexaethyl tetraphosphate (HETP), and its active toxic ingredient, tetraethyl pyrophosphate (TEPP), are extremely toxic to insects and animals. Very minute amounts (2 to 10 mg. per kilogram) are fatal to experimental animals. Several human cases of poisoning have occurred in California.

These products, which are syrupy liquids, are freely absorbed from the gastrointestinal tract during ingestion, and also through the intact skin. Probably, they are absorbed also through inhalation of the vapors. They are only slightly irritating when first applied to the skin, so that there is no immediate warning of potential danger. Their action is due to the irreversible destruction of the enzyme cholinesterase, leading to excessive parasympathetic nervous stimulation. In addition, there is an effect similar to that induced by nicotine.

Symptoms include pupillary contraction, spasm of eye muscles, blurred vision, tightness of the chest, sometimes dyspnea, bronchial spasm, edema, excessive glandular secretion in bronchi and bronchioles, vomiting, constipation or diarrhea, and intestinal cramps. Information concerning chronic toxicity is incomplete and inconsistent, but it is probably similar to *ginger paralysis* observed some years ago from a similar compound. Atropine and the magnesium ion are most effective in treatment.

Poisoning can be prevented by avoiding contact of the agent with the bare skin, or washing it off quickly with copious amounts of soap and water. Use of protective masks in dusty atmospheres, and care in avoiding contamination of food are additional preventive measures.

(705) Exfoliative dermatitis from contact with DDT. E. L. Higgins and D. J. Kindel. *J. Invest. Dermat.* 12: 207 (Apr.) 1949.

DDT and two related compounds were proved by patch tests to be the cause of a case of exfoliative contact dermatitis. The eruptions occurred following the use of DDT spray mixture. In view of the widespread use of DDT, the rarity of reaction in man is emphasized.

(706) Statement on parathion. U. S. Public Health Service (July) 1949.

Parathion, known chemically as O,O-diethyl O-p-nitrophenyl thiophosphate, provides one of the most effective insecticides known for the control of many agricultural and horticultural pests. Thoughtless or careless handling of parathion liquid, or formulations in which it is contained, may cause serious illness or death. Symptoms of poisoning and suggestions for treatment are given. Precautions are recommended to manufacturers, in the preparation of impregnated dust concentrates; to mixers and blenders, in the preparation of diluted dusts and for distribution and storage; and to users, for field application of wettable powders and dusts.

(707) Parathion, a toxic insecticide, can be used with precautions. *Indust. Hyg. Newsletter* 9: 3 (Aug.) 1949.

Parathion, one of the newer insecticides, is very effective when used correctly and with care. Skin contact with the liquid or inhalation of the dust must be avoided, since death can result quickly. Persons handling parathion who develop symptoms of headache, diarrhea, nausea, shortness of breath, or tightness of the chest, should be seen by a physician immediately. At the first sign of pulmonary

edema, the patient should be placed in an oxygen tent.

Parathion acts by stimulating the parasympathetic nervous system; therefore, atropine should be given in large doses.

(708) Dermatitis caused by DDT. L. Hollander. *Arch. Dermat. & Syph.* 62: 66–68 (July) 1950.

A case of dermatitis of major severity and long duration caused by DDT is described, occurring in a man who lay on a lawn freshly sprayed with DDT. The man developed a vesicular dermatitis of the face, arms and anterior chest, which were the areas of direct contact. A patch test with 5 percent DDT was strongly positive.

(709) Dermatologic aspects of insect repellents and toxicants. L. Goldman. *Arch. Dermat. & Syph.* 62: 245–260 (Aug.) 1950.

The protection of the individual and his living quarters and other parts of his environment, through chemical and laboratory research, represents an important feature of the chemical control of insects. To assure such protection, the entomologist, the toxicologist, and the clinical dermatologist must cooperate in the development and use of new materials and in the control of compounds now in use.

The materials now recommended for repellent action are of low sensitizing index. However, the possibility of acute and chronic systemic toxicity through skin absorption must still be considered, for the absence of premonitory dermatitis may lead to overexposure.

(710) Comparative acute and subacute toxicities of allethrin and pyrethrins. C. P. Carpenter, C. S. Weil, U. C. Pozzani, and H. F. Smyth, Jr. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 2: 420–432 (Oct.) 1950.

In addition to aerosol inhalation studies and feeding experiments to determine the toxicity of allethrin, studies were conducted on irritation, toxicity from percutaneous absorption, and sensitizing potential.

The LD 50 of undiluted commercial allethrin for rabbits by the percutaneous route is 11.2 ml. per kilogram. Dilution in deodorized kerosene markedly increases toxicity by skin penetration, but dimethyl phthalate does not appear to increase percutaneous absorption.

Undiluted commercial allethrin and dilutions in deodorized kerosene caused moderate erythema of the clipped skin of the rabbit belly when applied in single or repeated applications.

Guinea pigs could not be sensitized by a course of 8 intracutaneous injections of a 0.1 percent dispersion of allethrin in 3.3 percent propylene glycol in isotonic sodium chloride.

The study indicates that commercial allethrin is of the same order of toxicity as pyrethrins, and can be used safely as an insecticide in sprays and aerosols.

(711) Skin hazards from fertilizers and pesticides. L. Schwartz. *Arhiv. Hig. Rada.* 3: 265, 1952.

Skin hazards from fertilizers and pesticides occurring among farmers, florists and cattle breeders are discussed. The pathology and measures for prevention of occupational hazards are described.

Leather and Footwear

(712) Health hazards connected with solvents used in shoemaking. W. Schweisheimer. *Hide & Leather & Shoes* 106: 18, 1943.

Various solvents, such as alcohol, acetone, benzene, toluol, ether, acetates, and petroleum naphtha, are potential hazards to workers in shoe factories. Various preventive measures are discussed.

(713) Dermatitis due to shoes. C. Shaw. *Arch. Dermat. & Syph.* 49: 191–193 (Mar.) 1944.

The salient features of contact dermatitis of the feet due to shoes are pointed out. Ten representative cases are cited. Compounds used in the manufacture of leather, antimildew preparations impregnated in the lining, glue, felt, canvas, and synthetic substitute materials are all possible sensitizers.

(714) Shoe dermatitis among soldiers. F. A. Dolce. *Mil. Surgeon* 95: 505 (Dec.) 1944.

Shoe dermatitis is often misdiagnosed and treated for long periods of time with fungicidal preparations. The author discusses the criteria upon which he bases his diagnosis of shoe dermatitis. These

include patch tests with the leather. Treatment and methods of preventing recurrences are outlined.

(715) The tanner's hands. W. Schweisheimer. *Hide & Leather & Shoes* 107: 26, 1944.

The prevalence, cause and treatment of various irritations common to the hands of tannery workmen are reported. Stains, callouses, chrome sores, carbuncles, and anthrax are discussed.

(716) Dermatological hazards in the leather industry. M. H. Samitz. *Indust. Med.* 17: 431–433 (Nov.) 1948.

A detailed discussion is presented of the steps employed in tanning leather. The causes of dermatitis in this industry are classified as (1) mechanical, (2) physical, (3) biologic, and (4) chemical. A list of preventive measures is given. It is noted that the plant with the best hygienic conditions, a dispensary and physician, had no record of dermatitis.

(717) Dermatological hazards in the leather industry—wool-pulling, belting, felt and hair. M. H. Samitz and P. Mori. *Indust. Med.* 18: 114–116 (Mar.) 1949.

Descriptions of the processes involved in the wool-pulling, belting, and hair and felt industries are given, with consideration of the dermatological problems involved. A statistical analysis of the incidence and types of dermatitis is included.

(718) Primary irritants and sensitizers used in fabrication of footwear. L. E. Gaul and G. B. Underwood. *Arch. Dermat. & Syph.* 60: 649–675 (Nov.) 1949.

A wide variety of materials, including adhesives and dyes, is found in modern footwear. Fillers are composed of adhesives and cork, asphalt and cork, sponge rubber, sawdust, asphalt, tar and synthetic resins, and plastics. These materials can act as primary irritants or sensitizers, insulting the skin through the solvent-action of sweat.

Eight cases of dermatitis from footwear are presented, together with the results of diagnostic patch testing to chemicals used in shoe manufacture as well as to portions of the patients' own footwear.

(719) Failure of modern footwear to meet body requirements for psychic and thermal sweating. L. E. Gaul and G. B. Underwood. *Arch. Dermat. & Syph.* 62: 33–45 (July) 1950.

The foot portion of hose should be made of absorbent fibers to permit the removal from the skin of psychic and thermal sweat. Shoe material should allow the rapid passage of moisture so that evaporation from the feet can play its important role in the regulation of foot and body temperature.

With permeable shoes and socks that meet physiologic requirements, environmental water can be kept from the feet by loose-fitting overshoes.

(720) Contact dermatitis due to synthetic resins in shoe linings. J. W. Jordon. *A. M. A. Arch. Dermat. & Syph.* 62: 671–680 (Nov.) 1950.

Data are presented on 47 proved cases of dermatitis of the feet caused by synthetic resins used in the linings of shoes. Dermatitis due to synthetic resins used in shoe linings is more common in females, varies in severity, and usually is bilateral and symmetrical. The distribution depends on the degree that the shoes are lined by the resin.

Dermatitis of the feet caused by synthetic resins is sometimes accompanied by dermatitis at other sites caused by synthetic rubber in garter snaps and by elastic and adhesive plaster.

Patch tests performed in the customary manner, employing the resinous linings which contact the areas of dermatitis when the shoes are being worn, are of prime diagnostic importance.

Elimination of shoes with linings which give positive patch tests usually results in prompt healing of the dermatitis. Employing a series of synthetic resins for patch testing in cases of suspected resin dermatitis is of little value; patients must be tested to the compound they actually contact, or better yet, to all the ingredients of the compound.

The widespread use of synthetic resins in manufacturing, and the fact that many isolated instances of resin dermatitis have been reported, make it likely that these compounds are an important cause of dermatitis of obscure etiology at sites other than the feet.

Mechanical (Trauma)

(721) Traumatic edema of the hand. F. Schorcher. *Beitr. klin. Chir.* 171: 176–194, 1940.

A case of edema of the hand due to lymph vessel obstruction is reported. The obstruction was supposedly produced reflexly by over-excitement of the sympathetic nervous fibers from silkworm thread used for drainage purposes.

(722) The occurrence of angio-neurotical disturbances in the hands ("dead hands") of beaters in the boot and shoe industry. A. Bruusgaard. *Nord. hyg. tidskr.* 22: 309–318, 1941.

Nearly all of the workers in the shoe industry engaged in the beating process, which makes the upper part of the footwear fit the last, developed an angioneurotic disease of the hands. Although intermittent at first, this disease may become constant later. The hands feel cold, and their sensibility is lowered. The disease is apparently due to a disturbance of the local vasomotor and central sympathetic nerve centers, which involves excessive contractions of the capillaries in response to cooling.

(723) Trigger finger. *Safety Eng.* 86: 41–44 (July) 1943.

Two ailments are peculiar to women engaged in chipping or riveting with air guns.

The first, chipper's palsy, is rare. It consists of weakness or atrophy of some muscles, and is probably caused by improper handling of the tool or a too vulnerable position of the nerve at the base of the thumb.

The other, called *trigger finger* or *woman welder's hand*, is the result of injury to the tendons of one or more fingers at the level of the knuckles. Bruising the tendon causes swelling which may become so great that the tendon does not pass easily through the opening in the ligament and external force must be applied. Treatment involves splinting the fingers for a number of weeks. The tools should be redesigned to conform to a woman's hand, well-fitting gloves should be used, and easy, relaxed operation of the tools should be taught.

(724) "White hand" in tin plate stretchers and in grinders. J. Ponhold. *Arch. Gewerbepath. Gewerbehyg.* 12: 102–111 (Sept.) 1943.

The signs and symptoms are reported of *white hand*, found in 35 of 39 tin-plate stretchers engaged in straightening sheets of tin-plate by repeated blows with a heavy iron hammer. This condition is due to capillary damage from strong, high frequency vibrations and from exposure to cold. Preventive measures are outlined. It is suggested that some hypersensitivity to cold may remain for a number of years after cessation of this type of work.

(725) Clinical effects of the use of pneumatic tools. D. Hunter, A. I. G. McLaughlin, and K. M. A. Perry. *Brit. J. Indust. Med.* 2:10, 1945.

The authors describe a syndrome known as *white fingers* found in pneumatic tool workers. It usually occurs from 2 to 5 years after initial employment among workers using tools with a vibration rate of 2,000 to 3,000 a minute. The syndrome rarely causes gross disability.

(726) Raynaud's phenomenon in riveters. T. Lindquist and T. Flemberg. *Acta med. Scandinav.* 120:309–318, 1945.

This paper is concerned with circulatory disturbances that result from the use of pneumatic riveting tools. In the groups studied, the riveters had their hands exposed to cold air which was played on the tool to prevent its overheating. The assistants' hands were subjected to excessive heat. The symptoms were similar in both groups and characterized by stiffness, numbness, blanching, and a sensation of cold and pain in the fingers. In some instances, the symptoms became apparent only while a man was at work; in others, they appeared after working hours and after exposure. Symptoms first appeared after employment in this type of work from 7 to 26 years.

A test is described which makes it possible to distinguish between spasmodic and structural disorders of arteries by

comparing the temperature of the skin of the fingertips with a rising temperature of the body.

(727) Effects of high speed vibrating tools on operators engaged in the airplane industry. E. E. Dart. *Occup. Med.* 1: 515–550 (June) 1946.

The history and pathologic physiology resulting from the use of vibrating tools are reviewed. A report is presented on a study of 224 exposed individuals, half of whom had symptoms. Treatment is discussed and illustrative case reports are given. A disturbance of vascular tone was found when measured by temperature response of hands to direct chilling. This disturbance produced a syndrome different from that occurring in operators of pneumatic hammers and chisels, where the frequency of vibration is lower. The possible relationship of these cases to Raynaud's syndrome, acroparathesia, and scalenus anticus syndrome is noted. The high incidence of pain (68 percent) and its persistence gave some cases certain attributes of causalgia.

(728) Raynaud's phenomenon in grinders of small metal castings. A clinical and experimental study. J. N. Agate, H. A. Druett, and J. B. L. Tombleson. *Brit. J. Indust. Med.* 3: 167–174 (July) 1946.

On examination of 37 workers from a grinding shop, it was found that 32 had Raynaud's phenomenon in cold weather. The type of work and the grinding equipment are described. Clinical findings reveal that the lesions were mostly bilateral, appeared on an average of 21 months after initial employment, and caused relatively little disability. The exact distribution of the lesions is noted.

There is evidence to suggest that grinding with the larger wheels caused a more widespread lesion than processes with smaller wheels; also, that the disturbance becomes more extensive the longer work with a large wheel continues. Experimental studies on the vibrations show the order of frequencies and amplitudes concerned. There is considerable variability and vibration in several directions at once.

(729) "Dead hand" in operators using electrically driven cutting tools. K. Biden-Steele and F. H. King. *M. Press* 218: 144–148 (Aug. 13) 1947.

About 65 percent of the 282 operators using electrically driven rotary cutting tools in one factory showed signs of *dead hand*. In another factory, 40 percent of 300 workers were affected. The condition is precipitated by cold and begins by blanching of one or more fingers, accompanied by a feeling of deadness. In 67 cases this was followed by cyanosis. The average duration of work before the onset of symptoms was 23 months, but in some cases it was only 6. The disablement is not easy to assess because the attacks usually last less than half an hour, and occur only on certain days.

The condition has been observed to persist, but not progress, for 4 years after withdrawal from this type of work. The only preventive measure is restriction to 9 months of work with the tools. Improvements in the tools and in techniques of their use are being investigated.

(730) The hand of the plant potter: A stigma of the market gardener. H. Cohen. *Brit. J. Indust. Med.* 4: 62–63, 1947.

An ulnar deviation of the metacarpophalangeal joints can be caused by the position of the gardener's hands in potting. Eventually a deformity arises due to the gardener's pressing down with the thumbs and fixing the pot with the index fingers. Radiographs show the arthritic changes and subluxation in the deformed joints.

(731) Occupational Marks and Other Physical Signs—A Guide to Personal Identification. F. Ronchese. Grune & Stratton, New York, 1948. 163 pp.

Occupational marks on the body, as well as odors and discolorations, are described. Excerpts from history, fiction, and medical literature are presented. A very small number of trades or professions leave characteristic, unique, unmistakable marks.

(732) Sarcoidosis following injury. F. R. Bettley. *Brit. J. Dermat. & Syph.* 61: 103–104 (Mar.) 1949.

Three cases of sarcoidosis following injury are presented. One patient, who had sustained abrasions and cuts on the face in an accident, 4 years later developed sarcoid nodules in the scars. Still later, nodules appeared on the previously unaffected skin within the area of lymphatic drainage and regional lymph nodes. Two similar patients are mentioned. A brief discussion of the possible etiologic role of injury and infection is given.

(733) Occupational lesions of hands in workers with moving picture films. C. Soprana. *Med. d. lavoro* 40:173 (June–July) 1949.

Post-traumatic lesions and wounds are seen on the left hands of workers with moving picture film. Soft leather gloves are recommended as protection against trauma from the film.

(734) An outbreak of cases of Raynaud's phenomenon of occupational origin. J. N. Agate. *Brit. J. Indust. Med.* 6:144, 1949.

A report is presented on the circulatory reaction of workers' hands to vibrations of power-driven tools. In 278 cases, approximately 70 percent of the 233 males related their complaints to a rotary grinder used in polishing metal castings. Forty-seven percent of the 45 women gave a similar history. The clinical picture and the role of such factors as temperature, type of operation, and age of patient are discussed. Prevention lies in the engineering of better tools, which would eliminate the vibrations in the harmful range of 40 to 125 cycles per second.

(735) Observations on an industrial dermatosis "Sui Generis:" Subungual tylosis. E. Ramos, J. Silva, and D. Cozzolino. *Arch. argent. dermat.* 2:93–100, 1952.

The authors propose the term *subungual tylosis* for this occupational dermatosis of workers in tanneries and laundries. The finger lesions show marked circumscribed thickening of the epidermis mainly in the stratum corneum. The thickening forms a hard raised fringe under the free margin of the nail, between this part of the nail and the digital pulp. Other manifestations are onycholysis, trachyonychia, thickening of the ungual plate, exfoliation and maceration of the epidermis in the neighborhood. The lesions are of mechanical origin, humidity and chemical industrial products being secondary factors.

Sanchez de Bustamante—Buenos Aires
[Excerpta Medica]

(736) Barbers' pilonidal sinus. J. G. Downing. *J. A. M. A.* 148:1501 (Apr. 26) 1952.

A 71-year-old former barber is reported with a hair-containing sinus of the second interdigital web of the right hand. Three other reports of a similar eruption in barbers are cited from the literature. The explanation may be on a developmental basis, but more likely the lesion represents an acquired infective and foreign body reaction to buried hair.

(737) Localized acquired hypertrichosis. A. C. Ressmann and T. Butterworth: *A. M. A. Arch. Dermat. & Syph.* 65:458–463 (Apr.) 1952.

Thirteen cases of a striking, acquired, localized hypertrichosis, resulting from repeated self-biting in the mentally deficient, are presented. There was a definite increase in hair length and number in the involved areas. It was postulated that the increase in hair was due to hyperemia resulting from continuous trauma. The increase in the number of hairs was thought to be due to delayed shedding of the old hair, while new hairs are being formed, resulting in two or more hairs emerging from the same follicle.

(738) Accidental tattooing of the face treated by abrasion with sandpaper. W. A. Rosenberg. *A. M. A. Arch. Dermat. & Syph.* 65:466–470 (Apr.) 1952.

A case of accidental tattooing of the face with steel particles is reported. Treatment consisted of abrasion with sandpaper, resulting in loss of the disfigurement with no residual cicatrization.

(739) Traumatic vasospastic disease of the hand (Raynaud's phenomenon). E. F. Hoerner. *Indust. Med.* 21: 297 (June) 1952.

A significant increase in incidence of Raynaud's phenomenon attributable to occupational trauma is ascribed to the increase in the use of vibrating tools. The vibrations concerned with the production of Raynaud's phenomenon are those between 2,400 and 7,500 cycles per minute. A number of preventive measures are suggested, with emphasis on selection of employees and the use of proper tools.

(740) Herpes zoster following trivial injury: with notes on a case. John Kinnear. *Brit. J. Dermat.* 64: 324–328 (Sept.) 1952.

A review is presented of herpes zoster which occurred 30 hours after a minor injury of the same site. The literature

reveals that there have been similar cases. It was concluded that trivial injury can be a causative factor in the production of herpes zoster on rare occasions.

(741) Pilonidal sinus of the hand. M. Waisman and R. G. Olivetti. *A. M. A. Arch. Dermat. & Syph.* 66: 466–469 (Oct.) 1952.

A case is reported of interdigital sinus and hair-containing granuloma of the hand of a barber. The lesion, produced by the occupational penetration of extraneous hairs into the skin, is made up of imbedded hairs and the product of reaction of the surrounding tissue.

(742) Mechanical trauma: a study of its role in a group of skin diseases reputedly influenced by trauma. A. R. McFarland. *A. M. A. Arch. Dermat. & Syph.* 67: 278–283 (Mar.) 1953.

Trauma may be a sole cause of or a contributing and modifying factor in certain skin diseases. It may be inflicted deliberately, unintentionally, or unavoidably. Statistical studies are recorded.

Trauma from scratching may be eliminated by mechanical protection. Trauma from pressure or friction may be helped by change of habits, occupation, or protective devices.

The role of trauma in initiating or aggravating leucoplakia, cancers, and precancerous lesions is thought to be questionable.

Physical

COLD

(743) Tissue damage due to cold. L. Kreyberg. *Lancet* 1: 338–340 (Mar. 9) 1946.

Tissue damage due to cold is described. As skin is chilled, the initial changes are purely physiological adjustments. At first, the blood vessels contract and the skin is cold and cyanotic. Then, the skin becomes very red with a high oxygen content, since metabolic processes are greatly slowed. The skin is numb and the extremities are clumsy. Below 10° C. the skin is pink and painful with successive waves of blood vessel contraction and dilation. Following this, actual freezing of the tissues occurs.

Three types of exposure are described: (1) A short exposure to moderate cold with return to normal; (2) freezing the tissues to ice, with return to normal temperatures; (3) long exposure to moderate cold with a return to normal temperatures. In each type of exposure, the pathological reaction to cold is primarily caused by an acute aseptic inflammation which produces hyperemia, edema and necrosis. The necrosis is thought to result from blood stasis following the complete loss of plasma through the very permeable capillary wall. Instructions in the treatment outlined include: Avoid rapid heating and rubbing; elevate the limb and warm it very gradually to normal temperatures; and attempt to keep the skin aired and dry.

(744) Studies on gangrene following cold injury. F. A. Fuhrman and J. M. Crismon. *J. Clin. Investigation* 26: 229 (Mar.) 1947.

The factors responsible for gangrene, following experimental freezing in rabbits' feet and ears are analyzed. Gangrene caused by controlled cold injury, reactions following untreated cold injury, and edema following cold injury are discussed. A report is made on the use of fluorescein as an indicator of local blood flow.

(745) Familial urticaria due to cold. F. G. Witherspoon, C. B. White, J. M. Bazemore, and H. Hailey. *Arch. Dermat. & Syph.* 58: 52–55 (July) 1948.

A case of familial urticaria due to cold in a 19-year-old soldier is presented. Twenty-four out of 45 members of his family showed an identical syndrome. Relief was only partially achieved with antihistaminic drugs, and separation from the service was necessary.

(746) Poikiloderma vasculare atrophicans: Report of a case due to exposure to cold. J. G. Downing and J. M. Edelstein. *Arch. Dermat. & Syph.* 62: 206–213 (Aug.) 1950.

A case of poikiloderma vasculare atrophicans is reported in which excessive contact with ice determined the site of the initial lesion. The histopathologic features are reviewed and considered to

be consistent with an inflammatory disease of the skin.

(747) The clinical effect of peripheral circulatory disturbances on lesions caused by cold, and infectious skin conditions. E. Keining. *Dermat. Wchnschr.* 125: 545–548, 1952.

Freezing and frostbite differ in that freezing occurs as a result of temperatures below freezing point causing damage by solidification and thawing out of tissues. Frostbite, caused by temperatures slightly below normal room temperature, causes reversible vascular damage and in turn irreversible tissue damage. The author attributes various types of chilblains, cold purpura, frostbite, tuberculids, verruca virus infection, pyoderma gangrenosum, paronychia and onychomycosis to these vascular changes.

Winer—Beverly Hills [EXCERPTA MEDICA]

(748) Sensitivity to cold. Queries and Minor Notes. *J. A. M. A.* 150: 1549 (Dec. 13) 1952.

The condition of the patient in question corresponds to the condition of hypersensitivity to cold. At present, it is not considered a true allergy (antigen-antibody reaction) but rather a situation in which an excessive amount of histamine is liberated locally under the stimulus of low temperature. Treatment can be of two types. The antihistamines can relieve this reaction or prevent it if used about an hour prior to expected exposure.

Various means have been suggested to improve tolerance to cold stimuli. Most of them have as their principle the systematic exposure to cold. One of the simplest is to place the hands and forearms in water of about 45° to 50° F. (7.2° to 10° C.) for about 3 to 5 minutes twice daily. If a reaction occurs, this is to be followed immediately by immersing the hands in warm water. If this method is too drastic in the particular case, water with a higher temperature can be tried at first. As a matter of fact, a recognized procedure is the use of baths, beginning with a fairly high temperature and decreasing the temperature from day to day. Histamine injections have also been claimed to increase tolerance to cold. The usual procedure is to begin with an 0.05 cc. dose of a dilution of 1:10,000, the dose being gradually increased each day. After about 2 weeks it can be given semiweekly. The maximum dose should be below the one that gives a pharmacologic reaction (flushing of face, headache) in the individual patient.

HEAT

(749) On the prickly heat. F. R. Fay and E. Susman. *M. J. Australia* 2: 453–456 (Dec. 22) 1945.

Factors which increase and decrease susceptibility to prickly heat are discussed. The disease seems to be constitutional rather than due to any specific factor. No absolute prophylaxis exists. There is no cure for miliaria rubra except change of environment.

(750) Studies on prickly heat: I. Clinical and statistical findings. M. B. Sulzberger and L. O. Emik. *J. Invest. Dermat.* 7: 53–59 (Feb.) 1946.

The possible etiologic and influencing factors in production of prickly heat among the officers and men of the U. S. Naval Medical Reserve Unit No. 2 on Guam are discussed. Two lotions found of value in therapy are given.

(751) Rates of sweating of men working in severe heat. S. D. Gerking and S. Robinson. *Am. J. Physiol.* 147: 370–378 (Oct. 1) 1946.

Earlier studies reveal that men failed to maintain thermal equilibrium for 6 hours in some experiments because of decline in sweating rate. In the experiments reported here it was noticed that the decrease in sweating rate was 10 to 80 percent after the 6th hour. It is thought that this was due to fatigue of the sweating mechanism rather than dehydration.

(752) Epidemic of prickly heat on aircraft carrier. G. B. Ribble, W. S. Luedemann, and S. M. Peabody. *U. S. Nav. M. Bull.* 47: 77–82 (Jan.–Feb.) 1947.

An epidemic of prickly heat which occurred on an aircraft carrier is discussed. Studies show that the men who worked under higher temperature had a higher incidence of miliaria rubra and that they should have a cool place to sleep. One percent menthol in 70 percent alcohol provided the best symptomatic relief, but change to a cooler temperature is the most effective therapy.

(753) Urticaria caused by heat, exertion and excitement. H. Sigel. *Arch. Dermat. & Syph.* 57: 204–209 (Feb.) 1948.

Twenty-two American soldiers in Japan were observed to have urticaria caused by heat, exertion, and excitement. A rather abrupt drop in climatic temperature of their environment is probably of etiologic significance. No histamine

sensitivity by intradermal tests or abnormal production of histamine by gastric analysis was shown. Treatment in general was unsatisfactory. Symptoms were relieved with any cooling agent.

(754) Common skin diseases of the summer season and their management. M. Leider, E. H. Mandel, G. L. Popkin, and C. Reiter. *Urol. & Cutan. Rev.* 53: 343–351 (June) 1949.

The influence of heat, humidity, and sunshine on skin function during the summer is discussed. A classification and tabulation of the common summer dermatoses are presented. General principles of dermatologic management and specific management of the most common summer dermatoses are described.

(755) Chapping of the skin on returning from the tropics to a cooler area. H. V. Allington. *Arch. Dermat. & Syph.* 62: 141–147 (July) 1950.

After a person has been in the tropics for some time, his skin becomes acclimated to a warm, humid environment. Following his return to a cooler, dry area, the sebaceous and sweat glands eventually readjust their activity to maintain a smooth, soft skin. However, it may take some time before the skin once again becomes normal in texture.

LIGHT

(756) Polymorphous dermatosis due to light. W. Burckhardt. *Dermatologica* 86: 249 (Oct.–Nov.) 1942.

A case of sensitivity of the skin to light is reported. After a 30-minute exposure to sunlight, the skin became red, swollen, and itchy. Later, papular lesions formed. Daily injections of 0.1 cc. nicotinamide considerably mitigated the sensitivity of the skin.

(757) "Arc flash" conjunctivitis. F. E. Rieke. *J. A. M. A.* 122: 734–736 (July 10) 1943.

Many cases of actinic conjunctivitis were observed in shipyard workers. Welders and others who were exposed to the welder's electric arc developed bulbar hyperemia, swelling of the lids, slight sunburn, extreme photophobia, and a feeling of sand in the eyes. Treatment was symptomatic and consisted of cold applications and the application of local anesthetics, vasoconstrictors, mydriatics, lubricating preparations and sedatives; dark glasses were also prescribed. Prophylactic measures are given.

(758) A case of light sensitization. D. Erskine. *Brit. J. Dermat.* 56: 195 (Sept.–Oct.) 1944.

A case of light sensitization in an electric welder is discussed. Sensitivity developed from exposure to the rays of the carbon arc. Further investigation revealed that the patient was sensitive to the ultraviolet band of wavelength. Treatment was prolonged and still in process at the time of writing.

(759) Superficial "burns" of skin and eyes from scattered cathode rays. L. L. Robbins, J. C. Aub, O. Cope, D. G. Cogan, J. L. Langohr, R. W. Cloud, and O. E. Merrill. *Radiology* 46: 1–23 (Jan.) 1946.

Six men were injured as a result of scattered radiation from a 1,200 kv. electrostatic generator. The target had been removed from the tube and a cathode ray window substituted for it. None of the men stood closer than 3 to 5 feet from the central beam, but all bent down to see the fluorescence of the cathode ray window for an estimated 5 seconds or less. The machine was estimated to have been operating for 2 minutes or less. By use of a phantom, exposure was estimated at between 1,000 and 2,000 r.

The clinical course of the skin reactions showed three distinct phases:

(1) Superficial response on face and hands was prompt and subsided within 5 to 7 days. (2) Deeper and more widespread effects lasted longer, in some cases resulting in blebs and loss of epithelium. (3) Four weeks after exposure, entirely new areas became involved, in one case requiring a skin graft.

Protocols of all cases are appended.

(760) Electric ophthalmia. L. K. Woodward, Jr. *U. S. Nav. M. Bull.* 47: 247–248 (Feb.) 1946.

During a 3-month period of increased activity in welding operations, a total of 47 cases of flash burn were treated aboard a repair ship. All cases except five occurred in shipfitters and other men who worked regularly or momentarily without goggles in the immediate vicinity of welders.

The main complaint was a burning sensation or pain in one or both eyes, frequently accompanied by a feeling of having a foreign body in the eye. Photophobia, lacrimation, and blepharospasm were pronounced in many cases. The findings included injection of the conjunc-

tiva, edema of the eyelids, and pseudopterygium. Usually, 4 to 10 hours elapsed after exposure before the appearance of the symptoms.

Treatment consisted of irrigation of the eye with mild boric acid solution and installation of a solution containing pontocaine hydrochloride and neosynephrin hydrochloride. In many instances an ointment containing 2 percent butyn sulfate also was employed. Edema of the lids was relieved by application of cool boric acid compresses. Approximately one-third of the patients were removed from duty for 24 hours. Almost all cases healed after 48 hours of treatment. The obvious means of prevention is the careful and systematic use of goggles or hoods.

(761) Inhibition of the erythema of sunburn by large doses of ultraviolet radiation. H. F. Blum and W. S. Terus. *Am. J. Physiol.* 146: 97–106 (Apr.) 1946.

Long wave lengths of ultraviolet radiation inhibit the erythema of sunburn, but cause even greater damage to the skin. This observation should aid in resolving some of the conflicting claims made for the therapeutic effects of ultraviolet radiation. Only those wave lengths that penetrate the papillary layer inhibit the vascular response of that layer. Thus, wave length 2537A causes only an erythema since most of it is absorbed by the epidermis, whereas longer wave lengths not only cause erythema but also inhibition because they are absorbed by the malpighian and papillary layers.

(762) The erythemal threshold for sunburn. H. F. Blum and W. S. Terus. *Am. J. Physiol.* 146: 107–17 (Apr.) 1946.

The erythemal thresholds of an individual are influenced by sensitivity of the cutaneous vessels whose caliber varies with environmental and internal conditions, by the reciprocity law, and by transmission by the corneum. Sweating and wetting the skin did not influence the erythemal threshold. The inhibitory effects of the longer wave lengths of ultraviolet rays add to the difficulty of estimating an individual's actual susceptibility to sunburn.

(763) Studies in hypersensitivity to light: II. Urticaria solare ($\lambda<3700$). H. F. Blum, R. L. Baer, and M. B. Sulzberger. *J. Invest. Dermat.* 7: 99–107 (Apr.) 1946.

A case is presented of urticaria solare, $\lambda<3700$A, to indicate a spectral region of sensitivity of the skin which is generally high. Passive transfer was successful. The possible etiology of this syndrome is discussed.

(764) Urticaria solare. (λ 4000–5000A). H. F. Blum, E. E. Barksdale, and H. G. Green. *J. Invest. Dermat.* 7: 109–115 (Apr.) 1946.

Urticaria solare (λ 4000–5000A) produced by blue and violet light is described and illustrated by a case report as a distinct disease entity. It is characterized by failure of passive transfer. The mechanism of production of the Urticaria and influencing factors are described.

(765) Sunburn and industrial absenteeism. L. Stambovsky. *Indust. Nursing* 5: 32–36 (June) 1946.

The mechanism of skin changes following sunburn are discussed. Intensity of radiation, individual sensitivity, and duration of exposure are described as factors governing cutaneous responses to biologically active ultraviolet energy. Sunburn preventives are considered.

(766) Hypersensitivity to sunlight and dysmenorrhea controlled with Benadryl: Report of a case. W. G. Tyson. *J. Invest. Dermat.* 7: 209–210 (Oct.) 1946.

A case of chronic urticaria from hypersensitivity to sunlight is reported. The reaction was more severe during the menstrual periods. No allergic diseases or patholoigic conditions were found. With the use of Benadryl, prompt relief was obtained both from the urticaria and from the severe dysmenorrhea which was another feature of the case.

(767) The hemogenic syndrome of welders: Acute hemorrhagic purpura, relapsing and curable. P. Harvier, R. Deul, H. Griffen, and P. Lebreton. *Paris med.* 36: 101, 1946.

The symptoms are reported of a welder with 8 years' experience who had to weld copper tubes inside a tank for 45 minutes with an oxyacetylene torch. Other hemopathies of welders are also given. The authors were unsuccessful in finding the cause by experiments.

(768) Dermatitis from commercial ultraviolet lamps. Queries and Minor Notes. *J. A. M. A.*, 134: 742 (June 21) 1947.

It is possible to contract actinic dermatitis and conjunctivitis from excessive

exposure to ultraviolet light used for antiseptic purposes. However, records of such cases are not common.

(769) Light urticaria. E. E. Ehrlich. *Ann. Allergy* 5:478–487 (Sept.–Oct.) 1947.

The history and development of light urticaria are reviewed. The controversy as to whether it is true allergy, or only a photodynamic phenomenon, is discussed. The role of successful passive transfer in this controversy is mentioned. A case of sunlight urticaria, with sensitivity to rays approximately between 3,000–3,750 A°, and with positive passive transfer, is presented. This tends to corroborate the views expressed in a recent paper by Blum, Baer, and Sulzberger that successful passive transfer is elicited only in patients sensitive to rays below 4,000 A°. Failure to attain any relief by many types of agents is noted.

(770) Methods for measuring skin sensitivity to ultraviolet rays. D. I. Sorkina. *Vestnik Venerol. i Dermatol.* [No vol. number.] Part I, No. 3:15–18 (May–June) 1947.

In this study cover glass was used as a filter, cutting off wavelengths below 300 μ. Comparison of the photochemical activity of the filtered and unfiltered rays showed an intensity ratio of 0.4 to 1. The author reports results of exposure to both types of rays in 235 patients suffering from various skin diseases.

Skin sensitivity to filtered ultraviolet rays may indicate sensitivity to sun rays.

(771) Experimental production of cancer of the skin by ultraviolet radiation; its implications in the use of sunlamps. W. W. Coblentz. *J. A. M. A.* 136:1040–1043 (Apr. 17) 1948.

Data are presented on the determination of ergs which will cause erythema of the skin in human subjects and cancer of the skin in white mice. The number of ergs used to cure human rickets in both moderate and severe cases is given. It appears that determining factors in causation of skin cancer are length of exposure and amount of irritation rather than any specified wave length of ultraviolet.

Although ultraviolet lamps and so-called sunlamps have been in indiscriminate use for over 2 decades, there are no published reports to indicate that irradiation with such a lamp was the causative agent of an existing skin cancer.

(772) Studies in solar urticaria. P. L. Beal. *J. Invest. Dermat.* 11:415–433 (Dec.) 1948.

Hypersensitivity to the sun is described and two cases are presented in which spectral sensitivity was established by use of glass filters and a monochromator. This urticarial sensitivity could be passively transferred by injecting the patients' serum into normal people and irradiating the site of injection with active wavelengths. Transfers to animals elicited no reactions. Studies of the antibody show that it is nondializable through a semipermeable membrane and heat labile. Antihistaminic drugs offered protection and patients were able gradually to withstand increased exposure to ultraviolet light. Eventually, the skin developed enough tolerance so that the antihistaminic drugs could be stopped.

(773) Nature of inhibition of ultraviolet erythema by Pyribenzamine. P. R. Kline and R. L. Baer. *J. Invest. Dermat.* 10:397, 1948.

The apparent inhibition of the erythema produced by exposure to ultraviolet light by Pyribenzamine is believed to be due to the absorption of light in the 2800–3100 angstrom unit part of the spectrum.

(774) Ultraviolet exposure from germicidal lamps. G. M. Hanna. *Indust. Med.* 18:75–76 (Feb.) 1949.

Various uses of ultraviolet germicidal lamps are discussed. Recommendations of the Council on Physical Therapy of the American Medical Association regarding the limits of exposure to ultraviolet radiation for infants and adults are given.

(775) Role of spectacle lenses in production of cutaneous changes, especially epithelioma. E. F. Corson, G. M. Knoll, H. A. Luscombe, and H. B. Decker. *Arch. Dermat. & Syph.* 59:535–448 (Apr.) 1949.

Refracted light conducted from the upper to the lower rims of spectacle lenses produces an elevation of temperature at the focal spot on the skin. The constant irritation caused thereby may be responsible for the frequency of cutaneous malignancy seen in this location. Temperature measurements readily demonstrated the *burning-glass* effect, which is mainly seen in rimless spectacles.

Twelve cases are reported in which the malignant or premalignant actinic changes were sharply localized at the focal point on the cheek.

(776) Professional dystrophies of the skin. J. M. Tome Bona. *Siglo med.*

Different occupations may cause various cutaneous dystrophies and intense heat radiation may cause pigmentation and atrophy in addition to inflammation. *Mariner's skin* and the skin of the left arm of blacksmiths may undergo atrophy also. X-rays and radium can produce a dermatitis.

Workers in petroleum refineries, asphalt factories, or creosote works are suject to potential dermatitis.

[Urol. & Cut. Rev. 53: 439 (July) 1949]

(777) Enhancing photodynamic effect of solutions of crude coal tar on the skin. L. Frank. *Arch. Dermat. & Syph.* 60: 597–600 (Oct.) 1949.

Solution of coal tar (N. F.) and 5 percent solutions of crude coal tar in acetone, alcohol, carbon tetrachloride, chloroform, and ether were applied to skin which was subsequently exposed to the carbon arc. No enhancing of the reaction to the ultraviolet light was observed unless the tar were first washed off. Removal through washing of the surface film alone, which acted as a sunscreen, did not remove all the tar from the skin, since the treated areas still fluoresced under the Wood's light. The inclusion of a surface-active agent in the solutions of crude coal tar further enhanced the photodynamic action of the solution upon the skin.

(778) Photosensitization induced by monoglycerol para-aminobenzoate. E. M. Satulsky. *A. M. A. Arch. Dermat. & Syph.* 62: 711–713 (Nov.) 1950.

This case report demonstrates photosensitization induced by the monoglycerol ester of para-aminobenzoic acid. It shows that there may be an allergic difference in susceptibility to photosensitization on the part of different persons, or that one skin is more readily photosensitized than another.

(779) Occupational dermatoses caused by tar and its derivatives. M. Fleischhacker. *Arhiv. Hig. Rada.* 1: 37–50 1950.

The author reports on dermatoses seen in 80 workers exposed to coal tar. Aggravation due to sunlight is ascribed to anthracene, acridine, and other chemicals involved in photosensitization. Hygienic measures are described, including the use of sun-screen ointments. [CHEM. ABST.]

RADIATION

(780) X-ray injuries in the metal industry. P. Rossing. *Arch. Gewerbepath. Gewerbehyg.* 12: 24–34 (Sept.) 1943.

Between 1937 and 1942 in Germany, 25 confirmed and compensated cases of skin injury from X-ray exposure were reported. The injuries were acute, including erythema and pigmentation with inflammatory redness; or chronic, with atrophy, telangiectasis, injury of the sweat and sebaceous glands, warts and carcinomatous changes. In one severe case the fingers of one hand, which were amputated, revealed endangiitis obliterans, which explained the failure to heal and the severe edema.

Some of the affected persons had worn protective gloves which were inadequate. With automatic control of apparatus now advised, gloves should be unnecessary. For fine work, a conical lead holder with a forceps manipulated by means of a lever is suggested.

(781) Medicolegal aspects of injuries from exposure to roentgen rays and radioactive substances. (Symposium on scientific proof and the relations of law and medicine.) C. E. Dunlap. *Occup. Med.* 1: 237–301, 1946.

Radiation injury results directly from irradiation of tissue cells and indirectly from vascular disturbances. Injuries caused by radiation are described. Limitation by law of the use of radium and roentgen rays is recommended.

(782) Hyperheparinemia: cause of the hemorrhagic syndrome associated with total body exposure to ionizing radiation. J. G. Allen and L. O. Jacobson. *Science* 105: 388–389 (Apr. 11) 1947.

Hemorrhage resulting from exposure of the whole body to ionizing radiation is caused by the presence in the blood of an increased amount of free heparin rather than by the thrombocytopenia, which is always present. Five reasons are advanced for this conclusion.

(783) Local sensitization of the skin to grenz rays by bergamot oil. M. Oppenheim. *J. Invest. Dermat.* 8: 255–262 (May) 1947.

Bergamot oil causes the skin to be sensitive to grenz rays. Deciding factors are the duration of exposure to grenz rays and the quality of the rays. The reaction is more pronounced with hard rays.

(784) Radioactive emanations: their nature, mechanism of action, biological effects and tolerance limits. B. N. Craver. *J. Indust. Hyg. & Toxicol.* 29: 196–200 (May) 1947.

The characteristics of the various types of radiation produced by atomic disruption and the nature and mechanism of the biological changes they produce are discussed. The curie and roentgen are defined and human tolerance limits stated in terms of those units.

(785) Alleged injury to workers at an atomic research station. Foreign Letters. *J. A. M. A.* 134: 1039 (July) 1947.

It has been alleged that workers in an atomic-research center in England have shown symptoms of lassitude, cutaneous eruptions, and impotence arising from their employment. The London correspondent of the Journal points out that, since protection is so easily applied, it is inconceivable that workers could be so affected.

(786) Problems relative to possible physiological effects caused by radiation. F. A. Bryan. *Indust. Med.* 17: 367 (Oct.) 1948.

The author points out the various hazards involved in work with radioactive substances and their isotopes and gives preventive measures. He describes how radiation harms the body by its effects on genes, yielding mutations, and how it can produce burns, keloids, cataracts, anemia, lymphocytopenia, sterility, and cause loss of hair and sloughing off of the mucosa of the bowel. The strength of the dose and time exposed decide the extent of the damage. Methods of monitoring and controlling reactions from radiation are presented.

(787) Health problems of X-ray shoe fitting. W. G. Fredrick and R. G. Smith. *Am. Indust. Hyg. A. Quart.* 9: 89 (Dec.) 1948.

This study resulted in the establishment of requirements for the safe operation of fluoroscopic shoe-fitting devices for the protection of both employees and customers. These requirements and explanatory notes are given. X-ray shoe-fitting machines are described, and primary X-ray beam intensity and stray radiation are discussed.

(788) Radiation hazards in industry. T. H. J. Burnett. *Am. Indust. Hyg. A. Quart.* 9: 95 (Dec.) 1948.

Hazards arising from ignorance, neglect, or carelessness in the use of radium in industry are discussed and methods considered for determining the amount of radiation to which workers are exposed. Maximal permissible exposures are described. Steps to control exposure to radiation are listed.

(789) The use of radioactive static eliminators in a printing plant. I. L. Berman and E. P. Ernest. *Indust. Med. & Surg.* 19: 229 (May) 1950.

It is safe to use radioactive static eliminators in the pressroom, provided that the following conditions are fulfilled:

The hazard must be understood by responsible officials. Installation must be done by experienced personnel. A survey and follow-up study, with clinical, laboratory, and experimental studies, are necessary. Rules governing these devices must be set up and enforced.

(790) Hazards in the use of radioactive static eliminators and their control. J. E. Silson. *Am. J. Pub. Health* 40: 943 (Aug.) 1950.

The use of radium-containing bars for the control of static electricity generated in various industrial operations requires careful control of the resulting radiation hazards. Distance from the material is the best protection against gamma radiation, since the required great thickness of lead would be impractical. Shielding is the best and most practical form of protection against beta radiation, since the lead does not have to be so thick, and can be so placed as to not interfere with the alpha radiation which is the most useful for ionizing the air.

Gloves are the sole precaution necessary for protection against the alpha rays when momentarily handling the bars, as in cleaning. There is no hazard from the radon gas in a well-ventilated room.

Care must be used in locating bars to provide proper distance and shielding. Film badge monitoring and medical supervision of the workers are advised as a final precautionary measure.

(791) Postradiation comedos. M. S. Hartman. *Arch. Dermat. & Syph.* 62: 440–441 (Sept.) 1950.

The author concurs with Ronchese that comedos following radiation therapy for carcinoma is a common occurrence. He feels that the process represents stagnation and desiccation in the patulous orifices of permanently atrophic sebaceous glands. Removal of the comedo is not followed by a recurrence, since the gland is nonfunctioning.

(792) Irradiation dermatitis of hands. M. L. Mason. *Am. Surgeon* 17:1101–1109 (Dec.) 1951.

Radiation injuries are a considerable proportion of the conditions for which plastic surgery is required. The hands are involved in from 30 to 60 percent of the cases of radiation dermatitis. A large proportion of the patients are doctors, dentists, and radiation technicians. Frequently, the patients are treated for some other dermatitis. A general discussion of radiation problems affecting patients and exposed workers is also presented.

(793) The acute radiation syndrome: study of nine cases and review of problem. L. H. Hempelman, H. Lisco, and J. G. Hoffman. *Ann. Int. Med.* 36:279–310 (Feb.) 1952.

This report is a detailed compilation of the clinical, hematologic, and pathologic aspects of nine cases resulting from two accidental nuclear reactions which occurred at the Los Alamos Scientific Laboratory. The means by which ionization radiations cause tissue damage are discussed, and the pertinent literature up to February 1950 is reviewed.

(794) Recommended safe practice for radium dial plants *Month. Rev.*, New York State Dept. of Labor 31:5 (Feb.–Mar.) 1952.

The requirements for the safe handling of luminous paints are outlined. The recommendations conform to the requirements listed in the National Bureau of Standards Handbook H27 *Safe Handling of Radioactive Luminous Compounds*, but are more detailed and specify protective measures.

(795) Industrial exposure to radium bromide. Queries and Minor Notes. *J. A. M. A.* 148:1261 (Apr. 5) 1952.

Small quantities of radium bromide, with barium salt as a diluent, are used in various electronic tubes, such as ionization gages; usually, the quantity is so minute that it is negligible. However, the quantity varies, and the trend is upward. As a rule, no more care need be exercised than in working with a luminous dial watch. Such a dial actively registers on a Geiger counter, but there is no known risk for the wearer.

In the present instance, the manufacturers of various types of tubes should be called on to furnish data as to the quantity of the radium bromide used. In this way, the extent of potential harm, if any, may be calculated in the event of breakage. If the operations involved lead to numerous breakages, a monitoring survey with Geiger counters should be conducted. If exposure above the precise tolerable limit is established, a monitoring program should be created under the tutelage of the tube producer. No radioactive substance, even of low potency, should be discarded with ordinary waste; after careful collection and sealing, it should be shipped to the producer for disposal.

(796) Examples of the acute radiation syndrome in man. L. H. Hempelmann. *New England J. Med.* 246:776–782 (May) 1952.

Three cases of individuals exposed to single doses of total body ionizing radiations are presented. These cases illustrate the symptomatology of the acute radiation syndrome.

PROTECTION

(797) Protective skin coatings for the prevention of sunburn. M. Luckiesh, A. H. Taylor, H. N. Cole, and T. Sollman. *J. A. M. A.* 130:1–6 (Jan. 5) 1946.

Most of the erythema resulting from exposure to natural sunlight and skylight is produced by ultraviolet energy shorter than wavelength 3,200 A. Tests for the Army Air Forces showed that dark red veterinary petrolatum is quite opaque to the harmful rays; it gave good protection even under severe exposure. It is not irritating and adheres well to the skin. Salol in a 10-percent cream also gives excellent protection and is nontoxic. The petrolatum alone and with 10 percent salol are recommended for extensive field trials.

(798) Evaluation of protective measures against sunburn. H. F. Blum, M. Eicher, and W. S. Terus. *Am. J. Physiol.* 146:118–25 (Apr.) 1946.

The protection afforded by *sunburn protective* ointments varies according to the intensity and spectral distribution of the sunburn-producing radiation in sunlight, the erythemal threshold of the individual, and the thickness of the application. The most effective ointment tested contained titanium dioxide. The

thickening of the corneum is of greater importance than the concentration and position of the melanin.

(799) Sunburn protection, natural and artificial. A. C. Giese and M. J. Wells. *Scient. Monthly* 62: 458–468 (May) 1946.

This article describes the physiologic concepts of tanning following solar radiation and also methods whereby protective artificial means may be employed to prevent severe burning.

Physiologically, tanning follows the erythema produced by solar injury because of the increased melanoblastic activity with migration to the skin surface of these cells; thickening of the corneum, which is one of the best natural protective agents; and the role of the hormones.

Protective artificial methods:

1. Ointments must scatter as well as absorb radiation effectively.
2. Talc, kaolin, zinc oxide, chalk, magnesium oxide, and titanium dioxide are used, the last being best.
3. Sun screens should be (a) non-toxic, (b) non-irritating, and (c) photo-stable.
4. Most compounds used are aromatic benzene rings, and the double bonds present are the chromophores which absorb the erythema-producing rays.
5. Oils, lotions, and ointments can be used, but none protects the skin completely.

(800) Protective methods in radiology. W. Binks. *Brit. M. Bull.* 4: 58–64, 1946

The prevalence of conflicting reports on the risks of poisoning from inhalation or injection of radium or radium dust indicates that more evidence is required before tolerance doses for radium in the body, and for radon and radium dust in the air, can be regarded as satisfactory.

Operators of X-ray equipment must be safeguarded in three ways. First, the tube must be protected in all directions, except in that of the useful beam. Second, a protective barrier must be placed in front of the operator if the beam is pointed directly at him. Finally, protection from scattered radiation should be effected by a protective barrier or by remoteness from the scattering objects.

Features to be adopted for the protection of workers employed in luminizing departments are: (1) Protection against gamma radiation from radium paint issued to each worker and from the stock luminous compound; (2) protection against beta radiation by working behind a lead glass screen; (3) local ventilation to remove radon and radium dust from the vicinity of the operator; (4) means to remove radon and radium dust from the air; (5) special clothing for workroom use, (6) periodic cleaning of bench-tops and equipment; and (7) enforcement of high personal hygienic standards.

The use of photographic films for monitoring the doses of radiation to which workers are exposed has been recommended for inspection of industrial radiologic departments. These films are covered with a 1 mm. lead sheet which absorbs beta radiation, so that the shielded portion records only gamma radiation, whereas the unshielded portion records both the beta and gamma radiation. Also recommended are detection of the concentration of radon in the air, and estimation of radium in the bodies of luminizers.

(801) A method for protection of patients with solar urticaria. L. Rubin, P. L. Beal, and S. Rothman. *J. Invest. Dermat.* 8: 189 (Apr.) 1947.

The authors report an increase in tolerance to ultraviolet light in a patient with solar urticaria, who was given the antihistamine compound, Pyribenzamine. Gradually increasing ultraviolet light exposure resulted in an increase in tolerance of more than 200 times. This effect is local, and the decrease of penetration of antigenic waves is due to pigmentation and/or thickening of the horny layer.

(802) The assessment of merit of sun-protecting preparations. W. Koch. *Brit. J. Dermat.* 59: 309–312 (Aug.–Sept.) 1947.

A multiple exposure method is presented which affords a quick and fairly accurate estimate of intensities of erythemata for the evaluation of sun-protecting preparations. Areas of equal size on the back are separated by adhesive tape. Preparations are applied to the squares at random, and the whole back is exposed to sunlight. After exposure the areas may be compared as to redness or temperature.

(803) The sunburn-protecting effect of para-aminobenzoic acid. S. Rothman and A. B. Henningsen. *J. Invest. Dermat.* 9: 307–313 (Dec.) 1947.

Para-aminobenzoic acid has been shown to have an absorption band in the ultraviolet spectrum in the range of rays causing sunburn, 2,900–2,100 A. The authors described their experiments and indicate that skin can be protected against sunburn by the use of 15 percent para-

aminobenzoic acid in Ruggles' cream spread over the exposed area in a layer 0.03 mm. deep.

(804) Sunburn: prevention and treatment. E. W. Thomas. *Brit. J. Dermat. & Syph.* 60:423 (Dec.) 1948.

Sunburn and suntan are differentiated and formulas are given for protective applications. [It is assumed that for *methyl salicylate* one should read *menthyl salicylate.*] Para-aminobenzoic acid (15 percent in a vanishing cream or 10 percent in 70 percent industrial spirit) is an efficient protective against sunburn; it may allow slight tanning to occur. The treatment of acute sunburn is outlined.

(805) Sensitization to monoglycerol para-aminobenzoate. L. Meltzer and R. L. Baer. *J. Invest. Dermat.* 12:31–39 (Jan.) 1949.

A case of eczematous hypersensitivity to glycerol para-aminobenzoate, a filter incorporated in many sunburn preventives, is reported. The sensitization was preceded by sensitization to benzocaine and sulfonamide, derivatives of para-aminobenzoic acid. Aniline also caused sensitization. The possible occurrence of dermatitis on the basis of cross-sensitization should be considered before allowing the use of sunburn preventives containing para-aminobenzoic acid or its esters.

(806) Protection against X-ray and beta radiation. V. W. Archer, G. Cooper, J. G. Kroll, and D. A. Cunningham. *J. A. M. A.* 148:106–108 (Jan. 12) 1952.

The usual protection against X-rays during fluoroscopy, consisting of leaded rubber gloves and leaded rubber aprons, leaves portions of the body unprotected. Experience with a leaded glass fabric cloth is reported, and it is concluded that this fabric affords excellent protection against X-radiation. It may be used as a durable, flexible, cleanable garment, or in place of lead foil or lead rubber in superficial treatment. Lead glass fabric is very efficient in protecting against beta radiation of atomic fission products.

(807) Use of small protection films for estimation of doses received on fingers and hands during radium manipulations. T. M. Robb and R. E. Ellis. *Brit. J. Radiol.* 25:100 (Feb.) 1952.

The use is described of small standard X-ray film packs as a method of measuring the finger and hand doses received during radium manipulations.

(808) Clothing protection against radiation hazards. Editorials and Comments. *J. A. M. A.* 149:1225–26 (July 26) 1952.

(809) Protection afforded by clothing against radiation hazards. F. R. Holden and A. F. Owings. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6:67–73 (July) 1952.

Protective clothing has the following values in the control of radioactive contamination: (1) Protection against ultraviolet and infra-red radiation, (2) prevention of the spread of radioactivity, (3) partial protection of the skin from beta radiation and complete protection against alpha radiation, (4) control of ingestion and inhalation hazards, and (5) elimination of direct skin contact with radioactive materials. Other desirable features of clothing designed for radiation protection are enumerated.

(810) Fiberglass gowns for radiologists. Queries and Minor Notes. *J. A. M. A.* 150:1059 (Nov. 8) 1952.

The amount of protection needed by radiologists varies with the amount of exposure, which in turn is variable, depending on the working conditions. The permissible weekly dose set by the International Safety Committee is 300 milliroentgens. As shown in experimental work on the fabric, one to two thicknesses will provide ample protection under usual working conditions.

Medico-Legal

(811) Problems of proof in claims for recovery for dermatitis. L. Schwartz. *Ann. Int. Med.* 18:500–517 (Apr.) 1943.

The duty of the dermatologist is to inform the compensation commission in regard to the following:

1. Do the working conditions present an actual ocupational dermatitis hazard?
2. Has the worker an occupational dermatitis?
3. What is its actual cause?
4. Was it contracted at the place against which the claim is made?

5. Is or was the employee disabled by it?

6. Give an estimate of the time of disability.

7. Express an opinion as to measures to be employed to prevent the recurrence of the condition.

In diagnosis of occupational dermatitis the following factors must be considered: (1) History, (2) site of eruption, (3) appearance of lesions, and (4) differential diagnosis. Various causes and manifestations of possible occupational dermatitis are discussed in detail. When the patient or witness is called upon to testify, he must be thoroughly familiar with the case to escape embarrassment on cross-examination. Various important points of information are discussed. There is included a comprehensive list of points the plaintiff should try to show. Any expert giving testimony must also be thoroughly familiar with all aspects of the case and other similar cases.

(812) Cancer as accidental injury under the workman's compensation act. I. H. Rubenstein. *Bull. A. Soc. Control of Cancer* 26: 18–20 (Feb.) 1944.

Although medical science is not certain of the actual cause or causes of cancer, the law seems well settled as to whether cancer is an *accidental injury* under workmen's compensation acts. Legally, these cases may be divided into two types. In the first type, it is claimed that the injury *caused* the cancer, which brought about the resultant disability or death of the injured workman. In the second type, it is claimed that the injury aggravated and accelerated the preexisting cancer. The fundamental difference between these two types is that in the first type, the cancer is (apparently) nonexistent before the injury occurred; in the second type, the cancer is definitely known to exist before the injury happened. Because of the difference, there is a general rule or law applicable to each.

For the first type, to prove that cancer is a compensable accidental injury, the following four elements must be present: (1) Serious injury or strain, (2) physical causal connection between the injury and the disability or death, (3) proper lapse of time between the injury and the disability or death, and (4) absence of cancer in employee at the time of injury.

For the second type, in which injury has aggravated the preexisting cancer, the following points must be shown: (1) Ordinary type of injury, (2) physical causal connection between the injury and the disability or death; (3) proper lapse of time between the injury and the disability or death; and (4) dormant or active cancer in the employee at the time of the injury. Workmen's compensation cases cited in the article illustrate the application of these elements in determining whether the injury caused the cancer, or aggravated and accelerated the preexisting cancer. The cases also reveal that certain cancers, because of their type and location in the human body, cannot be caused or aggravated and accelerated by an injury, blow, strain or cut. Hence, such cancers are not compensable under the Workmen's Compensation Act.

(813) Employer's negligence as cause of halowax acne. Spence v. Bath Iron Works Corp. Maine Supreme Judicial Court Apr. 13, 1944.

Occupational diseases may not be covered by the Workmen's Compensation Act, but an employer may be held liable for damages where it is shown that an occupational disease is the result of the employer's negligence. However, in the case cited, recovery should not have been allowed, since testimony was admitted which should have been excluded from the record.

It was stated that the employer could have, and should have, known of the danger involved in handling degaussing cables. To support this statement and to indicate the employer's knowledge of the hazard, testimony of similar infections to other employees was given in evidence. However, these cases of infection all occurred after the plaintiff had developed hal-acne or halowax acne and could not possibly have been known to the employer in sufficient time to warn plaintiff of the danger or to provide a safeguard against the risk.

Part of the testimony by the dermatologist who qualified as an expert witness also should have been excluded from evidence, since it was not restricted to the disease of halowax acne, on which subject he qualified, but included his assumption or opinion as to the status of public knowledge concerning his specialty.

(814) Workmen's compensation for cancer ascribed to single injury. *J. A. M. A.* 125: 1043–1044 (Aug. 12) 1944.

Under workmen's compensation acts, a claim for cancer resulting from an industrial accident is decided by an industrial board or an equivalent tribunal. Such tribunals, even though without legally

qualified physicians or lawyers among their members, must decide questions of law and of fact and make their awards accordingly.

In many States, the board's findings as to fact are not open to review, except on the question of reasonable evidence. If an industrial board has decided on the basis of reasonable evidence that a single or multiple industrial injury has caused a cancer that resulted in disability or death, an appellate court cannot set aside the award or remand the case for further proceedings, even though the court believes the decision unjustified. Appeals, then, are hardly a satisfactory remedy for errors in judgment in making such awards.

Rather, it would be better, without denying that a cancer may be caused by a single injury, to organize industrial boards so as to enable them better to weigh the medical evidence that comes before them. Moreover, all appellate courts should have the right to set aside or remand for further proceedings cases in which decisions seem to be clearly contrary to the weight of the entire evidence, even though there may be some reasonable evidence to support them. The physician should bear in mind that the question remains open whether human cancer can be caused by a single accidental injury. The results of clinical observations are not conclusive, and as far as is known, cancer in animals has not been produced experimentally by single mechanical injury. So long as it is held among the medical profession at large or by an individual physician giving testimony that a single injury may produce human cancer, industrial commissions cannot be blamed if they accept such evidence and grant awards accordingly.

(815) Virginia report, dermatitis. Richmond Times-Dispatch Oct. 7, 1944.

Dermatitis and various inflammations of the skin led the list of occupational diseases reported to the Virginia Industrial Commission during the first 3 months of the State's new occupational disease law. In all, 135 cases of disease were reported from July 1, when the law became effective, through September 30. There were 62 cases of dermatitis, 40 of which were in manufacturing industries. Other diseases reported included 15 cases of infection or inflammation, 15 of conjunctivitis, 7 of poisoning, 1 case of radium disability and 1 case of silicosis. The case of silicosis was reported in a coal mine.

(816) The dermatologist and the industrial accident board. J. G. Downing. International Association of Industrial Accident Boards and Commissions, 1944 Convention. U. S. Dept. of Labor, 1945. P. 31.

Dermatologists are frequently called upon to testify before courts and industrial commissions. Therefore, some knowledge of courts and their procedures, and of general law, is essential. Consideration of all problems relating to diagnosis may entail extensive research and laboratory work. The main subjects of contention are eczema, hypersensitivity, fungous infection, and aggravation.

In Massachusetts a rational law has been framed to compensate for disability arising from personal injury which may result from an occupational disease of the skin.

(817) Occupational dermatoses: disability and compensation. C. G. Lane. *New England J. Med.* 233: 711–715 (Dec. 13) 1945.

The author discusses the frequency of occupational dermatoses but notes the extreme inadequacy of statistics on duration of disability, wages lost, medical expenses, and compensation paid. Further studies are urged to determine actual losses in order to stimulate earlier diagnosis and a search into the factors prolonging disability. Criteria by which the physician can determine the correct occupational liability are given. Suggestions are made to aid in reducing the number of occupational dermatoses.

(818) Consideration of injury as the cause of cancer. F. E. Adair. *Compens. Med.* 1: 5–6 (Dec.) 1945.

The author's medical and court experience confirms the findings of a follow-up of severe human injuries, such as civil and military injuries, which have failed to convince scientists that injury plays any role in the production of human cancer. It is suggested that the entire problem of injury as the cause of cancer be taken out of the hands of the courts, and placed under the jurisdiction of a commission of eminent physicians and judges.

(819) Medicolegal aspects of injuries from exposure to roentgen rays and radioactive substances. (Symposium on scientific proof and the relations of law and medicine.) C. E. Dunlap. *Occup. Med.* 1: 237–301, 1946.

Radiation injury results directly from irradiation of tissue cells and indirectly

from vascular disturbances. It may require weeks or months to recognize damage.

Injuries caused by radiation may include dermatitis, skin cancer, bone necrosis, gastroenteritis, sterility, damage to blood-forming tissue, and damage to the fetus in utero. Bone necrosis, gastroenteritis, and blood changes usually are caused only by severe exposure. A recommendation is made that the use of radium and roentgen rays be limited by law to properly qualified persons.

(820) Acid burns-leg injury and disfigurement-evidence. *Indust. Hyg. Digest* 11:6 (Mar.) 1947.

The claimant suffered injury to his foot and ankle and was scarred as a result of acid burns suffered in the course of employment. The fact that the claimant limped was improperly taken into consideration in formulating an award for disfigurement, and there was no medical testimony supporting an award for leg injury.

Durant v. *Ancor Corp.*, South Carolina, Supreme Court. No. 15,909. January 24, 1947.

(821) Chemical poisoning—medical testimony—dermatitis repens. *Indust. Hyg. Digest* 11:7 (Mar.) 1947.

The court found that dermatitis repens in the claimant, allegedly arising from contact with water containing 2/10ths of 1 percent phenol, was noncompensable. Medical testimony conclusively showed that such a phenol solution was commonly used as a germicide, and that if a dermatitis resulted from the use of too strong a solution, the result would be a burn, not an infection.

Masonite Corporation v. *Scruggs.* Mississippi Supreme Court. No. 36,348. February 24, 1947.

(822) New occupational disease compensation law in Texas. *Occup. Med.* 3:507 (May) 1947.

Texas recently joined the ranks of some 23 or more other States through the adoption of an occupational disease compensation law, signed by the governor on April 23, 1947.

(823) Doctor's contraction of tularemia from examination of diseased rabbit—notice to employer—statutes construed. *Indust. Hyg. Digest* 11:5 (May) 1947.

The employer did not receive proper notice of the injury within 90 days, as required by statute. Therefore, the decedent's fatal contraction of tularemia from the examination of a diseased rabbit, in the course of his employment, was not compensable under the workmen's compensation statute.

Gower v. *Department of Conservation.* Michigan Supreme Court. April 8, 1947.

(824) Grinder's dermatitis from lubricant spray—compensable injury—statutes construed. *Indust. Hyg. Digest* 11:5 (May) 1947.

The claimant's injury occurred before the provision of statute had been enacted allowing compensation for dermatitis as a disease. The condition was not compensable, inasmuch as no definite *accident* could be proved.

Butts v. *General Motors Corp.* New Jersey Supreme Court. No. 211. April 8, 1947.

(825) Disease from melting pentolite—compensability under Tennessee statute. *Indust. Hyg. Digest* 11:6 (June) 1947.

A disease incurred as the result of long exposure to melting pentolite in the course of employment was not compensable under the Tennessee statute. The latter provides compensation only for accidental injury, suffered at a point in time, and not for occupational diseases incurred in the usual course of employment, due to gradual, insiduous development.

Gabbard v. *Procter & Gamble Defense Corp.* Tennessee Supreme Court. May 8, 1947.

(826) Nasal perforation from chrome poisoning—permanent partial disability applicable statute. *Indust. Hyg. Digest* 11:6 (June) 1947.

Disability arose when the claimant was unable to endure the employment and, by quitting, ended exposure. An award for disability due to nasal perforation from chrome poisoning was to be made under the statutory schedule in effect at the time the claimant ceased employment.

Koval v. *Natural Products Refining Co.* New Jersey Supreme Court. May 6, 1947

(827) Dermatitis venenata v. pustulous psoriasis—compensable disease. *Indust. Hyg. Digest* 11:6 (July) 1947.

The claimant contracted dermatitis venenata while working in a toolroom with painted, wet, and greasy materials. The venenata cleared up. Medical testimony established that the disability

which later arose was due to psoriasis, a skin disease not caused by the employment.

Blau v. *Walsh-Kaiser Co., Inc.* Rhode Island Supreme Court. Equity No. 1792. May 29, 1947.

(828) Occupational dermatoses (ergodermatoses). J. G. Downing. *New England J. Med.* 237: 755–765 (Nov. 20) 1947.

Definitions of occupational dermatoses are referred to. The medicolegal problems to be considered in occupational dermatoses are discussed, and emphasis is placed on either removing the hazards if possible, or educating workers to take proper preventive measures. The removal of irritants from the skin is discussed, and several prescriptions are given.

(829) Injury v. occupational disease—burning and skin eruption on hands after exposure to caustic. *Indust. Hyg. Digest* 11: 5 (Dec.) 1947.

The jury found that the appellee sustained accidental injuries to both hands, as distinguished from an occupational disease. The finding was sufficiently supported by testimony that while the appellee was repairing a caustic pump for his employer, his hands became wet with the drippings, as a result of which his hands were burned and the skin became cracked and blistered.

Texas Employers Insurance Association v. *McKay.* Texas Court of Civil Appeals, Amarillo. No. 5816. October 13, 1947.

(830) Dermatitis venenata—insufficient evidence of traumatic origin. *Indust. Hyg. Digest* 12: 7 (Mar.) 1948.

Prior to the hearing, the employee had made no statement relating to cuts or scratches on her arms, which had been exposed to oil. Consequently, there was insufficient evidence of a traumatic origin of the dermatitis venenata upon which she based her claim.

Stewart v. *Wright Aeronautic Corp., New Jersey Supreme Court.* No. 202. May Term, 1947. January 12, 1948.

(831) Sensitivity to oil and metal dust—capacity for common labor not restricted. *Indust. Hyg. Digest* 12: 7 (Mar.) 1948.

Due to her apparent sensitivity to oil and steel dust, an employee was not allowed to return to her work in a machine shop. However, this did not disable her from common labor, except in shops where she would come in contact with oil and dust. Therefore, her sensitivity did not justify an award in her favor as an *odd lot* employee.

Gathard v. *Campbell, Wyant and Cannon Foundry Co.,* Michigan Supreme Court. February 16, 1948.

(832) Paresis—overheating of body—syphilis—contributing cause. *Indust. Hyg. Digest* 12: 6 (Apr.) 1948.

The evidence, including the medical testimony, was sufficient to show that overheating of the room in which the claimant worked was a producing cause of paresis, notwithstanding the fact that he had syphilis, and that this disease also contributed to the condition. The trial court was correct in refusing to reopen the case to permit the defendant to read in evidence a portion of testimony relating to overheating of the room, since this testimony had been given by a witness who had not been in the place of accident for the preceding 10 years.

Safety Casualty Co. v. *Malvous.* Texas Court of Civil Appeals, Ninth Supreme Judicial District, Beaumont. September 25, 1947. Rehearing denied, October 15, 1947. Writ of error denied, December 3, 1947.

(833) Sodium burns — sensitivity of keloid tissue—parmanent total disability. *Indust. Hyg. Digest* 12: 6 (Dec.) 1948.

The finding that plaintiff was permanently and totally disabled, after the burning of his body and face in an explosion in the defendant's sodium department, was sustained on appeal by the results of tests. These tests showed that the plaintiff suffered from itching and blisters at the site of the keloids, when he performed his old duties in the unusually warm cell room of the department.

Sutcliffe v. *E. I. du Pont de Nemours & Co.* Louisiana Court of Appeals, First Circuit. October 5, 1948.

(834) Compensation problems presented by industrial skin conditions. J. R. Card. Division of Labor Standards Bull. No. 94, U. S. Dept. of Labor, 1948. P. 20.

The criteria adopted by the Ontario Compensation Board for determining whether or not dermatitis is occupational are presented.

Briefly summarized, they are as follows: (1) It should be shown that the dermatitis did not exist prior to exposure; (2) the condition should develop during the period of exposure; (3) the eruption should begin on exposed parts of the body; (4) the appearance should be consistent with that of dermatoses known to have similar exposure; (5) properly applied and interpreted patch tests should be positive; and (6) the

history should show that the dermatitis developed when the patient was at work, cleared or improved when he was away from work, and recurred when he returned to work.

Complicating situations are discussed, and causes of persistence of dermatitis after apparent removal from exposure are listed.

(835) The problem of trauma and malignant disease in compensation work. W. Boyd. Division of Labor Standards Bull. No. 94, U. S. Dept. of Labor, 1948, P. 30.

The author gives numerous illustrations of loose thinking in attributing cancer to trauma, and shows that there is very little or no direct evidence for any connection. Cancer must not be regarded as a single disease; cancer of different types and different organs must be considered separately.

Skin cancer and sarcoma of connective tissues may result from reparative efforts following injury, but no connection can be traced in other types. It is admitted that long-continued irritation may cause cancer, and that it is possible for such an irritation to result from trauma. Trauma may serve to call attention to an unsuspected cancer. Among a large number of cases submitted by the Ontario compensation board, the author found six cases in which he considered that trauma might be the causal factor.

(836) Simulation and self infliction as encountered in industrial dermatology. J. G. Downing. *Arch. Indust. Hyg. and Occup. Med.* 1: 271 (Mar.) 1950.

The diagnosis and handling of dermatologic problems involving an element of self-infliction are discussed. The preemployment examination should make particular note of the existence and extent of such cutaneous eruptions as psoriasis, lichen planus, atopic dermatitis, and stasis dermatitis. Only by such evidence can the industrial physician assert or deny an industrial etiology or industrially determined exacerbation.

The morphologic diagnosis of dermatitis factitia is discussed, together with the use of occlusive casts and dressings to protect the lesions and permit healing. Four cases illustrating these principles are presented.

While a strong stand is advised in cases of flagrant malingering, a sympathetic and intelligent industrial health program is deemed important to rehabilitate those workers who have become sensitive to contactants on the job.

(837) Industrial dermatoses and the law: suggestions for improvement. E. F. Traub and D. Schultheis, Jr. *New York J. Med.* 51: 2005 (Sept.) 1951.

Better cooperation between employers, insurance carriers, and physicians would improve the present situation. The physician should be careful in his investigation and work-up, should not solicit compensation claimants, should not overtreat or prolong treatment unnecessarily, should use language comprehensible to the layman when giving testimony in court, and should be recompensed adequately for his careful handling and work-up of an industrial case.

The establishment of a board of three unbiased dermatologists, not employed by insurance carriers, to pass on cases would improve their medical handling.

(838) Do Roentgen-ray treatments as given by skin specialists produce cancers or other sequelae? M. B. Sulzberger, R. L. Baer, and A. Borota. *A. M. A. Arch. Dermat. & Syph.* 65: 639–655 (June) 1952.

One thousand X-ray irradiated patients and 1,000 nonirradiated control patients were studied. It was concluded that superficial X-ray treatments, as given by the dermatologists in the United States in the doses necessary for the cure of cancer and other malignant growths of the skin, produced mild roentgen sequelae in about 25 percent of cases. There was no evidence of sequelae produced by totals of 1,000 r. or less of superficial fractionated X-ray therapy, as generally employed by dermatologists in the United States for the treatment of benign dermatoses. When such doses exceed 1,000 r. (the range was between 1,000 and 2,630 r.), it may be expected that about 1.5 percent of the patients will have roentgen sequelae which are relatively mild and of only cosmetic importance. There was no evidence that cancers, roentgen ulcers, or any other dangerous sequelae were produced even with the very large doses which most dermatologists consider permissible for benign dermatoses (1,400 r. total).

(839) Dermatitis—allergy to mica dust—agreement to return to work not enforceable before cured—findings of fact. *Indust. Hyg. Digest* 16: 3 (Sept.) 1952.

A return-to-work order for an employee who has contracted occupational dermatitis and whose recovery depends on the avoidance of mica, as the probable initial source of the affection, would not be justified if the job entails possible

exposure to mica. A return to work under such conditions would run the risk of exposing the claimant to further infection before she was completely cured.
Cornell-Dubilier Electric Corp. v. Manocchia. Rhode Island Supreme Court. No. 2143. July 9, 1952.

(840) Aggravation as a factor in industrial dermatitis. B. Appel. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 8: 133–142 (Aug.) 1953.

Aggravation of an industrial dermatitis assumes a large share in expense and disability.

Aggravation may be classified in one of five categories: First, aggravation by a supervening, nonindustrial condition; second, aggravation by a supervening industrial condition resulting from employment with the same employer; third, aggravation by a supervening industrial condition resulting from employment with a different employer; fourth, aggravation by a preexisting nonindustrial condition, and fifth, aggravation of a preexisting nonindustrial condition by a supervening industrial condition.

There is a definite medico-legal need for a legal definition of *aggravation.* The above categories are suggested as a means of classifying aggravation and assigning it its proper importance in any case of an industrially determined dermatosis.

Metals and Minerals

ARSENIC

(841) The effect of arsenates on the storage of lead. L. T. Fairhall, J. W. Miller and L. Weaver. *Pub. Health Rep.* 58: 955–959 (June 18) 1943.

A soluble arsenate, such as sodium arsenate, when fed to rats receiving lead carbonate, produced effects similar to those produced by lead arsenate alone. The administration of sodium arsenate with lead carbonate diminished the concentration of lead in the kidneys, while the concentration of arsenic amounted to only half that of the sodium arsenate group. More significant is the fact that arsenates in general definitely diminish the storage of lead in bone tissue.

The amount of pathologic damage follows that observed in experiments previously described, in which lead arsenate and lead carbonate were fed to animals for comparison of the relative toxicity of molecular components. In this study, the spleen showed the most changes with sodium arsenate and the least with lead carbonate. Conversely, the kidney showed more marked changes with lead carbonate. The tissues from the animals receiving both sodium arsenate and lead carbonate showed changes of an intermediate degree. No pathologic changes of any significance were observed in the liver.

(842) Unusual case of arsenical dermatitis. Report of a case. E. P. Monahan. *J. Missouri M. A.* 41: 54, 1944.

Dermatitis was caused by exposure to dried pomace prepared from apple peel. The fruit had been sprayed with lead arsenate. The pomace gave a strong test for arsenic.

(843) Occupational dermatitis seen in a calcium arsenate factory. G. Guatier. *Arch. d. mal. profess.* 7: 32, 1946.

The author examined the workers of a factory producing chemicals for agriculture. Ten to 12 persons were occupied with the production of calcium arsenate by a wet process. In 1943 the following illnesses occurred: Two cases of corrosive ulceration of the hand, 24 cases of papular eczema of the scrotum, 7 cases of erosion on the commissure of the lip or the nose, 2 cases of perforation of the nasal septum, 12 cases of inflammation of the conjunctivas and the upper respiratory tract, and 2 cases of transient albuminuria. In most of the cases the illness was mild. There was no melanosis, keratosis, or polyneuritis. This may be due to the fact that the work was done by a wet process and that there was a high labor turnover. In another factory, light cases of polyneuritis occurred.

(844) A case of industrial arsenical cancer occurring for the first time in Hungary and a comprehensive analysis of it. G. Frank. *Acta dermat.-venereol.* 30: 163, 1950.

A case is presented of a worker in a chemical plant producing agricultural sprays containing sodium arsenate, and manufacturing a miticide containing resins and tars. He handled these sub-

stances for a period of 9 years. Two years after leaving work, he had a transient attack of a dermatitis of unknown etiology. Five years after leaving the job, he developed diffusely distributed scaley lesions with an erythematous surface beneath the scales. He was given arseno-therapy by mouth and by injection without any effect upon his disease. Nine years after leaving work, he developed multiple lesions showing cancer and precancerosis. Chemical analysis of his skin showed a high content of arsenic. Therefore, BAL (dimercaprol) was given therapeutically for 10 days in a dose of 100 mgm. 3 times a day. Repeat skin analyses showed reduced values for arsenic following dimercaprol therapy. However, there was no change in the skin lesions.

(845) Occupational arsenical dermatitis: A study among employees at a copper-ore smelting work, including investigations of the skin reaction to contact with arsenic compounds. I. Holmquist. *Acta-dermat.-venereol.* 31: 1–214, 1951.

The patch test to study the sensitizing capacity of various inorganic compounds of arsenic showed that few reactions occurred with the lead salts and the calcium salts, probably due to their low solubility. The highest percentage (80.4 percent) of reactors to As_2O_3 was seen in those with longer exposure as contrasted with 30.3 percent in new employees.

Factory operations are reviewed in great detail, with statistics given on incidence of hypersensitivity of arsenic found in the various operations.

BERYLLIUM

(846) Toxic hazard of beryllium. *Brit. M. J.* 2: 460 (Oct. 9) 1943.

Among the manifestations of beryllium poisoning, the editorial lists skin irritation, hepatonephritis, beryllium rickets, and lung damage caused by inhalation of beryllium dust or fumes. Recent investigations of the action of beryllium on experimental animals appear to confirm the view that beryllium is not inherently toxic, but that the toxicity is probably due to contaminants. Very little beryllium was stored in the tissues of animals given large amounts by mouth, by inhalation, or by intraperitoneal injection, and there was no evidence of *beryllium rickets*. Exposure of guinea pigs and rats to the fumes of molten fluorides containing beryllium fluoride or oxyfluoride showed that these fumes were decidedly toxic.

(847) Beryllium granulomatosis, alias miliary sarcoid, Salem sarcoid, miliary sarcoidosis, chronic beryllium poisoning or delayed chemical pneumonitis. A description and report. J. Prye and W. H. Oatway, Jr. *Arizona Med.* 4: 21–29, 1947.

Beryllium granulomatosis is a new industrial disease of great potential importance. The causative agent apparently is some compound of beryllium, but its action is not understood and its relationship to a bizarre and sometimes concomitant diptheroid bacillus is unknown. A case is reported which parallels the small number of chronic cases recorded during the past nine months, both in diagnostic feature and progress. All cases of sarcoidosis should be investigated from the standpoint of occupational history. Beryllium compounds must be handled as potentially dangerous materials.

(848) Skin lesions in persons exposed to beryllium compounds. R. S. Grier, P. Nash, and D. G. Frieman. *J. Indust. Hyg. & Toxicol.* 30: 228–237 (July) 1948.

Three cases of subcutaneous granuloma arising in persons who had cut themselves on broken fluorescent lamps coated with beryllium-containing phosphor are described. The pathology of the lesions is similar to that seen in the skin lesions of two beryllium workers who had pulmonary granulomatosis, and essentially similar to the lung lesions seen in this disease. Because of the danger of recurrence, treatment should involve complete excision. To avoid similar cases, caution must be exercised in the disposal and salvage of burnt-out fluorescent lamps.

(849) A beryllium case. C. F. Shook and J. P. Powell. *Indust. Med.* 17: 403 (Oct.) 1948.

A case of subepidermal granuloma which resulted from local implantation of a beryllium phosphor is described in detail. The opinions of pathologists who examined tissue samples are given.

(850) Safe disposal of fluorescent lamp tubes. Safety Reprint General No. 9. National Safety Council, Chicago, (Dec.) 1948.

(851) Granuloma of the skin at site of injury by a fluorescent Bulb. W. A. Coakley, R. N. Shapiro, and G. Robertson. *J. A. M. A.* 139: 1147–1148 (Apr. 23) 1949.

Four types of cutaneous lesions are reported resulting from exposure to beryl-

lium salts. A case history is given of granuloma of the skin at the site of injury by a broken fluorescent bulb.

(852) Hazards of beryllium. *J. A. M. A.* 140: 410 (May 28) 1949.

Danger from fluorescent lights arises only when they are broken. The safest way of disposing of used lights is described.

(853) Acute dermatitis and penumonitis in beryllium workers: Review of 406 cases in eight-year period with follow-up on recoveries. J. M. DeNardi, H. S. Van Ordstrand, and M. G. Carmody. *Ohio State M. J.* 45: 567 (June) 1949.

From 1940 through 1948, 195 workers with dermatitis from beryllium were studied. In addition, 211 patients were seen with manifest respiratory disease, all of whom were workers in 3 plants extracting beryllium.

The cutaneous lesions may be vesicular, urticarial, papular, or may be ulcerative lesions. The treatment of the beryllium granulomas is excision where feasible, or incision and evacuation of the granuloma followed by curettage of the base. Healing occurred within 7 to 14 days.

Of the patients with respiratory disease, 121 had tracheobronchitis and 90 had a chemical pneumonitis. There were 2 types of pneumonitis, fulminating and insidious. The fulminating type is less common and is associated with anhydrous beryllium sulfate fumes formed during a chemothermal reaction when pulverized beryl ore frit is treated with sulfuric acid. The insidious type of pneumonitis appears after long exposure to the fumes or dusts of beryllium sulfate tetrahydrate, beryllium fluoride, and beryllium oxide. Hospitalization and oxygen therapy were required for both types of pneumonitis. There were 10 deaths in the 90 cases of pneumonitis.

Recent reexamination of 20 patients who had the severe type of pneumonitis revealed no recurrent or chronic manifestation of the disease and no disability.

(854) Beryllium granulomas of the skin. Frank R. Dutra. *Arch. Dermat. & Syph.* 60: 1140–1147 (Dec.) 1949.

Four patients reported beryllium oxide was introduced into the skin as the result of breaking a fluorescent tube and puncturing the skin by the glass. The fifth patient was a person employed in cutting metallic beryllium with a machine, and who accidentally lacerated her finger during work.

The diagnosis of beryllium granuloma of the skin can be made clinically when there is a history of beryllium or one of its compounds having been embedded in the skin. Tissues into which the material has been introduced will show hypertrophic scarring, with chronic draining sinuses.

Biopsy revealed lesions which resemble caseous tuberculosis or Boeck's sarcoid. Differentiation rests on the presence of beryllium demonstrated by analytic methods, and on the absence of tubercle bacilli. The beryllium granuloma can be differentiated from Boeck's sarcoid by the presence of caseation, and by the large number of lymphocytes present in the lesion, especially at its periphery.

Cure followed excision in all five of the patients.

(855) Cutaneous granuloma following laceration by fluorescent light bulbs. J. J. Neave, S. B. Frank, and J. A. Tolmach. *Arch. Dermat. & Syph.* 61: 401–406 (Mar.) 1950.

Two cases are reported of cutaneous granuloma following laceration with fragments from fluorescent light bulbs, which contain a phosphor of beryllium. Both lesions were chronic granulomas in clinical appearance. Biopsy revealed a granulomatous picture with a tubercle-structure resembling tuberculosis or sarcoid. One patient's lesion manifested caseation necrosis.

The use of beryllium in fluorescent light tubes will be discontinued, but the danger will be present for a long time to come because of the large number of tubes now in use.

(856) Delayed subcutaneous beryllium granuloma. E. A. Shorten and H. K. Giffen. *Arch. Surg.* 60: 783 (Apr.) 1950.

A case of subcutaneous beryllium granuloma developed 3 years after the patient suffered a laceration from a fluorescent tube. Magnesium tungstate was found in the excised specimen; the absence of zinc-beryllium silicate indicates that it disappeared after implantation.

(857) Beryllium granulomatosis. J. Gerrie, F. Kennedy, and S. L. Richardson. *Canad. M. A. J.* 62: 544 (June) 1950.

A case of subcutaneous granuloma was due to laceration with a broken fluorescent tube. Wide excision of the lesion was followed by prompt healing. The specimen showed a histologic picture similar to that of sarcoid.

(858) Berylliosis. D. Hunter. *Arch. belges méd. sociale et d'hyg.* 8:433–441 (July) 1950.

The author reviews the properties and uses of beryllium, and he discusses the hazards in the processing of beryllium compounds, the clinical manifestations of berylliosis, and the pathologic picture.

(859) Berylliosis: Brief discussion and presentation of a case with pulmonary, digital and axillary node involvement. R. A. Nachtwey, M. B. Dockerty, and C. H. Hodgson. *Minnesota Med.* 33:904 (Sept.) 1950.

Over a period of years a man employed in blowing and coating fluorescent lamps developed symptoms of dyspnea referable to pulmonary berylliosis. On one finger he had a granulomatous lesion at the site of a previous laceration with a broken fluorescent light bulb. There was an associated enlarged axillary lymph node. Microscopic examination of the node revealed a granuloma; chemical analysis revealed the presence of beryllium.

(860) Experimental beryllium granulomas of the skin. F. R. Dutra. *Arch. Indust. Hyg. & Occup. Med.* 3:81–89 (Jan.) 1951.

In experiments performed to artificially produce beryllium granulomas in porcine skin, metallic beryllium and beryllium oxide implantation produced granulomas, but of a nonspecific appearance. However, implantation of a phosphor dust containing beryllium oxide produced the typical picture of beryllium granuloma, with a well-organized tubercle picture seen in the accidentally produced beryllium granuloma in man.

(861) Epidemiology of beryllium intoxication. J. H. Sterner and M. Eisenbud. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4: 123–151 (Aug.) 1951.

The authors review the literature pertinent to the toxicity of beryllium compounds, and the clinical and pathological characteristics of acute and chronic berylliosis, as shown in those cases reported and those studies performed under experimental conditions. Some manifestations of berylliosis conform to conventional patterns of occupational disease, and some do not.

Beryllium acts on the skin as both a primary irritant and a sensitizer, and the skin reactions to beryllium and its compounds can be explained by means of the usual mechanisms of occupational dermatitis. The acute respiratory disease caused by beryllium is similar to the response to irritants such as phosgene, and there is a conventional relationship between the severity of exposure and the incidence of disease.

However, chronic pulmonary berylliosis manifests characteristics which are different from the usual pattern. Severe cases of chronic beryllium poisoning have occurred from exposures to concentrations several orders of magnitude lower than what would be regarded as significant for other industrial toxins. As a result, fatal cases may show only minute amounts of beryllium in the tissues while there is marked pathologic change. Symptoms may have their onset many years after exposure to beryllium has ceased. The pulmonary lesions of berylliosis have not been produced in experimental animals.

On the basis of the known sensitizing activity of beryllium compounds on the skin, the pulmonary granulomatous lesions, the long period of incubation before pulmonary symptoms develop in the chronic cases, the minute amounts of beryllium necessary to produce lesions in the lungs, the authors offer a theory as to the pathogenesis of berylliosis, stressing the role of acquired, specific, altered reactivity.

(862) Chemical (beryllium) granulomas of skin. E. B. Helwig. *Mil. Surgeon* 109:540 (Oct.) 1951.

Ten cases of beryllium granuloma of the skin are presented, with a description of the pathologic picture. The prognosis in regard to healing is poor, unless a wide excision is performed to remove all affected tissue.

(863) Cutaneous hypersensitivity to beryllium. G. H. Curtis. *Arch. Dermat. & Syph.* 54: 470–482 (Oct.) 1951.

The author studied 13 cases of contact type, eczematous dermatitis among workers engaged in a beryllium extraction process. Clinically, histologically, and by patch tests, these were true cases of an allergic eczematous type of dermatitis from beryllium.

Spontaneous flare-ups of eczematous reactions were produced in 8 of 16 control persons who never previously had been exposed to beryllium compounds. The incubation period was found to vary from 6 to 16 days, which corresponded to the incubation period of 7 to 14 days in the clinical dermatitis group. Subsequently, 48-hour eczematous reactions were produced by higher dilutions than the sensitizing concentration.

Pure beryllium metal is insoluble and cannot be used for patch tests. Therefore, anions, acidity, and primary irritant capacity of the soluble beryllium compounds had to be and were eliminated as direct factors in causing clinical dermatitis.

The beryllium ion is believed to be the sensitizing allergen. Beryllium fluoride possesses the capacity to sensitize the skin readily, which accounts for the high incidence of dermatitis among workers in the fluoride process of beryllium extraction. Beryllium sulfate and beryllium chloride have less activity and potential as sensitizers. Beryllium nitrate was found to have a low sensitizing index, under the experimental conditions.

For the patch tests, 1 or 2 percent buffered solutions of beryllium fluoride, beryllium sulfate, beryllium chloride, beryllium nitrate, beryllium ammonium fluoride, beryllium oxalate, and beryllium benzenesulfonate are suitable.

It is suggested that mucous-membrane manifestations and possibly acute pneumonitis may be allergic reactions.

(864) Some aspects of berylliosis. Herman Beerman. *Am. J. M. Sc.* 221: 462–469, 1951.

The clinical pictures and syndromes produced by beryllium compounds are reviewed. The mechanism of the action of the substance and its relation to sarcoidosis are discussed, as well as treatment and prevention.

(865) Berylliosis: Summary and survey of all clinical types observed in a twelve-year period. J. M. DeNardi, H. S. Van Ordstrand, G. H. Curtis, and J. Zielinski. A. M. A. *Arch. Indust. Hyg. & Occup. Med.* 8: 1–24 (July) 1953.

During a period of 12 years, the authors observed and treated 431 patients with acute beryllium intoxication. Ten of these patients died from an acute pneumonitis. In recent years, the incidence of cutaneous berylliosis has been reduced from 25 to 2 percent and the incidence of respiratory berylliosis has been reduced almost to zero. This is attributable to engineering and hygienic preventive measures.

Patch test studies in both acute and chronic berylliosis suggest that allergic hypersensitivity plays an important pathogenetic role, and that the patch test is a useful procedure in differential diagnosis.

The presence of beryllium in body tissues and in urine is indicative of past exposure, and does not quantitatively correlate with the severity of the process, or even the presence of active berylliosis as a disease. Likewise, no patient recovering from the acute pneumonitis developed the chronic form of berylliosis.

Therapy is symptomatic and conservative. However, there is recent encouraging evidence of the value of steroid therapy in both acute and chronic berylliosis.

CADMIUM

(866) Cadmium poisoning by inhalation. F. F. Huck. *Occup. Med.* 3: 411–414 (Apr.) 1947.

Cadmium is capable of acting as a poison both by inhalation of the fumes of the metal and by ingestion. Industrial cadmium poisoning occurs from inhalation of the fumes or dust and results in symptoms which are predominantly pulmonary. Recovery usually begins within a period of 7 to 11 days after exposure. If death occurs, it usually takes place on or about the seventh day after exposure. There are no laboratory tests to aid diagnosis. Symptomatology of cadmium poisoning and a case report of cadmium poisoning from inhalation of fumes are discussed.

(867) A study of industrial exposures to cadmium. F. Princi. *J. Indust. Hyg. & Toxicol.* 29: 315–320 (Sept.) 1947.

A study was made of 20 workers, exposed to various atmospheric concentrations of cadmium dusts and fumes, in an attempt to determine the effects of industrial exposure to these materials. The most characteristic and earliest finding was a yellow ring on the teeth of men who had had long exposure. This was not related to the hygienic condition of the teeth or the gums. Most of the deleterious effects of cadmium reported in the literature have resulted from relatively brief exposures to high concentrations of the substance. It is probable that, in chronic exposures, cadmium is eliminated rapidly from the body and that there is no cumulative effect. These data suggest that cadmium may not be as great an industrial hazard as has previously been reported.

CHROME

(868) Bronchial asthma caused by chromium trioxide. C. Broch. *Nord. med.* 41: 996 (June) 1949.

Asthma is a common complaint at a Norwegian foundry where ferrochromium undergoes electrothermic processes. Two cases of asthma were traceable to inhalation of chromium trioxide. These

patients had positive skin tests to hexavalent chrome-ion.

(869) Cutaneous ulcers in workers exposed to chromium. C. L. Meneghini. *Rassegna di med. indust.* 19: 161 (July-Aug.) 1950.

The author observed 120 workers who had been exposed to chromium for a maximum period of 18 months. More than 90 percent of the workers had chromium ulcers on the hands, fingers, forearms or the dorsa of the feet. Test applications of the chromium solutions used by the workers were applied to non-afflicted employees. The alkaline chromate solution had a strong caustic effect; and acid chromate solution had a mild caustic effect. A mildly acid solution had no harmful effect on the skin of the volunteers.

Chromium cutaneous ulcers are due to precipitation of the protein to form protein-chromate complexes, and to the effect of alteration of skin pH.

Recommended measures are the prevention through minimal exposure, use of protective devices, practice of good plant hygiene, and washing of the hands with solutions containing chromium-reducing substances.

(870) Unusual sequela to chrome ulceration of the skin. W. F. Edmundson. *Arch. Dermat & Syph.* 64: 371–372 (Sept.) 1951.

A production foreman in the liquor building of a chemical plant developed a perforated nasal septum and a chrome ulcer of the fourth finger of the left hand. The ulcer healed slowly, and for several months after healing the scar enlarged and became hypertrophic. No further change occurred in the next 20 years. Biopsy was refused. Patch tests with 0.5 percent solution of bichromate were negative.

(871) Chromate dermatitis in railroad employees working with diesel locomotives. J. R. Winston and E. N. Walsh. *J. A. M. A.* 147: 1133 (Nov.) 1951.

Chromate dermatitis resulting from contact with diesel-locomotive radiator fluid is a problem of growing importance in the railroad industry because of increasing use of diesel locomotives.

(872) Chrome ulcers of the skin and nasal septum and their relation to patch testing. W. F. Edmundson. *J. Invest. Dermat.* 17: 17–19, 1951.

Of 285 workers in a chrome ore-processing plant, 69.5 percent had chrome ulcers or scars, and 61.4 percent perforated septa. There seemed to be a direct relationship between severity of exposure to chromate dusts and the rate of attack upon the septum. Patch tests showed no evidence of increase in sensitization to chrome in those patients with chrome ulcers or perforated septa.

(873) Chromium intoxication with special reference to hepatic injury. L. R. Pascale, S. S. Waldstein, G. Engbring, A. Dubin, and P. B. Szanto. *J. A. M. A.* 149: 1385–1389 (Aug. 9) 1952.

A discussion of skin toxicity from chromium compounds is included.

MAGNESIUM

(874) Magnesium in industry—magnesium burns. F. J. Jarzynka. *Indust. Med.* 12: 427–431 (July) 1943.

The rise in prominence of magnesium in industry has awakened much interest in the occupational hazards incurred in its fabrication. Burns are the most common injuries encountered and are usually severe and deep, as magnesium fires produce high temperatures. The fires arise from molten metal, or from the igniting of the metallic dust or swarf. The author gives a short history of the experience of his company with magnesium fires and relates a number of case histories.

Treatment, which differs in no way from that of other thermal burns, is discussed briefly. Protective measures against magnesium burns are: Good housekeeping, instruction of employees, and use of protective clothing and plastic face shields or goggles.

(875) Pseudo-gas gangrene of the hand. A. D. Rubenstein, I. R. Tabershaw, and J. Daniels. *J. A. M. A.* 129: 659–662, 1945.

Workers handling an alloy containing 90 percent magnesium developed subcutaneous gas tumors which simulated gas gangrene, but which gave no evidence of bacterial infection on close examination. Experiments with rats produced similar results. Hydrogen was found to be part of the gas. It has been known for some time that contact of human body fluids and tissues with magnesium will form gas.

MERCURY

(876) Chronic mercury poisoning. M. Bucknell, D. Hunter, R. Milton, and K. M. A. Perry. *Brit. J. Indust. Med.* 3:55 (Apr.) 1946.

Examination of 72 men in a workshop where thermometers were made showed that the workers were suffering from mild chronic mercury poisoning. They were excreting 10 times as much mercury in a day as could possibly be absorbed from the air. Examination showed that bundles of 50 thermometers had 100 to 40,000 μg of mercury on their surfaces. The mercury is evidently absorbed through the skin.

(877) Hazards in the use of mercury compounds in treating seeds. H. F. Schulte. *Indust. Med.* 16:443 (Sept.) 1947.

Mercurial compounds are commonly used on seeds to kill fungi, prevent seed rotting, and for other similar purposes. Their use must be controlled, as dermatitis can result from contact with these compounds. The best preventive and protective measures are adequate ventilation and good personal hygiene. Further research is needed on the mechanism of volatilization, how much free mercury is formed in this process, and other phases of the subject.

(878) Contact dermatitis due to the mercury of amalgam dental fillings. H. M. Robinson, Jr., and E. S. Bereston. *Arch. Dermat. & Syph.* 59: 116–118 (Jan.) 1949.

Two cases of contact dermatitis from mercury amalgam fillings were confined to the perioral area of the face and neck. Mercury and mercury amalgam elicited positive patch test reactions. A towel handled by the dentist, who kneads the mass by hand to express the excess mercury, elicited a positive patch test; while a clean, unhandled towel from the same office did not.

(879) Dermatitis medicamentosa simulating Hodgkin's Disease due to mercury compounds. M. M. Robinson. *Ann. Allergy* 10: 21–23 (Jan.–Feb.) 1952.

NICKEL

(880) Dermatitis from army spectacles. W. O. G. Taylor and A. G. Fergusson. *Brit. M. J.*, 2:40 (July) 1945.

A study of 6 persons who developed a dermatitis after wearing nickel-framed spectacles showed that nickel-silver alloys were the cause of a specific hypersensitivity. The most satisfactory solution of the problem was to change to gold or shell frames or to attach a protecting wafer or washer to the frames.

(881) Paraprol as a prophylactic and therapeutic agent in nickel dermatitis and chrome sore. R. P. Scott. *Indust. Med.* 15:681 (Dec.) 1946.

Exposure to chromic acid and bichromates may produce cutaneous changes ranging from mild follicular dermatitis to widespread nodular and crusted eruptions.

Forty employees in the nickel and chrome plating department were selected for this study. Paraprol (urea, lauryl sulfoacetate and benzyl alcohol in a specially aromatized demulcent base) was applied locally to affected parts three times a day.

Nickel dermatitis was controlled and the incidence of chrome sores was reduced from 10 or 12 to 3 or 4. Itching due to irritation was also allayed by the application of Paraprol.

(882) Nickel and cobalt dermatitis. A. Rostenberg, Jr., and A. J. Perkins. *J. Allergy* 22: 466–474 (Sept.) 1951.

Included in this report are references to sources of contact with nickel and cobalt. The role of nonspecific factors in the genesis of eczematous sensitization is discussed. A case history of a man extremely sensitive to nickel, cobalt, and gold is presented with a description of the diagnostic studies performed. The cross reactivity of nickel and cobalt is also discussed.

(883) Observations on the persistence of skin sensitivity with reference to nickel eczema. J. K. Morgan. *Brit. J. Dermat.* 65: 84–94 (Mar.) 1953.

Fifty-four out of 58 known nickel-sensitive patients were retested by a standardized technique after an interval of 1½ to 11 years. Thirty-one patients (57 percent) demonstrated a persisting sensitivity; the longest observed duration was 11 years. Twenty-three (43 percent) gave negative results to patch testing. Eighteen of these patients continued to have eczema, although no longer nickel sensitive. It was suggested that for some of these patients the specific sensitivity to nickel could be regarded as merely a transitory phase in the course of a series of eczematous reactions.

(884) Dermatitis and five cent coin. Queries and Minor Notes. *J. A. M. A.* 134:322 (May 17) 1947.

Regarding the possibility that nickel may cause a hair line dermatitis over the temples, it is stated that spectacle frames made either of alloys or of plastics are to be suspected. There were no reported cases of dermatitis caused by the five-cent piece made of nickel which was used during the war.

PLATINUM

(885) Asthma caused by the complex salts of platinum. D. Hunter, R. Milton, and K. M. A. Perry. *Brit. J. Indust. Med.* 2:92–98 (Apr.) 1945.

A syndrome consisting of rhinorrhea, sneezing, tightness of the chest, dyspnea, cyanosis, wheezing, and cough is described. This syndrome occurred in 52 out of 91 men exposed to the dust or spray of the complex salts of platinum. Thirteen men complained of dermatitis. The syndrome did not arise in men exposed to much higher concentrations of metallic platinum in the atmosphere or in men exposed to the complex salts of other precious metals, including palladium. Prevention can be effected by exhaust ventilation.

(886) Platinosis: A five-year study of the effects of soluble platinum salts on employees in a platinum laboratory and refinery. A. E. Roberts. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 4:549–559 (Dec.) 1951.

The soluble salts of platinum, notably sodium chloroplatinate, act as a sensitizer, producing erythema and urticarial lesions of the skin, and a conjunctivitis, rhinitis and asthma. Patients with platinosis showed a lymphocytosis. One worker with a constant platinum dermatitis of 4 years' duration was hyposensitized with subcutaneous injections of dilute solutions of the substance, with relief of the dermatitis and a decrease in the sensitivity, demonstrable by the scratch test.

SILVER

(887) Urticaria following a dental silver filling. H. Markow. *New York State J. Med.* 43:1 (Sept. 1) 1943.

A patient developed sensitivity to mercury in contact with the mucous membrane of the mouth, with allergic manifestations locally and in other parts of the body. Complete relief resulted on removal of all silver fillings, and subsequently filling the cavities with porcelain.

(888) Exposure to silver dust. Queries and Minor Notes. *J. A. M. A.* 148:781 (Mar. 1) 1952.

The soluble salts of silver, such as silver nitrate, are toxic, and fatalities have occurred. These may not be attributable to silver, per se. No standards of concentration of exposure have been established above which argyria becomes a hazard. Variations in susceptibility are pronounced. The scleras are often first involved. Apart from cosmetic damage, skin deposits are believed to be without importance. Only small amounts of silver are excreted through the urine; it is excreted instead through the intestinal tract. Precise urinary determinations require spectrographic procedures.

MISCELLANEOUS

(889) Burns from lithium. Queries and Minor Notes. *J. A. M. A.* 126:268 (Sept. 23) 1944.

The method of preventing burns by lithium hydroxide is the same as that used for sodium hydroxide, since its action is similar; prevention includes the wearing of rubber gauntlets and rubber aprons to protect the arms and legs, and the use of transparent face shields. Protective ointments are less efficacious, but, if used, they should be of the lanolin-castor oil type. Workers should be instructed to insert petroleum jelly in the nostrils several times a day. Containers of lithium hydroxide should be covered when not in use and vented by suction hoods when in use, to prevent exposure from vapors. If the substance is spilled on skin or clothing, immediate flushing with water should follow. Both lithium hydroxide and lithium chloride can cause ulcers of the skin.

(890) Allergic dermatitis due to metallic cobalt. L. Schwartz, S. M. Peck, K. E. Blair, and K. E. Markuson. *J. Allergy* 16:51 (Jan.) 1945.

The authors report on 20 cases of dermatitis which occurred about 1 month after employment in a plant that manufactures cemented carbides. Patch tests with cobalt and a loose black powdery mixture were positive in six patients. The other ingredients of the cemented carbides gave negative results. It was concluded that cobalt was the causative agent.

(891) Occupational dermatitis: Report of 368 cases. M. I. Hall, E. F. Lutz, and F. A. Patty. *Conn. M. J.* 10: 187 (Mar.) 1946.

Workers with steel products perform a variety of operations in which the worker's skin comes in contact with oils and other chemicals, especially alkalis, chromic acid, and etching compounds. This article covers a review of 368 cases of occupational dermatitis seen in the course of a year among 7,501 employees. A table listing the incidence of dermatitis in different occupational groups shows that operators of automatic machines have the highest rates, followed by grinders, janitors, stock handlers, inspectors, and wrappers. The importance of length of exposure is indicated by the fact that 84 percent of the cases were in persons exposed for over a month. Personal cleanliness is stressed because energetic washing brought about improvement in 88 percent of the cases.

(892) Toxic manifestations of osmium tetroxide. M. R. McLaughlin and K. M. A. Perry. *Brit. J. Indust. Med.* 3: 183–186 (July) 1946.

An account is given of a syndrome caused by the fumes of osmium tetroxide evolved during the refining of osmiridium. The syndrome included vigorous irritation of the conjunctivae and the mucous membranes of the nose, throat and bronchi, associated in some cases with frontal or orbital headache. The *halo around lights* was a characteristic symptom resulting from irritation of the eyes. It was temporarily disabling, in that the worker was unable to read for about 24 hours. The men were exposed to atmospheric concentrations of osmium tetroxide up to 640 micrograms per cubic meter. No chronic or cumulative effects were noted. Full details are given of the method used for the quantitative estimation of osmium.

(893) Occupational skin diseases in the steel industry. W. H. Rice. *Kentucky M. J.* 44: 342 (Oct.) 1946.

This is a general paper, listing causes of dermatitis in the steel industry and giving suggestions to industrial physicians for dealing with the problem of cutaneous disease. Employment of women and changes in manufacturing processes are some of the factors responsible for the increase in cutaneous disease.

(894) The toxicology of the newer metals. L. T. Fairhall. *Brit. J. Indust. Med.* 3: 207–212 (Oct.) 1946.

A summary is presented of the toxicology of 13 of the *newer* metals.

The metals discussed are beryllium, cadmium, cobalt, columbium, indium, osmium, platinum, selenium, tantalum, tellurium, thorium, uranium, and vanadium.

The use of the metal, its properties, toxicity, and hazards, and the literature relating to it are discussed separately for each metal. A full list of references, classified under the separate metals, is provided.

(895) Report of investigation of health hazards in connection with the industrial handling of thallium. H. K. Sessions and S. Goren. *U. S. Nav. M. Bull.* 47: 545–550 (May–June) 1947.

In the Bureau of Ships, lenses and windows are manufactured from fused halides of thallium, which are made from various crude thallium salts by a series of recrystallization processes. Thallium salts may be absorbed during these processes by inhalation, absorption through the skin, and ingestion. Measures to minimize absorption by these routes should be instituted in industrial operations. The toxicity of thallium is cumulative and is considered to be between that of lead and arsenic. The acute symptoms of thallium poisoning are given. There is as yet no specific treatment.

(896) Diagnosis and treatment of occupational metal poisoning. L. Greenberg. *J. A. M. A.* 139: 815 (Mar.) 1949.

The author stresses the need for prompt recognition of the industrial origin and symptoms of metal poisoning to prevent irreversible changes from prolonged exposure. Arsenic, cadmium, beryllium, mercury, manganese, and selenium are discussed and treatment of toxic metal poisoning is considered.

(897) Preliminary observations on toxicity of elemental selenium. R. H. Hall, S. Laskin, P. Frank, E. A. Maynard, and H. C. Hodge. *Arch. Indust. Hyg. & Occup. Med.* 4: 458–464 (Nov.) 1951.

The primary irritant and sensitizing properties of powdered gray selenium were tested by the application of an aqueous paste to the shaved rumps of guinea pigs. The animals were examined 24 and 48 hours after the application.

After 21 days, the paste was again applied, and the site examined at 24 hours and 48 hours post-application. No reaction was observed.

(898) Industrial dermatitis due to contact with brass. G. E. Morris. *New England J. Med.* 246: 366 (Mar.) 1952.

The author reports on five cases of dermatitis from contact with brass, the first such series to be reported. Brass is known as a cause of metal fume fever, but the concept of industrial dermatitis from this alloy is new. The dermatologist should include brass as a cause of some of the unusual dermatoses.

(899) Scrap metal and dermatitis. Queries and Minor Notes. *J. A. M. A.* 150: 1164 (Nov. 15) 1952.

Much scrap metal handled in recovery operations is smeared with various oils from previous machining. Assuming that dermatitis resulted from the man's occupation, these oils become a more important hazard than any of the metals handled. In the melting of oil-laden scrap metal, the oils become doubly disturbing. Acrolein, one product of thermal decomposition of some oils, acts notably as an eye irritant. In some scrap recovery plants, degreasers have been introduced to provide clean metal. Rosin is a recognized source of dermatitis. On an allergic basis, copper may be the offender. Scrap metal sorters are prone to acquire dermatitis; their exposure is obvious and continuous. As a rule, the dermatitis of these trades is from contact.

(900) Factors influencing dermatitis in coal miners. R. B. Knowles. *Brit. M. J.* 2: 430–432 (Sept. 30) 1944.

In 9 coal pits and among some 7,000 miners, 56 cases of dermatitis occurred in a period of 2 years. The author divides cases of skin trouble into 2 groups, those due to trauma with infection, such as beat hand and beat knee, and those cases due for the most part to moisture, heat and friction. Fungus infection of the feet may be spread at pithead baths. Oil employed on coal-cutting and boring machines, or paraffin used to remove oil may cause dermatitis.

An analysis of cases in relation to working conditions suggests that high temperature and humidity favor dermatitis. Dust on the skin, associated with sweating and friction between skin surfaces, or between skin and rough clothes, may be a determining factor. Men with thick, dark, oily skins are, as a rule, less susceptible than those with fair, thin, dry skins. Relatively hairless skins are less liable to folliculitis from oils and grease than hairy arms and legs. Prevention lies in adequate ventilation of the pit; removal of dust and water; and education of the miner regarding the risks and the use of unsuitable cleansing agents. In fact, the whole matter of dermatitis among miners is one of attention to detail and an understanding of causation, prevention, and treatment.

(901) Dermatitis due to a case-hardening compound. G. P. Whitwell. *Brit. J. Dermat.* 57: 169 (Sept.–Oct.) 1945.

The case hardening of steel consists essentially in bringing carbon into contact with the metal surface in such a state that the steel is made richer in carbon content. Severe dermatitis which occurs among the workers was thought to be due to impregnation of charcoal with 5 percent sodium carbonate. The charcoal itself probably is harmless.

(902) Dermatitis from an annealing compound. L. W. Spolyar. *Monthly Bull.* Indiana State Board of Health 49: 136 (June) 1946.

An outbreak of an ulcerative irritant type of dermatitis occurred in workers engaged in machining cast-iron castings covered with an alkali dust. The dust came from the annealing compound in which the casings had been immersed for three hours at 1700° F. and which originally contained barium, calcium and sodium carbonates, coke, charcoal and molasses. After heating, the annealing compound was dumped, sieved, and placed in a bin to be used. The castings were sent to the machine shop without removal of the adhering compound.

Workers who machined the castings developed small, round, punched-out, painful, ulcerlike areas on the tips of their fingers, especially in hot weather. The dust on the casing had a pH of 13, and contained 71 percent of carbonates. The men packing the casings, although exposed similarly, did not develop the dermatitis. The machinists' fingertips came in contact with the sharp machine edges, and the combination of shaving down the skin and irritation by the chemicals caused the dermatitis. The annealing compound was thereafter removed by shot blasting in a tumbler, and the dermatitis no longer occurred. A similar outbreak occurred in England in 1945.

(903) Risks to health in the potassium mining industry in Alsace. G. Keller. *Arch. d. mal. profess.* 8: 251–256 (Mar.) 1947.

In an Alsatian mine, the salt, sylvinite, was encountered. It contained a mixture of potassium chloride and sodium chloride, with traces of chloride of magnesium and calcium sulfate. Rock temperature in the seams was as high as 55° C, causing free sweating, which was aggravated by the saline dusts. The chief troubles resulted from contact of salt dust with the skin which caused pyogenic infections and furunculosis, with a tendency for injuries to heal slowly. Remedies are proposed.

(904) Industrial selenosis (a review of the literature, report of five cases and a general bibliography). R. F. Buchan. *Occup. Med.* 3: 439–456 (May) 1947.

Selenium is rather widely used in industry, and, in certain combinations, is capable of producing acute and chronic physiologic effects. Animal experimentation has demonstrated that the liver is the organ affected most easily, early cellular destruction taking place. The author presents the symptomatology of selenium poisoning, as recorded by several writers, and gives a brief historical survey of the toxicology of selenium.

In 5 particular cases, the diagnosis of selenosis is based on the following factors: (1) Onset of complaints after introduction of etching ink containing selenium; (2) identity of complaints with those long associated with metallic poisoning; (3) demonstration of the presence of hydrogen selenide in chemically detectable amounts in the workroom air; (4) presence of odor identified as hydrogen selenide; (5) demonstration of urinary excretion of selenium indicative of selenium absorption; and (6) clinical recovery on substitution of a nontoxic etching ink.

Prevention of industrial selenosis depends on an intelligent appreciation of the inherent hazards attached to the use of selenium products, and on proper engineering and medical controls. Careful attention should be given to complaints referable to the respiratory tract, the gastrointestinal tract, and the central nervous system.

(905) Granulomas of the skin due to asbestos. H. Ollivier, P. Morand, and R. Brun. *Arch. d. mal. profess.* 10: 516, 1949.

In a case of granuloma of the skin due to asbestos, the worker was employed in applying asbestos to stoves when he wounded his palm. Within 2 weeks a swelling appeared at the site of the trauma. Excision of the mass and microdissection revealed a nucleus of fibers of asbestos.

(906) Dermatitis in a drill sharpener. Queries and Minor Notes. *J. A. M. A.* 148: 1166–1167 (Mar. 29) 1952.

Carborundum and allied synthetic abrasives are seldom suspected in a case of dermatitis. In the past, some bonding agent embraced rubber compounds and vegetable resins, but it is not known that use of this type of agent persists. On the other hand, every workman in his daily life comes into contact with a variety of agents far more likely to induce sensitization than synthetic stones.

Paints, Lacquers and Varnishes

(907) Professional eczema of lacquer (positive cutaneous tests). Desensitization or professional immunization. H. Gougerot and T. Desmonts. *Bull. Soc. franc. de dermat et Syph.* 45: 1788–1792, 1938.

A patient who developed dermatitis after coming into contact with lacquer was skin tested with natural and black lacquer. The results are described. Although the patient continued to work, the dermatitis gradually regressed, a development known as progressive desensitization or immunization. The use of the two terms is explained.

(908) Chrome sores in use of zinc chromate paint. *Missouri Indust. Health Bull.* 2:1 (Aug.) 1944.

Cases of chrome sores have been reported among some workers spraying zinc chromate paint. Since this paint is a primer coat required on Navy contracts, plants employing this paint should provide adequate respiratory protection and ventilation.

(909) Contact dermatitis from Japanese rifles. F. Hinman, Jr. *Ann. Allergy* 4: 384–387 (Sept.–Oct.) 1946.

Seven cases of acute vesicular dermatitis were reported among men who refinished Japanese rifle stocks. The lesions cleared when the contactant, Japanese lacquer or varnish, was removed.

(910) On occupational diseases of the skin among paint factory workers, painters, polishers and varnishers in Finland. V. Pirila. *Acta dermat.-venereol* 27: 5–163, 1947.

Occupational skin diseases in 1,142 workers in 3 large paint factories, a white lead factory, and painter's firms and workshops is reported. Clinical and experimental examinations were performed on the workers who either had or had had dermatitis. The incidence of occupational dermatitis among the various workers and the results of patch tests are reported. A distinction is made between allergic and toxic reactions. The etiologic agents are discussed with reference to the type of skin reaction produced. Also included is a summary of the case histories and results of testing; the patients classification of occupational dermatitis based on causes; and a discussion of the contents of paint used in Finland.

(911) Cutaneous reactions provoked by Indo-Chinese lacquer. J. Pellerat, L. Chmel, and R. Chamard. *Arch. d. mal. profess.* 9: 269, 1948.

Indo-Chinese lacquer is a powerful primary irritant. The proportion of patients reacting to it diminishes with the dilution used. In those who already show eczema, a test with lacquer may produce a flare-up in the eczematous patches. Administration of 3.277 RP, an antihistamine agent, attenuates markedly the cutaneous reactions provoked by varying concentrations of the lacquer. This shows that histamine plays a part in the development of these reactions, and suggests a possible mode of prophylaxis.

(912) The dermatoses of those working with paint and allied substances. J. M. T. Bona. *Actas dermo-sif.* 39: 737, 1948.

This is an excellent, detailed summary of the extensive literature. The author deals with the inorganic and organic pigments and dyes in general use; with the binding materials; the natural and synthetic resins; the solvents; and, finally, with lacquers and varnishes.

Patch Tests

(913) Hazards of patch testing. E. Epstein. *California & West. Med.* 53: 6–7, 1940.

There are four dangers to patch testing: Necrosis, the generalization of previously localized eruption, sensitization of previously uninvolved skin, and development of constitutional symptoms.

(914) Studies in contact-dermatitis. The spontaneous flare-up of negative test-sites in experimental sensitization in man. M. Grolnick. *J. Immunol.* 41: 127 (June) 1941.

Patch tests with krameria elicited flare-ups in 18 subjects from the 8th to the 21st day after application of the patch. Additional applications caused reactions in previously negative sites in 19 subjects. These sites remained inactive for 10 to 43 days prior to their flare-up. These successive applications evidently produce an immunological alteration which finally causes hypersensitiveness.

(915) Results of a questionnaire on patch tests. Analysis of answers by two hundred and eleven dermatologists and forty-five industrial physicians. J. G. Downing. *Arch. Dermat. & Syph.* 48: 514, 1943.

Patch tests, in spite of their limitations, are valuable in selected cases. They should be performed by dermatologists, not general practitioners. Though the procedure is simple, serious reactions, resulting in prolonged disability, have followed patch tests with many substances.

(916) The patch test in contact dermatitis. L. Schwartz and S. M. Peck. *Pub. Health Rep.* 59: 546–557 (Apr. 28) 1944.

This is a brief but authoritative paper on patch tests, their technique, varia-

tions, and interpretation of results. First, primary skin irritants are distinguished from sensitizers. According to Public Health Service definitions, "A primary cutaneous irritant is an agent which will cause dermatitis by direct action on the normal skin at the site of contact if it is permitted to act in sufficient intensity or quantity for a sufficient length of time," and "A cutaneous sensitizer is an agent which does not necessarily cause demonstrable cutaneous changes on first contact but may effect such specific changes in the skin that, after 5 to 7 days or more, further contact on the same or other parts of the body will cause dermatitis." Directions are given for patch tests with liquids, powders, solids, and ointments. Modifications for volatile substances are also described. The symbols for interpretation are explained: 1 plus, for erythema; 2 plus, for erythema and edema; 3 plus, for papules and a few vesicles; 4 plus, many vesicles and sometimes ulceration. Details of recording and interpretation, with cautions to be observed in accurate interpretation, are given. The *prophetic* patch test is a recent development used to determine possible irritant qualities of new chemicals used in the manufacture of wearing apparel, cosmetic or other articles coming in contact with the skin. Absence of previous contact may be assumed, and even one positive reaction may indicate that the substance may lead to dermatitis if it is in general use. The time for testing when earlier dermatitis is still present, complications of patch tests, medico-legal aspects, and the provocative patch tests (use of two concentrations when the lower may be ineffective), are discussed briefly. Special directions for testing with fabrics, furs, leather, shoes, rubber, and cosmetics are included.

(917) Contact testing of the buccal mucous membrane for stomatitis venenata. L. Goldman and B. Goldman. *Arch. Dermat. & Syph.* 50: 79–84 (Aug.) 1944.

Common causes and methods of testing for contact stomatitis are discussed. The rubber suction cup technic is the best method of testing for buccal sensitivity. The time factor of testing has not been definitely determined, but the experience of the authors showed that 20 to 30 minutes was sufficient. They were unable to account for the rarity of contact stomatitis and predict that contact testing of the buccal mucosa will show contact stomatitis more prevalent than it is thought to be.

(918) Report on patch tests conducted at Fort Monmouth Signal Laboratory. U. S. War Department (Mar.) 1945.

Tests showed that a fungus proofing wire impregnating material with 1 percent or even 0.2 percent phenylmercuric salicylate is a powerful skin irritant and that a lacquer with 1 percent phenylmercuric salicylate is also a strong irritant. The other chemicals tested showed no irritating properties.

(919) Certain statistical considerations in patch testing. C. R. Henderson and E. C. Riley. *J. Invest. Dermat.* 6: 227–230 (June) 1945.

If 0, 1, or 2 positive patch test reactions are observed in a sample of a given size, an estimate can be made as to the likely (95 percent) maximum rate of positive reactions in the population from which the sample was drawn. If it is desired to make reasonably certain (95 percent likelihood) that the rate of positive reactions in the population does not exceed a given figure, the size of sample necessary to accomplish this end may be determined. Three values will be obtained, depending upon whether 0, 1, or 2 reactions in the sample is to serve as the criterion.

(920) A note on the statistical probabilities of finding hypersensitive subjects in random samples. L. F. Knudsen. *J. Invest. Dermat.* 6: 231–232 (June) 1945.

If the population rate of positive patch test reactors to a substance were known, it would be possible to determine the probability of obtaining no reactors, one reactor, or more than one reactor in a sample of a specified number of subjects. For example, given the population rate 0.1 percent and one group of 200 subjects to be tested, the chances are 82 out of 100 that there will be no reactors in this group, and 18 out of 100 that there will be one or more reactors in the group.

(921) Patch tests for occupational dermatoses. Queries and Minor Notes. *J. A. M. A.* 128: 160 (May 12) 1945.

The patch test is an important and valuable criterion in the diagnosis of allergic occupational dermatitis. The possible allergenic substances in a particular occupation are usually few and simple to select. Primary irritants must not be used for patch tests. If hypersensitivity to a primary irritant is in question, dilute solutions must be used. The patch test is not the sole criterion

on which the diagnosis of occupational dermatitis is made. Other criteria are occupational history, site of the eruption, its appearance, and differential diagnostic data. Several standard references are recommended for additional information.

(922) The sensitized skin: Experimental and clinical implications. M. Grolnick. *Indust. Med.* 14: 595–600 (July) 1945.

The author reports the results of a series of patch tests with krameria and other sensitizing chemicals and concludes that the mere external applications of a very small amount of a potent, and concentration-sensitizing substance to the intact skin may at times sensitize the entire skin surface following a suitable incubationary period. He also states that it is well also to consider the possibility of inducing sensitivity by repeating diagnostic patch tests with the sum of related substances which are potential sensitizers.

(923) A new technique for performing quantitative contact (patch) skin tests. J. E. Dunn, H. S. Mason, and B. S. Smith. *J. Invest. Dermat.* 6: 323–336 (Dec.) 1945.

The usual patch test for determining the agent in contact dermatitis is satisfactory for diagnostic work but does not show the degree of cutaneous hypersensitivity. A technique is described employing serial dilution of the test substance in acetone.

(924) A new interpretation of some so-called positive patch tests, with special reference to metals used in industry. S. W. Becker. *J. Michigan M. Soc.* 45: 65–9 (Jan.) 1946.

Both nickel and chromium and their compounds can produce eczematoid dermatitis in individuals working with them. Typical vesicular reactions, which signify epidermal hypersensitiveness, are obtained on patch testing. Compounds of both metals have also produced, on patch testing, dermatitis consisting of erythema, follicular inflammation, dermal edema, and subsequent vesiculation. Such reactions may result from dermal hypersensitiveness to the compounds, which is seen in patients with functional dermatitis, such as dry neurodermatitis (atopic eczema). The dermatitis which persists after removal of patients from exposure to the offending metallic compound may be functional rather than occupational. This possibility could explain the paradoxical behavior of some such eruptions. Five cases are presented in support of these points.

(925) Skin reactions caused by fractions of oil of turpentine and hexanitrodiphenylamine. I. Rokstad. *Acta dermat.-venereol.* 26: 1–352, 1946.

The effect of oil of turpentine on normal and sensitive skin was studied. For comparison, hexanitrodiphenylamine was used because it is a substance which the subjects would not be likely to come in contact with later. The adhesion chamber method of patch testing is considered superior. A distinction is made between three types of reactions, namely, toxic eczematous, and combined toxic-eczematous reactions. The various fractions of oil of turpentine are discussed as a cause of skin reactions. Eczematous sensitization, its localization, and the reaction mechanism are also discussed.

(926) Modifications of the Goldman technique for contact testing of the buccal mucosa. J. Farrington. *J. Invest. Dermat.* 8: 59–61 (Feb.) 1947.

The usefulness of the Goldman technique for contact testing of the buccal mucosa in stomatitis venenata has been extended by the suggestion that the rubber cup be cemented with collodion to artificial dentures. A second modification is the fixation of a rubber finger cot by inserting between the teeth a short strand of dental floss which connects the hose of the cup and a small button.

(927) Contact eczematous dermatitis and patch tests. C. Miller. *Arch. Dermat. & Syph.* 56: 678–694 (Nov.) 1947.

The halogens and the heavy metals are the primary irritants. Necrosis and vesicular formation seem to be the main types of symptoms. Microscopic pictures of positive reactions in patch tests are included and differences between this disease and other eczematoid dermatoses are presented.

(928) A new adhesive tape remover of particular value in patch testing. A. W. Glick, G. Weissberg, and S. M. Peck. *J. Invest. Dermat.* 10: 399 (June) 1948.

The use of propylene glycol ether for removing three types of adhesive tape renders the removal relatively painless and, more important, greatly reduces the traumatic reaction of removal.

(929) Use and abuse of the patch test. D. J. Birmingham; P. C. Campbell, Jr.; and L. Schwartz. *Indust. Hyg. Newsletter* 8: 3–5 (June) 1948.

The patch test is by no means a sole criterion for the diagnosis of contact der-

matitis. When used intelligently it can serve as a valuable aid in diagnosis and not infrequently it can help to prognosticate the dermatitis-producing qualities of materials designated for mass usage. Proper performance and interpretation of patch tests require a knowledge of the testing substances. Helpful assistance can be obtained from the published lists of recommended test concentrations by Mayer, Schwartz, Rostenberg, and Sulzberger. Efforts to follow the recommended procedures as outlined will reward both doctor and patient.

(930) Repeated patch testing in allergic eczematous sensitization. V. H. Witten and H. M. Shair. *Ann. Allergy* 7: 32–45 (Jan.–Feb.) 1949.

Patch tests were performed over many weeks on subjects who were known to be hypersensitive to one or more eczematogenic allergens. Patch tests performed at weekly intervals with standard concentrations of allergens indicated that the standard patch test procedure was a highly reliable method of testing for allergic eczematous contact-type hypersensitivity. It was found that patch tests with graded dilutions of an allergen were more satisfactory for demonstrating relatively small variations in sensitivity than were tests with standard concentrations.

The change in the level of hypersensitivity as produced by repeated patch tests was not in the direction of decreased sensitivity and therefore the authors stated that repetitive patch testing was not satisfactory for affecting desensitization in allergic eczematous contact-type of hypersensitivity.

(931) An evaluation of the patch test based on experimental findings. M. Grolnick. *Ann. Allergy* 7: 368–371 (May-June) 1949.

Experimental studies in sensitization of the skin of humans indicated that the patch test may be a means of provoking sensitization of the nonsensitive individual. The excitant may remain in the skin for long periods of time. Certain precautions are given which must be observed in the performance of patch tests to avoid the hazards incident to the clinical implications of these findings.

(932) "Prophetic" patch test. C. B. D. Holland, W. C. Cox, and E. J. Dehne. *Arch. Dermat. and Syph.* 61: 611–618 (Apr.) 1950.

The Army Industrial Hygiene Laboratory applied 28,201 test patches during a period of 13 months, using the technic and schedule recommended by Schwarz, Tulipan, and Peck for prophetic patch testing. Materials tested included leathers, fabrics, and plastics treated with chemicals to render them resistant to mildew, shrinkage, or to make them antiseptic for use as dressings.

Ambient conditions and the *microenvironment under the patch* gave reactions which could not always be interpreted with assurance as either primary irritation or sensitization.

There were reactors on first application of a substance which failed to react to the challenging or eliciting patch. There were persons reacting to the patch on the eliciting occasion, and not on the first application, who could have had primary irritation reactions. The authors felt that they could not differentiate with any great degree of certainty between these two types of reaction.

Reactions on second application which were negative on first application are not necessarily a sign of sensitizing power in the test substance. To be certain of the reliability of sensitization-index as determined by the prophetic patch test, the patch tests results would have to be correlated with the experiences of thousands of persons using or wearing the tested items.

Since the Schwartz patch is an occlusive, heating, and macerating procedure, the authors felt that a patch test which would hold the material in contact with the subject under more normal conditions would be better. To this end, they devised an elastic band which was porous and held the material in place without retaining sweat and heat. They also devised an adhesive patch with a perforated center for the position of the test material. They found that these types gave fewer primary irritation reactions than simultaneously applied Schwartz patches when used to test porous materials such as fabrics for clothing, and provided more normal conditions of use. For testing of rubber and impermeable plastics, they found the Schwartz patch to be as good as their own patches.

(933) The patch test—its technic and interpretation. W. Weinberger. *Arch. Indust. Hyg. & Occup. Med.* 2: 565–573, 1950.

The various types of patch tests, and the technics employed are discussed. The various types of reactions occurring are described and graded numerically. The following precautions are recommended:

1. Do not perform a patch test with a known primary irritant unless this is in a nonirritant concentration.

2. Do not perform a patch test when a dermatitis is widespread and acute. To do so may produce a generalized eruption.

3. Do not perform a patch test when the patient shows signs of a systemic reaction, as such testing may cause misleading responses and may harm the patient.

4. Do not perform a diagnostic patch test with a known sensitizer unless the history indicates previous contact with the substance.

5. Do not perform a patch test with an unknown substance without using a control substance or person.

6. Do not perform preemployment patch tests. To do so may produce a sensitivity. Only on rare occasions is such a procedure justified.

7. Do not make the patch test the sole criterion of allergic contact type eczematous dermatitis. Other criteria are the history, the site of the eruption, its appearance and the differential diagnostic data.

8. Primary irritants and physical agents as inciting causes of dermatitis are not detected by patch testing.

(934) A standardized patch test. Louis Schwartz. *J. Allergy* 8: 63–65, 1950.

The writer reviews fundamental concepts in patch test technique and stresses the need of standardizing the technique in an effort to obtain uniformity of results. The suggested technique employs: (1) A standard size patch (3 sq. cms.); (2) a standard amount of liquid (0.2 cc.) measured from a pipette; (3) uncoated regenerated cellulose 1–1½" larger than the test patch; and (4) elastoplast cover (3 inches across the diagonal).

The use of a standardized method may provide a better definition of sensitizing indices of compounds.

(935) Keloid resulting from a positive patch test. J. E. Dalton. *Arch. Dermat. & Syph.* 65: 53–55 (Jan.) 1952.

A case was presented in which a keloid resulted in a white, fair-skinned, 22-year-old female from a severe reaction to patch test with patulin (an antibiotic substance obtained from *Penicillium patulum*).

(936) Procedure for evaluating skin-sensitizing power of new materials. M. J. Brunner and A. Smiljanic. *Arch. Dermat. & Syph.* 66: 703–705, 1952.

This procedure may not reveal the actual percentages of persons sensitized on normal exposure, as is the case with the standard prophetic patch test. For example, users of mercaptan hair-waving agents may contact the substance only 3 or 4 times yearly, and perhaps such widely spaced exposures produce a different sensitization rate from that which results from the intensive test exposures. However, the percentages obtained in the test may be similar to those developing from normal use if this involves daily or frequent contact. Thus, of 12 technicians and others handling mercaptan on an almost daily basis, there were 5 who became sensitized during a 3-month period. In the test exposures, 5 of 16 subjects were sensitized in 3 weeks. In contrast, none of the 40 women who had 2 waves at 3-month intervals with this preparation showed reactions, and of 106 persons subjected to the prophetic patch test, only 1 was apparently sensitized by it.

The need for repeated exposures was demonstrated by the relatively low percentages of sensitization when the number of exposures was reduced. With 1 to 3 applications in the first week, only 1 out of 15 persons was shown to be sensitized to mercaptan A in a 3-week period. Mercaptans A and B are obviously potent sensitizers, and some indication of their potential was obtained in the standard prophetic patch test. However, sensitizers less potent than these pose a problem in uncovering an allergenicity which is moderate to low, but prohibitive in cosmetics. Experience has shown that these moderately powerful sensitizers may fail to sensitize in the Schwartz and Peck procedure.

Although the actual sensitizing index following normal use cannot be exactly ascertained by this procedure, or any other yet devised, the method presented apparently accelerates the reaction rate and will expose allergenicity in a range outside that which is possible with the standard prophetic patch test.

(937) Patch tests. G. E. Morris. *Ind. Med. & Surg.* 22: 19–21 (Jan.) 1953.

A summary of the author's points are as follows:

1. Patch tests are of definite value in eliciting the causes of contact dermatitis in many cases.

2. The specific techniques and dilutions to be used in performing patch tests will vary in accordance with the substance in question.

3. Irritants should not be used for patch testing.

4. All materials used for patch testing must be properly diluted.

5. The eczematized skin has a lower threshold or irritability than does the normal skin.

6. Future use of patch tests will provide new techniques and lead to further advances.

7. Absolute reliance on the result of the patch test in all cases of externally caused dermatitis is not justifiable.

Physiology

(938) The color of the skin as analyzed by spectrophotometric methods. I. Apparatus and procedures. C. Sheard and L. A. Brunsting. *J. Clin. Investigation* 7: 559–574 (Oct. 20) 1929.

Reference is made to (1) tintometric methods for estimating the color of the skin; (2) the fundamental attributes of color; (3) spectrophotometric apparatus and methods of procedure for obtaining curves of the reflection by the skin of light various wavelengths; (4) the authors' water-cooled device to enable spectrophotometric determinations to be made on living materials; (5) spectrophotometric analyses of the color of the skin, and (6) conversion of spectrophotometric data into terms of color excitation values, percentages of fundamental red, green and violet reflected by the skin, dominant wavelength, purity, and relative luminosity.

(939) The color of the skin as analyzed by spectrophotometric methods. II. The role of pigmentation. L. A. Brunsting and C. Sheard. *J. Clin. Investigation* 7: 575–591 (Oct. 20) 1929.

Spectrophotometric analysis of the human skin demonstrates certain fairly constant features regarding its color. The fundamental hue or dominant wavelength of the skin lies in the spectral region, 590 millimicrons (sodium yellow). Deposition of melanin in the skin in response to more or less exposure to sunlight does not disturb the hue or purity of its color but decreases the relative luminosity. The more melanin present, the lower the percentage of light reflected from the surface of the skin and the lower the brilliance.

Pigment is not a racial characteristic. The same hue prevails in the white as in the so-called black, red, and yellow races. Deposits of pigment in disorders of the skin do not alter the fundamental attributes of its color except as they lower the value for brilliance. Jaundice in the skin can be estimated quantitatively, but it does not affect the normal values for hue, purity, or relative luminosity.

(940) The color of the skin as analyzed by spectrophotometric methods. III. The role of superficial blood. L. A. Brunsting and C. Sheard. *J. Clin. Investigation* 7: 593–613 (Oct. 20) 1929.

Quantitative comparisons are presented showing the variations in the color of the skin in health and disease as dependent on the content of superficial visible blood. Observations on specimens of the skin obtained postmortem from a blond subject and an Osage Indian have been compared with records made during life in the same type of subjects to note the effect of the presence or absence of blood on the color of the skin. Furthermore, the effect of a change in the distribution of the superficial blood was observed by placing the hand in an elevated and dependent position in relation to the heart. Various types of dermatoses have been examined spectrophotometrically in order to demonstrate the effect of changes in amount and distribution of the superficial blood on the color of the skin.

The following observations are presented:

1. The blood in the superficial capillaries exerts a major influence on the color of the skin.

2. Spectrophotometric observations of various areas of the human skin demonstrate considerable variation in the amount, quality and distribution of peripheral blood. Diseases of the vascular tree or the blood itself tend to accentuate these changes in the color of the skin

3. The pigment (melanin), in proportion to its density, acts as a screen to prevent the superficial blood from attaining visibility.

4. Superficial blood plays a part in the curve of reflection of light from the surface of the skin and is evidenced by absorption zones at the spectral regions, 540–580 and 630 millimicrons. The absorption band at 630 millimicrons is the least constant, whereas the others persist in all records except in those obtained from specimens of skin devoid of blood (post mortem).

5. An abundance of oxygenated blood near the surface of the skin tends to shift the dominant wavelengths from the region of 590 millimicrons to the orange or red end of the spectrum, reach-

ing a value as high as 620 to 660 millimicrons. There is a diminution of the purity or degree of hue and a lowering of the relative luminosity or brilliance.

6. An abundance of venous blood tends to shift the dominant wavelength toward the blue region of the spectrum (490 to 500 millimicrons), indicating a condition of cyanosis. This is produced by an alteration in the relative percentage values for red, green, and violet. Normally they maintain a linear relationship, but the value for violet exceeds the value for green in conditions of marked cyanosis.

7. Spectrophotometric records and analyses may assist in the delineation of changes due to combined alterations in the content of blood and pigment in human beings.

(941) Experimental miliaria in man. I. Production of sweat retention anidrosis and vesicles by means of iontophoresis. W. B. Shelley, P. N. Horvath, F. D. Weidman, and D. M. Pillsbury. *J. Invest. Dermat.* 11:275–291 (Oct.) 1948.

Anidrosis was produced experimentally in man by iontophoresis. This was due to sweat retention within the duct and not to damage of the secretory epithelium, which can be caused by formaldehyde. The physiologic mechanism involved seemed to be an abnormal keratinization due to a nonspecific injury to the epidermis, which eventually produced a hyperkeratotic plug in the sweat duct orifices. The sweat gland acini remained normal and yielded sweat on stimulus, which caused miliaria.

(942) Effect of lead on the content of ascorbic acid and sulfhydryl compounds in animal tissues. G. A. Uzebekov. *Biokhimiya* 13:429–433, 1948.

The daily subcutaneous injection into guinea pigs of lead (6 mg. per kilogram) results in toxic C-avitaminosis. The ascorbic acid content diminishes in the blood and in the internal organs; its excretion in the urine stops altogether. Lead poisoning also results in a decrease in the blood of reduced glutathione and oxidized glutathione, and in a lowering in the sulfhydryl compounds and protein sulfur in the brain, liver, and kidney tissues.

(943) Studies in percutaneous absorption of radioiodine. O. B. Miller, and W. A. Selle. *J. Invest. Dermat.* 12:19–29 (Jan.) 1949.

The authors discuss absorption through the skin and how absorption of iodine is demonstrated by the use of radioiodine. Studies show that about 88 percent of iodine applied to the skin volatilizes and that the rest is slowly absorbed. Application of radioiodine to the skin of a pregnant animal results in concentration of iodine in the gastric fluid of the fetus as well as the thyroid gland; approximately 70 percent of all the iodine present in the fetus is recoverable from the stomach. Distribution of radioactive iodine in the organs of the rabbit and guinea pig after percutaneous absorption is demonstrated.

(944) Clinical studies in percutaneous absorption. M. V. Nadkarni, D. B. Meyers, R. G. Carney, and L. C. Zopf. *Arch. Dermat. & Syph.* 64: 294–300 (Sept.) 1951.

It was shown that on human skin the use of a water-soluble vehicle promotes a greater absorption of phenolsulfophthalein than did the use of an oleaginous base. The skin of middle-aged persons absorbed the dye most rapidly and in greatest quantity from each of the bases tested. Absorption of the dye through inflamed skin was two to five times greater than through the normal skin from the water-soluble vehicle and the oleaginous base respectively. It was suggested that toxic amounts of certain drugs may be absorbed through the skin with the use of a water-soluble vehicle. Future problems in this field were outlined.

(945) The fatty mantle of the skin and its significance in wetting the skin surface. W. Schneider and H. Schuleit. *Arch. Dermat. & Syph.* 193: 434, 1951.

The fatty mantle of the skin is not a water repellent, but, owing to its various components, serves as a regulator of the water content of the skin. Apart from the main fatty constituents, there are alcohol- and water-soluble substances in the mantle, the chemical composition of which is not yet determined, which serve to wet the hydrophobe keratin of the skin surface. *M. F.* [Brit. J. Dermat.]

(946) Local depilatory action of some unsaturated compounds. P. F. Flesch and M. Hunt. *Arch. Dermat. & Syph.* 65: 261–269 (Mar.) 1952.

Several unsaturated compounds were tested for their local depilatory action in mice, rabbits and guinea pigs. A single application of allyl-laurate, allyl benzoate, allyl dephenylacetate, and squalene caused reversible hair loss at the site of application. Repeated applications of vitamin A had the same effect.

All these compounds except vitamin A inactivated in vitro the free sulfhydryl groups of glutathione and of tissue homogenates and the sulfhydryl enzyme succinic dehydrogenase. Possibly this effect is due to an alkylating reaction between double-bonded carbon atoms and sulfhydryl groups.

Local application of human sebum causes reversible hair loss in mice and rabbits. The author proposes that sebum is an important factor in disturbances of hair growth and keratinization.

(947) The capacity of the human skin to regenerate lipoids after use of soap. H. Neuhaus. *Ztschr. Haut-u. Geschlkr.* 12: 507–513, 1952.

A comparative study was made of the lipoid regeneration of 4 portions of the skin of both thighs (each surface measuring 26.4 sq. cm.) following defatting for 1 minute by means of 4 agents as follows: (1) petroleum ether, (2) strongly superfatted soap, (3) soap containing a substance which penetrates into the skin and which is said to protect it, and (4) soap containing *physiogen*, which promotes rapid fat excretion from the body by an enzymatic mechanism. The lipoid content of the skin was determined every 10 minutes during a 60-minute period (the skin is exposed during 5 minutes to a solvent in a glass funnel; after a few hours, the fat content of the solvent is determined on the basis of the reduction of bichromate by the lipoids). With number 1, the original lipoid content was observed again after 60 minutes; numbers 2 and 3 showed only 75 percent of the original values after 60 minutes, while marked fat excretion was observed only after some 30 minutes. With number 4,45 percent of the original cutaneous fat was regenerated after 10 minutes, 70 percent after 20 minutes, and as much as 80 percent after 30 minutes. In view of these findings, soap containing physiogen may be an important aid in the prophylactic treatment of occupational eczema attributable to the effect of lipoid-solvent substances.

Bakker-Leyden [EXCERPTA MEDICA]

(948) Hair loss from sebum: P. Flesch. *A. M. A. Arch. Dermat. & Syph.* 67: 1 (Jan.) 1953.

Human sebum (obtained by ether extraction of hair), its unsaponifiable and saponifiable fractions and three of its unsaturated components—squalene, oleic, and linoleic acids—were found to be powerful local depilatory agents in laboratory animals. After a single application, local hair loss occurred in 10 to 12 days, and was reversible. A control series of animals treated with liquid petrolatum, hydrous wool fat, or stearic acid showed no impairment in hair growth.

The histologic changes in the depilated skin were a marked acanthosis, disappearance of the hair shafts and of numerous hair follicles as well, and anomalous keratinization. All these changes were reversible.

In vitro, sebum and its depilatory components inactivated the free sulfhydryl groups of glutathione and of tissue homogenates and the sulfhydryl enzyme succinic dehydrogenase. Sebum may influence hair growth and keratinization in man.

(949) Biochemistry and physiology of epidermis. C. Carruthers and V. Suntzeff. *Physiol. Rev.* 33: 229–243 (Apr.) 1953.

The biochemistry and physiology of the epidermis are covered under the headings of mitotic activity, mineral composition, enzyme activity, vitamins, amino acids, and proteins.

(950) The principles of percutaneous absorption. S. Rothman. *J. Lab. & Clin. Med.* 28: 1305–1321 (Aug.) 1943.

Absorptivity of the skin has widespread implications in different branches of medicine including physiology, toxicology, dermatology, and industrial hygiene. This article is a review of our knowledge of skin absorption and summarizes the theoretical and experimental data available. A bibliography of 69 items is provided.

(951) The absence of skin irritants in the contents of vesicles. M. B. Sulzberger and J. H. Katz. *U. S. Nav. M. Bull.* 41: 1259, 1943.

Blisters were produced on human subjects by poison ivy, liquid mustard gas, and liquid lewisite. The vesicle contents and vesicle tops were applied to normal human skin by the patch test technic. The contents of mustard gas vesicles were shown not to be vesicant; the contents of poison ivy vesicles were incapable of producing new lesions; and the contents and tops of experimental lewisite blisters were not vesicant.

(952) The excretion of ascorbic acid, thiamine, riboflavin, and pantothenic acid in sweat. D. M. Tennent and R. H. Silber. *J. Biol. Chem.* 148: 359–64, 1943.

Male subjects were kept on a normal diet. This was supplemented in some

cases by 250 mg. ascorbic acid, 50 mg. calcium pantothenate, 10 mg. thiamine chloride, and 10 mg. riboflavin daily for 1 week, and by 1 gm. of ascorbic acid and 50 mg. of the other vitamins 30 minutes before sweat collection. Sweating was induced by heat (41.7°–43.3° C., 60–70 percent humidity) or exercise (wood sawing at 31°–34° C., 80–85 percent humidity). The excretion of thiamine in sweat was insignificant; of ascorbic acid zero; of dehydroascorbic acid 200γ per hour; and of riboflavin 10γ per hour. Pantothenic acid was excreted at the rate of 24γ per hour by subjects without, and 50γ per hour by those with extra supplementation. It was concluded that the loss of vitamins in sweat is too small to cause a vitamin deficiency.

(953) Studies on ointments. I. Penetration of various ointment bases. E. A. Strakosch. *J. Pharmacol.* 78: 65–71, 1943.

Various greases and compound ointment bases were applied to human skin. None penetrated through the stratum corneum. Methods of studying penetration are described.

(954) Vesication and some vesicants. M. W. Goldblatt. *Brit. J. Indust. Med.* 2: 183–201 (Oct.) 1945.

A prescription of the possible mechanism of vesication is given followed by a discussion of the variations of vesication. A technique for treatment of chemical vesication, and certain compounds, used in the organic chemical industry, which are powerful vesicants, are discussed. The establishment of hypersensitivity to chemical compounds after the apparent healing of a vesicated skin is a frequent event and special precaution is required in deciding on the return to work of the affected person. In certain cases, photosensitivity may follow vesication.

(955) Self-disinfection of the skin: A short review and some original observations. J. M. L. Burtenshaw *Brit. M. Bull.* 3: 161, 1945.

The literature on self-disinfection of the skin is reviewed, and it is concluded that the disinfectant power rises with increased acidity. Ether extract from hair was analyzed and the different fractions examined for streptococcicidal power. The results showed that the whole range of acids of the acetic series, and, to lesser degree, their soaps, are important agents in killing bacteria, fungi, and viruses on the surface of the skin.

(956) The metabolism and permeability of normal skin. H. O. Calvery, J. H. Draize, and E. P. Laug. *Physiol. Rev.* 26: 495–540, 1946.

This paper presents a review of the literature correlating the metabolism, histology, and permeability of normal skin. Included in the discussion are the roles of protein, carbohydrate, and fats in metabolism of the skin; the strata of the skin in relation to permeability; the methods by which vehicles carry substances through the skin; and substances which can and cannot pass through the epidermis into the body.

(957) A study of certain factors governing the penetration of mercury through the skin of the rat and rabbit. E. B. Laug, E. A. Vos, F. M. Kunze, and E. J. Umberger. *J. Pharmacol. & Exper. Therap.* 89: 52–63 (Jan.) 1947.

The vehicle, compound, and concentration of mercury are considered as factors influencing the penetration of mercury. The type of vehicle seems to determine the effectiveness of the wetting agent in increasing the penetration of mercury through the skin. The interaction between the mercury compound and the vehicle may materially modify penetration.

(958) The absorption of phenol in oil solutions by the rabbit skin. A. Bass and S. C. Werch. *Federation Proc.* 6: 308, Part II (Mar.) 1947.

The absorption of oily solutions of phenol, alone or with camphor, by similar areas of rabbit skin, was studied. Examinations of the blood count, total blood phenols, urinary constituents, and organs were made. Experiments indicated that the absorption of phenol may be retarded by camphor. Blood phenols were much lower with phenol and camphor in vegetable oil than with the same concentrations in mineral oil.

(959) Biochemistry of the skin. E. M. Watson and R. H. Pearce. *Brit. J. Dermat. & Syph.* 59: 327–333 (Oct.) 1947.

The interfibrillar substance of animals as well as the connective tissue in general is composed of mucoproteins which contain mucopolysaccharides, such as hyaluronic acid and chondroitinsulphuric acid.

The skin also appears to possess an enzyme hyaluronidase which acts on hyaluronic acid. The skin of patients with pretibial myxedema contains an excess of hyaluronic acid, the abnormality being due probably to an imbalance between hyaluronic acid and hyaluronidase.

Pigmentation and Leucoderma

(See also Explosives: Physical-Light; Metals; Rubber; Treatment)

(960) Occupational argyria. J. E. M. Wigley and P. M. Deville. *Brit. J. Dermat. & Syph.* 57:27 (Jan.–Feb.) 1945.

A case of argyria is reported in a 61-year-old man working in the manufacture of silver nitrate. The pigmentation began on the forehead 10 years earlier and later spread to other parts of the body.

(961) Riehl's melanosis; melanoderma from hydrocarbons and tars. L. C. Joulia. *Arch. d. mal. profess.* 7:226–30, 1946.

The author shows that Riehl's melanosis is a pure form of the disease due to avitaminosis and endocrine disorders. He questions the existence of a melanoderma caused by hydrocarbons or tars, and suggests how contact with these substances could occasion an incorrect diagnosis or at least a misrepresentation.

(962) The different aspects of argyric pigmentation. L. Ramond. *Bull. Acad. de med., Paris* 130: 275–277, 1946.

Cases of argyria may be divided into three groups according to skin color. Each group is described. The author advocates caution in prescribing silver preparations.

(963) Pigmentation following application of iron salts. J. J. Strauss. *Arch. Dermat. & Syph.* 55:692–693 (May) 1947.

Most writers have been of the opinion that pigmentation from iron salts is permanent. The author presents a case in which pigmentation resulting from the use of ferric chloride in the treatment of poison ivy dermatitis almost entirely disappeared over a 6-year period.

(964) The chemistry of melanin. II. The oxidation of dihydroxyphenylalanine by mammalian dopa oxidase. H. S. Mason. *J. Biol. Chem.* 168:433–438 (May) 1947.

An absorption maximum at 305 to 310 mμ, characterizing hallachrome, developed when dihydroxyphenylalanine was oxidized in the presence of either mushroom tyrosinase or melanoma dopa oxidase.

(965) Occupation pigmentary changes in the skin. L. Schwartz. *Arch. Dermat. & Syph.* 56:592–600 (Nov.) 1947.

All cases of occupational pigmentation are grouped into those resulting from (1) An excess of melanin or melanoid; (2) deposits of metallic substances in the skin; and (3) dyeing of the skin as a result of external application of a dye or its deposition on the skin after ingestion.

Occupational melanoderma is common in those exposed to coal tar, tar distillates, pitch, petroleum, and asphalt. Pigmentation of the exposed skin is due partly to excessive melanin and partly to dyeing of the skin by coal tar. Melanoderma is apparently a protection mechanism against photosensitization. In the second group, the author discusses the effect of tetryl and deposits of steel, iron, and coal in the skin and ingestion of silver. An outbreak of depigmentation by an antioxidant in rubber gloves is described.

(966) Pigmentation and hair growth in black rats, as modified by the chronic administration of thiourea, phenyl thiourea and alpha-naphthyl thiourea. S. H. Dieke. *Endocrinology* 40:123–136, 1947.

A study has been made of the normal progressive changes in skin pigmentation and in hair growth and color of black rats, brown wild Norway rats, and black mice, and of how these normal patterns are affected in black rats by the chronic administration of thiourea, phenyl thiourea and α-naphthyl thiourea. The observations of other workers as to the normal rhythmic production of visible skin pigment in sharply defined areas of skin, followed by growth of hair only where the pigment has appeared, have been confirmed and extended, and a de-

scription given of how the stages of follicular activity can be deduced from the gross appearance of the skin.

Thiourea had no significant effect on the hair growth cycles, at average daily intakes as high as 200 mg. per kilogram body weight, and no effect on the color of the hair or skin. Phenyl thiourea at average daily levels of 25 mg. per kilogram or higher did not affect hair growth but inhibited pigment formation for as long as it was administered, thereby causing greying of the hair. When the average daily intake of α-naphthyl thiourea amounted to 25 mg. per kilogram or more, hair growth was almost completely inhibited and the skin remained unpigmented. Withdrawal of both phenyl and alpha-naphthyl thiourea resulted in the rapid reversal of these effects.

(967) Chemistry of melanin. IV. Electron micrography of natural melanins. H. S. Mason, H. Kahler, R. C. MacCardle, and A. J. Dalton. *Proc. Soc. Exper. Biol. & Med.* 66: 421–431, 1947.

Melanin granules were obtained by differential centrifugation from the S-91 and Harding-Passey transplantable mouse melanomas, from the choroid, ciliary body and iris of the beef eye, and from colored human skin. These preparations were examined with the electron microscope. Micrographs of each are presented.

(968) The chemistry of melanin. III. Mechanism of the oxidation of dihydroxyphenylalanine by tyrosinase. H. S. Mason. *J. Biol. Chem.* 172: 83–99 (Jan.) 1948.

The enzymic oxidation of 3,4-dihydroxyphenylalanine proceeds in three chromophoric phases which are characterized by absorption spectra with maxima at 305 and 475 mμ, 300 and 540 mμ, and by general absorption. The first chromophoric phase corresponds to the formation of 2-carboxy-2,3-dihydroindole-5,6-quinone. This compound rearranges to 5,6-dihydroxyindole upon standing at pH 5.6 to 6.8. When 5,6-dihydroxyindole is enzymatically oxidized, the product obtained corresponds to the second phase of the enzymic oxidation of 3,4-dihydroxyphenylalanine.

Synthetic dihydroxyphenylalanine melanin is probably a polymer of indole 5,6-quinone.

(969) Sites of deposition of silver in argyria. D. Boersma and B. L. Baker. *Arch. Dermat. & Syph.* 57: 1009–1012 (June) 1948.

In one patient, it was observed that the membrana propria of the large axillary sweat glands contained little silver in contrast to the dense concentration of silver in the connective tissue surrounding the small sweat glands. This concentration seemed to be directly related to the difference in concentration of elastic fibers in the connective tissue in the two types of glands.

(970) Leukoderma produced by antioxidants. G. A. Spencer. *Arch. Dermat. & Syph.* 58: 215–219 (Aug.) 1948.

The author reports on several cases of leukoderma caused by antioxidants, especially *Agerite alba*, trade name for monobenzyl ether of hydroquinone, used to prevent the aging of rubber.

(971) A classification of melanins. H. S. Mason. *In* **The Biology of Melanomas.** New York Academy of Sciences. New York, 1948. P. 399.

An examination of the criteria on the basis of which melanins have been identified makes it probable that different substances have been called melanin. A classification of natural and synthetic melanins is described, each with its respective subclasses.

(972) On the mechanism of melanin formation by the action of ultraviolet radiation. T. B. Fitzpatrick, A. B. Lerner, E. Calkins, and W. H. Summerson. *J. Invest. Dermat.* 12: 7–9 (Jan.) 1949.

The various theories on melanin formation are discussed. It is concluded that tyrosinase transforms tyrosine to 3,4-dihydroxyphenyl-1-alanine (dopa) and that the dopa is further oxidized by the same enzyme to a red indole derivative which changes over to melanin. Copper is necessary for the activity of tyrosinase.

Tyrosine is rapidly oxidized to form melanin in the presence of small amounts of dopa by tyrosinase. Rothman has found that compounds in combination with SH groups in the skin bind the copper required for enzymatic activity and therefore inhibit the formation of melanin.

(973) Riehl's melanosis (type Civatte). E. J. Moynahan for L. Forman. Brit. J. Dermat. 61: 105–106 (Mar.) 1949.

A patient who has pigmentation of the sides of the neck and lower jaw with some follicular hyperkaratosis and fine scaling is described. There is slight erythema of the forehead and chin. In

the discussion following the case presentation, it is pointed out that the melanosis of Civatte, Hoffmann-Habermann, and Riehl are considered to be the same. Treatment with estrogens is mentioned.

(974) Pigmentary disturbance following exposure to monobenzyl ether of hydroquinone. E. T. Bernstein and P. M. Sachs. *Arch. Dermat. & Syph.* 59: 542–548 (May) 1949.

Three cases of leukoderma in Negroes and one case of hyperpigmentation in a white man following exposure to rubber treated with monobenzyl ether of hydroquinone are reported. A discussion of the clinical and microscopic picture is followed by examples of nonoccupational exposure to monobenzyl ether hydroquinone.

(975) Melanodermatitis caused by benzanthrone. A preliminary note. F. Uebelin and H. Buess. *Arch. d. mal. profess.* 12: 655–657, 1951.

The authors discuss pigmentation of the skin which they have seen in 25 workers engaged in the production of benzanthrone. The pigmentation occurs most often on the face, neck, or upper part of the chest, and sometimes on the hands and forearms. The color varies from orange, through brown, to a blue-black. The histopathology is described and the etiology discussed. The authors believe that the pigmentation is associated with a mild toxic liver disorder. They recommend dust suppression, frequent washing, and use of barrier creams as preventive measures. [BULL. HYG.]

(976) Amalgam tattoo (localized argyria). C. D. Bell, D. E. Cooksey, and W. R. Nichel. *A. M. A. Arch. Dermat. & Syphil.* 66: 523–525 (Oct.) 1952.

The authors draw attention to localized argyria of the gingival and buccal mucosa due to accidental implantation of silver amalgam by dentists.

(977) Occupational leucoderma. F. J. McDonald. *A. M. A. Arch. Dermat. & Syph.* 61: 526–527 (May) 1953.

A case of occupational leucoderma believed to be due to stalite (R), an octylated diphenylamine, is cited. A case of leucoderma was noted in a worker who was exposed to symmetric para-para-diphenyl-phenylene-diamine. However, this same individual also had occasional exposures to hydroquinone and to para-aminophenol which obscure the etiological agent responsible for the leucoderma.

(978) Occupational melanosis. A. J. Reiches. *A. M. A. Arch. Dermat. & Syph.* 67: 616–621 (June) 1953.

The author reports four cases of occupational melanosis among machine operators in a can factory. The melanosis was accompanied by itching and burning. A light paraffin oil was used on the tin plate from which the can tops were stamped. A patch test with this *straight* paraffin product gave a marked positive reaction in the one patient tested, and a negative reaction on the author, who acted as a control. The question as to whether occupational melanosis is a disease sui generis or a syndrome is discussed.

Plants

(979) Bronchial asthma due to sensitivity to gum acacia. P. H. Sprague. *Canad. M. A. J.* 47: 253 (Sept.) 1942.

A printer who experienced asthmatic attacks while at work was exposed to dust arising from an *offset* spray which contained gum acacia. This spray was a fine powder used to prevent the colored material from one sheet from being smeared on to the sheet below it. Masks were worn by the workers, but, for one man, the mask failed to afford sufficient protection. His breathing became so difficult that he had to leave his work in the early afternoons; shortly after leaving, his breathing improved.

Investigation showed that it took almost 4 years for him to become sensitized to this substance, which is now no longer being used. The affected man had an allergic rhinitis, his father had asthma, and a brother had eczema. With him, a simple scratch test with a powder gave a definite weal and an extensive flare. Others have found that acacia is a highly specific allergen which constitutes a definite industrial hazard.

(980) Ivy and sumac poisoning. Pub. Health Rep. Supp. No. 161, 1943.

Distribution of the poison ivy and poison sumac plants and the nature and

action of the poison and symptoms produced by it are discussed. Methods of prevention and treatment are given.

(981) Dermatitis from semecarpus anacardium (bhilawanol or the marking nut). N. R. Goldsmith. *J. A. M. A.* 123: 27 (Sept. 4) 1943.

Sixteen workers who handled mail with *bhilawanol oil* developed a dermatitis similar to *Rhus dermatitis*. Fourteen were healed by boric acid dressings while 2 required 3 weeks for recovery. Patch tests were positive. *Bhilawanol oil* is discussed as to its characteristics and irritating properties.

(982) Sap dermatitis and conjunctivitis caused by the wild fig, Ficus tumila. P. B. English and L. P. Grey. *M. J. Australia* 1: 578, 1943.

Several cases of acute dermatitis among troops after exposure to the wild fig (*Ficus tumila*) are reported. Lesions were principally on the forehead, cubital fossae, and genitals.

(983) The allergenic properties of the vegetable gums. A case of asthma due to tragacanth. H. Gelfand. *J. Allergy* 14: 202–219, 1943.

A worker in a gum factory developed asthma from gum dusts. Six of 12 fellow workers had hay fever or asthma; 5 of these had symptoms and skin reactions to gum. Seven of the 12 tested reacted to gum arabic, 2 to Karaya gum and 3 to tragacanth. Exhaustive studies of passively sensitized sites and in vitro neutralization studies showed that tragacanth neutralized gum arabic had its own reagins. Gum arabic did not neutralize tragacanth reagins but did neutralize its own. A list of 41 sources of contact with allergenic gums is given.

(984) Poison ivy preventives prove ineffective. J. B. Howell. *Arch. Dermat. & Syph.* 48: 373, 1943.

The various preventives recommended for poison ivy dermatitis are generally ineffective. For the person of average sensitivity, thorough washing with soap and water will lessen the severity of the dermatitis only if it is used within 5 or 10 minutes after exposure. For an extremely sensitive person, soap and water is ineffective even after only 1 minute. Ferric chloride had no effect; petrolatum spread the infection; sodium perborate had little or no prophylactic effect; potassium permanganate, however, lessened the severity when applied copiously within 15 minutes after exposure.

(985) Dhobie mark dermatitis. C. S. Livingood, A. M. Rogers, and T. Fitz-Hugh, Jr. *J. A. M. A.* 123: 23, 1943.

It is a traditional belief that fungous infections are commonly transmitted through clothes washed by the Indian dhobie, and the terms *dhobie itch* and *tinea cruris* are generally regarded as synonymous. The authors, however, found no increase of cutaneous mycoses in a large group of soldiers who had worn dhobie-laundered clothes during an observation period of 3 months, and urge that the term *dhobie itch*, as meaning a fungous disease, be abandoned.

On the other hand, they hold the dhobie responsible for a hitherto undescribed form of contact dermatitis due to the fluid he uses for marking the clothes. They investigated a small epidemic of patchy dermatitis and found that the localization of the lesions corresponded exactly with that of the dhobie's identification marks (small crosses, dots or lines in various combinations). These marks are made by the dhobie with a pin, after puncturing a certain nut containing a dark brown or black juice which is suitably resistant to repeated washing. Patch tests confirmed the sensitizing properties of this marking agent.

(986) Dermatitis caused by representatives of Anacardiaceae in tropical countries. E. D. Merrill. *J. A. M. A.* 124: 222 (Jan. 22) 1944.

In the Old World Tropics, certain species of plants occur that, on contact, cause a distinct and often severe dermatitis, corresponding exactly to *Rhus dermatitis* in the United States. All these deleterious species belong in the same natural family as do the poisonous species of Rhus (poison oak, poison ivy, poison sumac) and the Anacardiaceae, and the active principle is the same in all cases.

The Anacardiaceae are a family of woody plants of worldwide distribution, chiefly trees, but including some shrubs and vines. It is rather a striking fact that frequently species of the family that contain a contact poison produce fruits that at maturity may be eaten with entire safety.

American troops serving in the Indo-Malayan region may come into contact with some of these poisonous species, and a few of them will acquire a more or less sever dermatitis similar to *Rhus dermatitis* in the United States.

(987) Dermatitis venenata caused by semecarpus atra. J. M. Hitch. *U. S. Nav. M. Bull.* 42: 1111–1115 (May) 1944.

A case of dermatitis was caused by sap from the trunk of *S. atra.* After a latent period of 2 to 5 days, a pruritic, slightly edematous area of erythema became covered in 24 hours with closely packed, superficial, thin-walled vesicles resembling those of poison ivy. Vesicles become flaccid, rupture, and coalesce in 2 to 3 days, denuding the skin of superficial layers of epithelium. Weeping is profuse for a few days. This acute phase is followed by appearance of a self-propagating, enlarging vesicular and papular scaling dermatitis lasting 2 to 4 weeks. Treatment is nonspecific.

(988) Contact dermatitis due to capeweed. E. A. Hand. *Arch. Dermat. & Syph.* 49: 331–334 (May) 1944.

Two cases of capeweed dermatitis occurred in Australia. The capeweed, a member of the daisy family, is a native plant of South Africa. One patient was hypersensitive to capeweed pollen and developed hay fever and eczema as the clinical symptoms. The second patient had a localized dermatitis from contact with the essential oil of the capeweed plant.

(989) Cashew nut oil. Queries and Minor Notes. *J. A. M. A.* 125: 92 (May 6) 1944.

All cashew nut oil, as used, presumably is oxidized to some extent. This substance, which is both an antigen and a primary skin irritant, is reported to induce systemic manifestations after absorption, of which headache is the first feature. White states that the Oriental cashew is called the *Indian marking nut.* He associates with it both skin blackening and the causation of skin irritation. This is confirmed by Goldsmith in the *Journal* (September 4, 1943) in an article entitled "Dermatitis from Semecarpus Anacardium (Bhilawanol or the Marking Nut)." Neubauer (*Zentralbl. f. Gerwerbehyg.* 3: 189 (July 1926) minutely describes the cashew nut and states that it contains 10 percent cardol, which he regards as the irritant ingredient.

Neubauer says, "Cardol is taken up in the blood circulation and has a toxic effect. This explains the headache among workers with vanilla and the dermatitis sometimes encountered among laundry workers owing to the marking ink being made from cashew nuts. They may cause external as well as internal maladies, and, should use become more extensive, steps must be taken to guard against their ill effects."

On the other hand, Goldsmith denies the presence of cardol, anacardic acid, catechol, or anacardol. However, he did find a monohydroxyphenol and a dihydroxy compound, $C_{21}H_{32}O_2$. He also notes that European physicians of repute have administered this oil internally with alleged benefits in asthma, rheumatism, and certain organic neuropathies. An outbreak of dermatitis due to cashew nut oil contained in a varnish has been recently reported (Lockey, S. D.: Cashew Nut Oil Dermatitis, *Annals of Allergy* 2: 22 (Jan.–Feb.) 1944). Lockey stated that persons with an allergic background should not handle varnish that has a cashew nut oil base, although some who are mildly sensitive to the oil who persist in using it may become hardened to it.

(990) Dermatitis from lemon grass oil (Cymbopogon citratus or Andropogon citratus). H. V. Mendelsohn. *Arch. Dermat. & Syph.* 50: 34–35 (July) 1944.

Eight men were treated for an acute dermatitis presumably due to lemon grass oil (*Cymbopogon citratus* or *Andropogon citratus*). The eruption resembled poison ivy dermatitis and appeared 6 to 18 days after the men had worked on a boat which had arrived from India with a cargo of lemon grass oil. A piece of pine wood soiled with lemon grass oil elicited a strongly positive reaction in four patients tested. Lemon grass oil evidently has many uses, including its use in the manufacture of ionone and perfume.

(991) Value of patch test in poison ivy dermatitis with consideration of group reaction between rhus extract and turpentine, ragweed oil and 3-geranyl catechol. H. Keil. *J. Allergy* 15: 259–270 (July) 1944.

Study of a number of cases of poison ivy dermatitis and dermatitis venenata support the generally accepted opinions that a positive patch test with a potent Rhus extract does not prove the presence of dermatitis due to poison ivy but simply indicates sensitization to the plant. A negative patch test eliminates any assumption of past or present hypersensitization to *Rhus toxicodendron;* on this point rests the chief value of the test. The quantitative patch test is an important method of checking the value of treatment. No group relation was found between the active ingredient in poison ivy and those in pyrethrum and ragweed. Group reactions may be encountered with

old turpentine. Other authors have found with work on guinea pigs that 3-geranyl catechol is biologically related to the active principle in poison ivy. The author confirms this finding in humans.

(992) Some phases of the prevention program for poison ivy dermatitis. L. Goldman. *Ohio State M. J.* 40: 629 (July) 1944.

Treatment for poison ivy dermatitis is largely symptomatic and little can be done to alter the course of the primary dermatitis. Prevention is therefore the keynote in the control of poison ivy.

The following methods of prevention are discussed: (1) Removal of the plant, (2) prevention of contact of the individual with the plant, (3) removal of plant material from cutaneous surfaces after contact, and (4) attempts to render the individual less susceptible to contact. There are several disadvantages in the last named method. Highly susceptible persons should be used in future studies of methods to render the individual less susceptible.

(993) The toxic principles of poison ivy. II. Preparation and properties of the diphenylmethylene ethers of catechols. H. S. Mason. *J. Am. Chem. Soc.* 66: 1156–1158 (July) 1944.

The preparation of the diphenylmethylene ethers of catechol, 3-n-propylcatechol, and 4-t-butylcatechol have been studied. These ethers are resistant to alkali and the Grignard reagent, but can be cleaved by dilute mineral acid and by catalytic hydrogenation.

(994) The relation of chemical structure in catechol compounds and derivatives to poison ivy hypersensitiveness in man as shown by the patch test. H. Keil, D. Wasserman, and C. R. Dawson. *J. Exper. Med.* 80: 275–287 (Oct.) 1944.

Evidence is presented in support of the view which postulates a close chemical and biologic relation between the active ingredients in poison ivy and Japan lac. Biologic evidence, based on the use of the patch test in man, is presented in support of the view that the active ingredient in poison ivy is a catechol derivative with a long, unsaturated side-chain in the 3-position. The paper also includes numerous experiments on the relation of chemical constitution of catechol derivatives to their effect on persons sensitive to poison ivy.

(995) Poison ivy smoke, experiments demonstrating that poison ivy smoke is not a cause of clinical ivy dermatitis. J. B. Howell. *Arch. Dermat. & Syph.* 50: 306–307 (Nov.) 1944.

Experiments on 10 medical students demonstrated that filtered poison ivy smoke does not cause dermatitis, and that any dermatitis from burning poison ivy is the result of contact with leaves, soot, and charred matter accompanying the smoke.

(996) Unusual hazard in a fertilizer factory. G. H. Zerbst. *Indust. Med.* 13: 552, 1944.

A fertilizer factory, usually employing cottonseed meal, substituted castor bean pomace because of cottonseed shortage. The castor bean pomace was ground in an unventilated mill in the midst of much dust. Soon, workers developed conjunctivitis, nasal congestion, pharyngeal soreness, and lip swelling.

The outbreak ceased when castor bean pomace was discontinued. The outbreak was believed to be due to some unknown foreign protein in the pomace.

(997) Seasonal dermatitis due to the albumin fraction of timothy pollen. J. H. Mitchell and W. F. Mitchell. *J. Allergy* 16: 48–50 (Jan.) 1945.

A case is reported of dermatitis of many years' duration, which occurred from timothy pollen during the grass pollinating season. It was found that this was due to the albumin fraction rather than the lipoid fraction of the pollen.

(998) The toxic principles of poison ivy. III. The structure of bhilawanol. H. S. Mason. *J. Am. Chem. Soc.* 67: 418–420 (Mar.) 1945.

A degradative study was made of Indian bhilawanol shell liquid, which is closely related to the toxic principles of poison ivy. The ozonization of bhilawanol diphenylmethylene ether yielded as its principal product, heptaldehyde. One probable component of bhilawanol is, therefore, 3-n-pentadecylcatechol.

(999) Ivy poisoning. T. L. Hazlett. *Health Bull., Westinghouse Electric Corp., Pittsburgh* (June 14) 1945.

Some common inflammations of the skin are due to substances contained in certain plants, among which are poison ivy, oak, sumac, many grasses, weeds,

bushes, trees, and other plants. Some people appear to be so sensitive that even approaching the plants may cause dermatitis. After contact with the plant, several hours up to several days elapse before the skin eruption is apparent and it may last for several weeks. The contents of the blisters will not produce the disease in others, but clothing and animals often carry the poison for months after contact with the plant. The best preventive is to recognize the plants and to keep away from them. Immediately after contact, washing the skin thoroughly with soap may remove the offending substance. Protective clothing or creams often help and various desensitizing procedures have been used. After the eruption has developed, self-treatment is unwise and a physician should be consulted.

(1000) The allergenic principles of poison ivy. IV. On the mechanism of the enzymatic oxidation of catechols. H. S. Mason, L. Schwartz, and D. C. Peterson. *J. Am. Chem. Soc.* 67: 1233 (July) 1945.

By scanning the 220–400 mμ absorption region of catechol at intervals of 4 minutes during its enzymic oxidation, the postulated formation of hydroxy-p-quinone was not detectable. Under optimal conditions, the initial maximum absorption of catechol at 275.6 mμ disappeared rapidly with simultaneous development of a new maximum at 380 mμ, that of o-benzoquinone. It is probable that the initial product of the enzymic oxidation of catechol, o-benzoquinone, participates in a polymerization to a phenolic chain susceptible to further enzymic oxidation.

(1001) The allergenic principles of poison ivy. V. The synthesis of 3-n-pentadecylcatechol (hydrourushiol). H. S. Mason. *J. Am. Chem. Soc.* 67: 1538–1540 (Sept.) 1945.

A procedure for the synthesis of 3-n-pentadecylcatechol from 2,3,dimethoxybenzaldehyde is given. This substance may be used as a stable, crystalline, standard alergen in the study of the poison ivy problem.

(1002) Lemon grass oil: A primary irritant and sensitizing agent. H. V. Mendelsohn. *Arch. Dermat. & Syph.* 53: 94–98 (Feb.) 1946.

Patch tests using lemon grass oil in varying concentrations (1 : 1, 1 : 10, 1 : 100) and undiluted complex chemical isolates from lemon grass oil (alpha, beta, and extra pure ionone) were made on a series of 20 patients with varying dermatoses. From this series it is concluded that undiluted lemon grass oil from any source, with a citral content of 75 percent or over, is a primary irritant, and that diluted to 1 : 10 it is a sensitizing agent. The alpha, beta, and extra pure ionones are apparently nonirritating and nonsensitizing.

(1003) Observations and data on prevention of poison-oak dermatitis. G. C. Novacovich. *U. S. Nav. Med. Bull.* 46: 811–821 (June) 1946.

The various types of poison ivy are fundamentally the same. The oleoresin in poison ivy, poison sumac, and Japanese lac trees is identical. Hyposensitization to the ivy resin is best achieved by the use of large doses of oral antigens rather than by parenteral administration of the resin. Urea hydrogen peroxide does not inactivate the ivy oleoresin. Navy antigas protective ointment inactivates the ivy oleoresin and protects the user against ivy dermatitis. Chlorinated lime inactivates or destroys the ivy oleoresin and protects the user against ivy dermatitis if used in ointment form prior to exposure. Ten percent chlorinated lime in a special formula is more effective than Navy antigas protective ointment.

(1004) Chloramide containing ointments in prevention of experimental poison ivy dermatitis. M. B. Sulzberger, R. L. Baer, and A. Kanof. *J. Invest. Dermat.* 7: 145–147 (June) 1946.

During World War II, studies on *gas protective ointments* eventually developed an effective and relatively nonirritating chemically active ointment containing certain chloroamides, which offered significant protection of the skin against mustard gas and other vesicant agents of chemical warfare. To study the skin's protective properties against peacetime irritants and allergens, 12 volunteers, highly hypersensitive to poison ivy, were tested. The results showed that the relatively nonirritating chloroamide, containing gas protective ointments of the Army M–5 type and the Navy S–330 ointments, offer significant degrees of protection against the poison ivy excitant.

(1005) Mango dermatitis and its relationship to poison ivy hypersensitivity. H. Keil, D. Wasserman, and C. R. Dawson. *Ann. Allergy* 4: 268–281 (July-Aug.) 1946.

Mango (*Mangifera indica*) dermatitis is shown to be due to the sap in the stem

of the plant, which often contaminates the external surface of the Mango rind. The pulp and juice are innocuous. Based on responses to 3-n-pentadecylcatechol, persons with poison ivy dermatitis are probably more easily sensitized to the mango plant. Preemployment patch tests to detect sensitive persons are suggested.

(1006) The biological assay of poison ivy extract. J. E. Dunn and B. S. Smith. *J. Invest. Dermat.* 7: 185–199 (Aug.) 1946.

A method for assaying poison ivy (or poison oak) extracts is demonstrated, using a known, pure, immunologically related compound as a standard. The assay is based on cross-sensitivity reactions obtained on sensitized guinea pigs by determining the sensitivity level (M. R. D.) for the unknown extract and pure compound simultaneously. Hydrourushiol (1,2-dihydroxy-3-n-pentadecabenzene) was found satisfactory as a reference material; anacardol was not. The animals used for assay purposes were sensitized with hydrourushiol. The assay expresses the potency of the extract as a ratio of the M. R. D.'s (unknown/hydrourushiol) in terms of weight. The poison ivy extract has an assay ratio of 2.56 and the poison oak of 11.5 based on the logarithmic mean of the observed ratios in hydrourushiol sensitized animals. The poison ivy extract, therefore, was 4.5 times as potent as the poison oak extract. The comparison of these extracts on humans was of the same order of magnitude. Some observations made during the course of this work are discussed.

(1007) Plant dermatitis in the Bahamas. W. P. U. Jackson. *Brit. M. J.* 2: 298 (Aug. 31) 1946.

The shrub *Metopium toxiferum* (Spondiaceae) varies in size from a small plant to a tree. The toxin is in a milky juice, beneath the bark, in the leaves and fruits. The *milk* frequently exudes from the bark and leaves, becomes oxidized, and causes a black stain. The toxin is a gum resin very similar in constitution and effects to that of poison ivy (*Rhus toxicodendron*). Many Royal Air Force personnel clearing undergrowth were poisoned by the plant. One drop of juice placed on the forearms of each of 20 volunteers caused a varying degree of erythematous reaction or local papulation in 14 persons, and 6 were unaffected. The juice of the fruit proved more potent as a toxin than that from the bark.

(1008) The oxidation of catechol by tyrosianese. C. I. Wright and H. S. Mason. *J. Biol. Chem.* 165: 45–53 (Sept.) 1946.

The values for the number of atoms of oxygen consumed during the complete enzymic oxidation of a molecule of catechol varied between 2.34 and 3.35. This variation depended on the catechol and enzyme concentrations and the pH. Previous investigators stated that only 2 atoms of oxygen per molecule were required.

(1009) Ragweed dermatitis. B. J. Slater, J. L. Norris, and N. Francis. *Occup. Med.* 2: 298–300 (Oct.) 1946.

The seasonal incidence and recurrence of ragweed dermatitis corresponds with growth and pollination of the plant. Farmers, gardeners, and grain handlers coming in contact with the dried weed and seed may have the eruption at any time of the year if they are sensitive. The eruption may also be continued by pyrethrum, turpentine, vegetable oils, or other materials which can cause dermatitis. Two cases are presented, in the second of which the patient's extreme sensitivity to metallic silver is also demonstrated.

(1010) Poison oak dermatitis studies on hemotologic, urinary and temperature changes. H. J. Templeton, C. J. Lunsford, and H. V. Allington. *J. Invest. Dermat.* 8: 53–54 (Feb.) 1947.

Studies on patients with severe poison oak dermatitis showed the presence of slight fever, mild leukocytosis, and moderate eosinophilia. Urinalyses on all patients gave essentially normal findings.

(1011) Evaluation of intramuscular injections of specific extracts in the treatment of acute poison ivy dermatitis J. B. Howell. *Ann. Allergy* 5: 219–223 (May–June) 1947.

In an attempt to evaluate the effect of injected poison ivy extract on the principle of specific hyposensitization, 40 patients with acute ivy dermatitis were studied. Nothing could be considered specific or strikingly beneficial from the use of poison ivy extract as compared with the use in a controlled group of crude liver extract, Proteolac, or strontium bromide.

(1012) Contact dermatitis due to oil of citronella. H. Keil. *J. Invest. Dermat.* 8: 327 (June) 1947.

Reports on dermatitis due to the Graminae or tropical grasses are cited.

Three cases are presented of eczematous contact-type hypersensitiveness to oil of citronella. Studies revealed that the essential allergen was citronella, an aliphatic aldehyde with one double bond. The relationship between oil of citronella and other essential oils is briefly discussed from the point of view of botanic origin, group reactivity, and fractional patch tests. Dermatitis due to oil of citronella is probably far more common than has been suspected. Since it occurs chiefly in the summer, the disease may be attributed to poison ivy or other plants.

(1013) The allergenic principles of poison ivy. VI. Note on the synthesis of 3-substituted catechols. H. S. Mason, *J. Am. Chem. Soc.* 69: 2241 (Sept.) 1947.

Three-bromocatechol and its diphenylmethylene ether have been synthesized to provide the nuclear fragments for the synthesis of unsaturated allergens related to the catechols of poison ivy.

(1014) Ascorbic acid in the treatment and prevention of poison oak dermatitis. D. H. Klasson. *Arch. Dermat. & Syph.* 56: 864–867 (Dec.) 1947.

A total of 126 patients suffering from dermatitis venenata due to poison oak were treated with ascorbic acid with favorable results. In the determination of prophylaxis against poison oak dermatitis, a group of 12 men who received ascorbic acid did not contract the disease while a large percentage of the control group did. It is concluded that, despite the small number of the subjects in the series, it is felt that ascorbic acid is capable of combating the disease.

(1015) Benadryl for ivy poisoning. L. S. Blumenthal and M. H. Rosenberg. *M. Ann., District of Columbia* 16: 86, 1947.

Benadryl was used in the treatment of 14 cases of poison ivy dermatitis. Most of the patients had received local therapy for 3 days before the administration of benadryl. Twelve of the 14 patients experienced great relief from pruritis 4 to 8 hours after the administration of benadryl. These patients were maintained symptom free on 50 mg. every 4 to 6 hours. The treatment did not alter the usual course of the rash but did stop the pruritis, thus adding strength to the theory that a histamine-like substance is liberated at the site of skin irritation.

(1016) The allergenic principles of poison ivy. VII. Absorption spectra of 3-n-pentadecylcatechol and related compounds. H. S. Mason. *J. Am. Chem. Soc.* 70: 138–140 (Jan.) 1948.

The absorption spectra of 3-n-pentadecylcatechol (hydrourushiol) and a group of other substituted catechols, catechol derivatives, and o-benzoquinones have been determined. The synthesis of 3-n-pentadecyl-o-benzoquinone and 3-n-pentadecylcatechol diphenylmethylene ether are discussed.

(1017) Ragweeds in Europe. Queries and Minor Notes. *J. A. M. A.* 134: 1579 (Aug. 30) 1948.

The statement is made that the American ragweeds are absent from the British Isles. While other ragweeds are present, it is concluded that the amount of any airborne composite pollen is present in too small a quantity in the British Isles and Europe to cause active symptoms.

(1018) Ragweed dermatitis. B. J. Slater, J. L. Norris, and N. Francis. *Ann. Allergy* 6: 594–596 (Sept.–Oct.) 1948.

Two case histories are presented of dermatitis due to ragweed. Both were treated by the oral method, using the ragweed oleoresin in corn oil. One patient was symptom-free for a year. The other patient had to discontinue treatment because of intolerance.

(1019) Allergic reactions in workers employed in plants processing castor oil beans. K. Rejsek. *Med. Deporte y Trab.* 13: 2082–2087 (Nov.) 1948.

An allergic illness among employees of a factory manufacturing castor oil is described. Two types were observed: Skin disease, and attacks of bronchial asthma. The allergic effect is ascribed not to the oil fraction, but rather to the fat-free portion of the bean, which contains mostly proteins. From this part of the bean, investigators isolated a very toxic albumin, which they called ricin, a second globulin fraction, and, lastly, ricinin, a substance of an alkaloid nature.

(1020) House ivy dermatitis. S. E. Rynes. *Ann. Allergy.* 7: 62–64 (Jan.–Feb.) 1949.

The use of alcohol extracts of dermatitis-producing plant oleoresins for the treatment of dermatitis is discussed and a case presented. It is felt that a similar approach can be employed in other cases of dermatitis venenata in which a plant sensitivity is suspected.

(1021) The treatment of acute poison ivy dermatitis with 3-n-pentadecylcatechol by the intradermal route. Harry Keil. *Ann. Allergy* 8: 356–361 (May–June) 1950.

Data are presented on the use of intradermal injections of 3-n-pentadecylcatechol in peanut oil for the treatment of severe poison ivy dermatitis. The treatment rapidly ameliorated the subjective symptoms and probably shortened the course of the disease. Constitutional side effects were not encountered. The compound is the saturated analogue of the active principle of poison ivy and is a synthetic crystalline material soluble in peanut oil.

Plastics and Resins

(1022) Studies on workers in synthetic resins on the basis of formaldehyde phenol condensation products. K. Humperdinck. *Arch. Gewerbepath. Gewerbehyg* 11: 519–535, 1942.

Among workers employed in the preparation of artificial resins from formaldehyde phenol cresol condensation products (bakelite), the author observed a great number of cases of allergic eczemas due to escaping fumes in two factories. The illnesses began a short time after the workers started their duties, with inflammation of the conjunctiva, swelling of the face, and eczema on the exposed parts of the body. Skin tests of the numerous products gave positive results, especially for formaldehyde and the dilute bakelite lacquer. Many of the workers showed positive reaction, after going to other places of work.

Some workers remained desensitized after one outbreak of eczema and could continue their work, but in most cases the hypersensitivity was very stubborn. Prophylactically, the vapors of the solutions are to be avoided and, when indicated, skin-sensitive persons are to be removed to other divisions of the work.

(1023) Dermatitis due to the formaldehyde resins. K. E. Markuson, T. F. Mancuso, and J. C. Soet. *Indust. Med.* 12: 383 (June) 1943.

Formaldehyde resins are finding an ever-increasing application in industry. A corresponding increase in the number of cases of contact dermatitis has resulted.

Phenol and urea-formaldehydes are the oldest in use, but melamine formaldehyde is also a popular product. The cresols are sometimes substituted for phenol, and it is suggested that the increased percentage of cresols in phenol formaldehyde may be a factor in the increased incidence of dermatitis. Phenol and formaldehyde are combined in the presence of a catalyst to produce the resins. An acid catalyst results in the production of a permanently soluble and a fusible resin used for varnishes and lacquers. In the presence of an alkaline catalyst, the two principles react to form a resin which, after heating, becomes insoluble and infusible. This type of resin is used as an adhesive (glue), since it is soluble only after heat treatment, when it becomes quite insoluble.

Some individuals may develop a rash which later subsides and does not recur on resuming contact. These hardened or immune individuals, however, may still break down at some remote date. Preventive measures from the point of view of the physician and the engineer are described in detail.

(1024) Contact dermatitis resulting from the manufacture of synthetic resins and methods of control. S. D. Lockey. *J. Allergy* 15: 188–195 (May) 1944.

The author gives a list of the principal synthetic resins manufactured in the United States, then discusses phenol-formaldehyde and urea-formaldehyde resins in detail. The methods of manufacture and hazards involved are mentioned. The main hazards from phenol-formaldehyde resins come from the oil used in the curing process and from the formaldehyde. Molding resin of the phenol-formaldehyde group also presents another hazard from hexamethylenetetramine.

In the manufacture of urea-formaldehyde, hazards are considerably reduced, due in part to the fact that the factories where it is produced are more modern, since its manufacture is more recent than that of phenol-formaldehyde resin. However, some trouble occurs, due to the formaldehyde and, to a lesser degree, to hexamethylenetetramine, which is used in much smaller amounts than in the molding resin of the phenol-formaldehyde resin. Protective measures are discussed.

(1025) Dermatitis due to vinyl carbazole. I. R. Tabershaw and J. B. Skinner. *J. Indust. Hyg. & Toxicol.* 26:313–315 (Nov.) 1944.

Vinyl carbazole, a dielectric used in the manufacture of electrical equipment, is a powerful skin sensitizer. Fourteen out of 30 workers developed a dermatitis from its fumes issuing from furnaces and impregnating tanks. In all cases, an interval of 5 days to 3 weeks elapsed before symptoms appeared and hardening was noted. Protective measures include general sanitation, protective clothing, and proper ventilation. It is recommended that mild cases be kept at work to develop hardening.

(1026) Dermatitis from synthetic resins. L. Schwartz. *J. Invest. Dermat.* 6:239, 1945.

Formalin as the main cause of dermatitis in the manufacture of plastics is discussed. The formalin vapor, or oil impregnated with phenol and formalin, used during the curing process, may cause irritation. Hexamethylenetetramine also enters into the composition of many plastics. Most cases of dermatitis have occurred during the manufacture or use of artificial resinous glues.

(1027) Toxicity of Plexiglass. Queries and Minor Notes. *J. A. M. A.* 131:1103 (July 27) 1946.

Plexiglass is a methyl methacrylate resin. The finished polymerized resin represents various chemicals bonded together, but it is possible that the heat of sawing may set up certain side chain reactions freeing various components in the nature of fumes.

The resin is known to be a toxic material in the unfinished state, giving rise to severe respiratory and gastrointestinal symptoms. Headache may or may not be the result of exposure to these fumes.

(1028) Practical experiences with dangers and illnesses from plastics. C. S. McKinley. *Indust. Med.* 16: 432–434 (Sept.) 1947.

The health hazards associated with the manufacture of plastics are not of an extreme nature. Many of the hazards are associated with materials that have been used by industry for years. New materials are appearing steadily and will bear close scrutinizing as to their toxic properties.

The manufacture, molding, and fabricating of plastics, is a combination of chemical and mechanical processes. To control the hazards, the toxicity of the material and the amounts used should be considered; then, adequate environmental, personal, and mechanical protection should be instituted.

A common problem encountered is that of sensitization dermatitis. Actual cases can be kept to a minimum by instituting dermatitis control measures. Opportunity for systemic intoxication exists in the use of modifying agents added to the resins. In certain processes, because of frequent changes, they must be watched closely to prevent injury. New chemicals should be tested by a range-finding test and followed closely by proper medical examinations until sufficient experience has been gained to evaluate their toxicology.

(1029) Dermatitis from plastics. D. J. Birmingham. *Indust. Hyg. Newsletter* 7:6–7 (Dec.) 1947.

Terms used in plastic manufacture are defined and the common precautions for prevention of injury are outlined. The following conclusions with reference to plastics are presented:

1. Some ingredients and their incomplete chemical combinations are fully capable of causing occupational dermatitis as well as outbreaks of dermatitis among the consumer public.
2. Completely finished or cured plastics rarely cause dermatitis.
3. Occupational dermatitis can be prevented in the manufacture of plastics by proper environmental and personal protective measures.
4. Manufacturers can prevent outbreaks of dermatitis from plastics among the public by completely curing the materials and by the proper use of the prophetic patch test.

(1030) Sensitization dermatitis from Scottissue towels. J. V. Klauder. *Arch. Dermat. & Syph.* 57: 415–416 (Mar.) 1948.

A white man, aged 60, developed eczematous dermatitis of the face, dorsa of the hands, and certain areas of the forearms. A patch test made with a wet Scottissue towel was positive. A positive reaction was also obtained in a test made with diethylene glycol ester of *abalyn* (methyl ester of resin). Seven weeks after the man last used a paper towel, the dermatitis had almost disappeared.

(1031) Studies on sensitivity to plasticizers. H. R. Gottschalk and R. S. Weiss. *Arch. Dermat. & Syph.* 57: 304–307 (Mar.) 1948.

Plasticizers in industry may cause dermatitis, whereas the completely reacted finished product usually does not. Two hundred volunteers were tested with each of three plasticizers—orthonitrobiphenyl, n-isopropyl benzene sulfonamide, and n-isopropyl and para toluene sulfonamide. The results were negative. Henderson and Riley conclude that negative results from 200 tests indicate that the maximum rate of positive reactions in the population would be 1.5 percent.

(1032) The condensation of phenol and formaldehyde to produce a sensitizer unrelated to the formaldehyde component. L. E. Gaul and G. B. Underwood. *J. Invest. Dermat.* 12: 1–6 (Jan.) 1949.

A case of dermatitis caused by a medicine containing saligenin, a phenol-formaldehyde resin, is described. Patch tests were positive to saligenin and negative to the other ingredients, salicylic acid and benzoic acid. Subsequent testing led to the conclusion that the sensitization was due neither to phenol nor to formaldehyde, but to the resultant resin. This supports Sulzberger's statement that in artificial resin dermatitis the hypersensitivity is often, but not always, directed to formalin.

(1033) Contact dermatitis due to table cloth cover of vinyl plastic fabric. O. B. Hitschmann. *Arch. Dermat. & Syph.* 61: 679–681 (Apr.) 1950.

Two cases are described of vesicular dermatitis of the ulnar and ulnar-volar surfaces of the forearms of housewives. Both women were in the habit of resting their forearms on the table, which was covered with a vinyl-plastic table fabric. Patch tests with the suspect articles were strongly positive, while patch tests with other plastic articles in the home were negative. Withdrawal of the contactant was followed by healing of the dermatitis, which promptly recurred on re-exposure.

(1034) Contact dermatitis from plastic mittens. H. J. Templeton. *Arch. Dermat. & Syph.* 61: 854 (May) 1950.

Two cases are reported of dermatitis of the glove areas in women who had used plastic mittens (Plasti-mitts) to protect their normal skins during dishwashing. The diagnosis was substantiated by positive patch tests.

(1035) Condensation plastics: Their dermatological and chemical aspects. G. E. Morris. *Arch. Indust. Hyg. & Occup. Med.* 5: 37–43 (Jan.) 1952.

The great increase in the use of plastics is responsible for dermatitis from the molding of the plastics, which comprises 6 percent of an industrial dermatologic practice. The chemical constituents of the plastics and the potent sensitizers used in their manufacture, such as phenol, formaldehyde, cresols, and furfurals are enumerated. However, the completely polymerized finished plastics are dermatologically inert.

(1036) Vinyl plastics: Their dermatological and chemical aspects. G. E. Morris. *Arch. Indust. Hyg. & Occup. Med.* 8: 535–539 (Dec.) 1953.

The types of resins and plastics and their constituents are reviewed. Workers handling the partially polymerized resins may develop specific cutaneous hypersensitivity. The finished products are inert for all save the rare, hypersensitive person.

Rubber

(See also Pigmentation and Leucoderma)

(1037) Dermatitis from the manufacture of synthetic rubber. W. E. Obetz. ***Tr. 32d Nat. Safety Cong.* 1: 613–614** (1943).

Only a comparatively few cases of dermatitis have developed in the synthetic-rubber industry, mainly because the process is largely mechanized and the raw materials and products are not in contact with the skin normally. Dermatitis cases usually occur among chemists, laboratory helpers, maintenance men, janitors, and laborers, all of whom may handle the product occasionally. In an analysis of 27 claims resulting in a large factory in 8 months, the cause could not always be traced. However, better ven-

tilation reduced the incidence. The period of disability is short.

(1038) Industrial hygiene—in synthetic rubber manufacture. F. S. Mallette. *Indust. Med.* 12: 495–499 (July) 1943.

Safe concentrations of ingredients used in synthetic rubber manufacture are given, together with preventive measures.

The vital importance and rapid expansion of the synthetic-rubber industry provides an excellent opportunity for industrial hygiene activities. Of the four different types of synthetic rubber called for in the Government program, Buna-S is the most important and will be produced in the largest quantity. The almost complete enclosure of this process prevents exposure to all but low concentrations of vapor. Safe concentrations for butadiene styrene, and acrylonitrile, ingredients of Buna-S and Buna-N rubber are given, with methods of determination of low concentrations.

In a series of several hundred blood examinations, no effect traceable to butadiene, styrene, or acrylonitrile could be found. The points of potential exposure in these processes are in the handling of raw materials, coagulation, centrifugation, and drying. Means for avoiding or preventing these exposures are given.

(1039) Manufacture of synthetic rubber creates some dermatitis problems. *Ohio Indust. Comm. Monitor* 16: 147–148 (Oct.) 1943.

The best means of preventing this disease is to avoid contact with liquids, fumes, vapors, or dust. The use of protective clothing and hand creams is usually recommended. Personal cleanliness also is very essential, and medical supervision is important.

(1040) Health hazards encountered in the manufacture of synthetic rubber. F. H. Wilson. *J. A. M. A.* 124: 701–703 (Mar. 11) 1944.

The toxicity of the main substances used in the manufacture of synthetic rubber is discussed. Acrylonitrile is extremely toxic, styrene is moderately toxic, and butadiene is mildly toxic. Some of the toxic signs are cited. The treatment advised is entirely symptomatic. It is recommended that all operating personnel receive thorough preemployment examination and a complete periodic checkup every 3 months. Adequate ventilation is to be supplied at all times, as well as other precautions for personal and group safety.

(1041) Contact dermatitis from rubber gas mask. J. C. Gilbert. *Ann. Allergy* 2: 339 (July–Aug.) 1944.

An instance of dermatitis resulting from use of a gas mask is reported. A patch test with the gas mask rubber elicited a positive reaction. A different type of gas mask was suggested for the patient.

(1042) Dermatitis of feet and hands due to rubber. C. R. Anderson. *California & West. Med.* 61: 65–66 (Aug.) 1944.

Rubber dermatitis of the feet affects women more frequently than men, since rubber is used extensively in the manufacture of women's shoes. Rubber cement is used for basting the shoes during the sewing process and for fastening the sock liner to the inner sole. An elastic rubber fabric is used frequently as an inner lining. The dermatitis may be manifested by erythema, edema, vesiculation, weeping, and crusting. It may involve any part of the foot. However, it generally appears first on the toes. The sides of the heels also are early sites. Rubber dermatitis of the feet should be suspected when the patient has had a previous dermatitis from rubber girdles, dress shields, or garters.

Rubber dermatitis may be confused with acute dermatophytosis of the feet. Physicians suffering from an eczematous dermatitis of the hands and feet are occasionally subjected to futile treatment for dermatophytosis when actually suffering from surgical glove dermatitis and rubber dermatitis of the feet. Sensitivity to rubber gloves should not be ruled out until patch tests have been performed on the back of the hands. The treatment requires elimination of exposure to rubber, which may prove difficult, and, especially in women, may necessitate the purchase of custom-built shoes in which all rubber has been eliminated.

The causative chemical in the rubber was not discovered.

(1043) Dermatitis caused by a rubber accelerator and plasticizer. *Indust. Hyg. Newsletter* 4: 5–6 (Sept.) 1944.

Twelve cases of contact dermatitis among operators and pressmen in an Indiana plant were traced to Thiofide (dibenzothiazyl disulfide), used as an accelerator, and a substance designated R. P. A. No. 5, used as a plasticizer. Sensitivity to these materials was proved by patch test. The affected workers were kept on the job under medical treatment. All but 2 became desensitized, this *hard-*

ening occurring within a period of 4 weeks. Two extremely sensitized workers were transferred.

(1044) Rubber products as a widespread cause of eczema; report of 80 cases. P. Bonnevie and P. Marcussen. *Acta dermat.-Venereol.* 25:163 (Sept.) 1944.

A systematic investigation at the Department of Dermatology of the Finsen Institute, Copenhagen, showed that eczema caused by rubber is of rather widespread occurrence and not confined to certain occupations, as previously supposed.

Of the 80 cases reported, representing about 2 percent of the cases of hypersensitivity eczema, only 25 were occupational; of these, only 9 caused disability in the particular occupation. Rubber footwear and articles of clothing were the causes.

Outbreaks on the feet were in most cases difficult to differentiate from mycotic foot eczema. A study of the causative factors showed that raw rubber itself was secondary in relation to the accelerator agents used in manufacture. Of these, mercapto-benzothiazol was the most frequent cause of sensitization, producing about 75 percent of the cases at the time when the investigation was made (1936–41).

The prophylaxis of rubber eczema is sometimes difficult on account of the widespread use of rubber, its indispensability in certain garments, and the penetration of accelerator agents. Cold vulcanized rubber can often be tolerated in cases where there is accelerator hypersensitivity only.

(1045) Contact dermatitis of eyelids caused by an antioxidant in rubber fillers of eyelash curlers. G. H. Curtis. *Arch. Dermat. & Syph.* 52:262–265, 1945.

Seven patients with contact dermatitis due to the rubber fillers in eyelash curlers were observed. In 5 of the 7, the substance causing the dermatitis was found to be an antioxidant used in the manufacture of rubber fillers. Positive patch test reactions to the rubber filler and to the antioxidant, phenyl-beta-naphthylamine, were noted. The history of contact and positive reactions to patch tests, are aids to diagnosis.

In addition, the dermatitis may be distinguished from other common dermatoses of the eyelids, as well as from eczematous contact dermatitis due to other allergens, in that it tends to occur in linear bands. If the whole of the upper lid is involved there is a narrow band of normal skin along the tarsal fold, and between the dermatitis and the margin of the lid.

(1046) Skin hazards in the manufacture and processing of synthetic rubber. L. Schwartz. *J. A. M. A.* 127:389–391 (Feb. 17) 1945.

Comparatively little dermatitis occurs in the manufacture of a synthetic rubber despite the many irritant chemicals used. This low incidence is attributed to the fact that the factories making synthetic rubbers are equipped with modern mechanical safety devices and observe proper precautions, as set forth in the article.

(1047) Spreading rubber cement. Industrial Data Sheet D-RU-1. National Safety Council, Chicago, 1945.

Rubber cements, used extensively in cementing plies of impregnated fabrics, contain 80 to 95 percent of flammable solvents. Fire and explosion are the most serious hazards, but toxicity of the vapor and skin affections by contact are also important.

If the vapor concentration is kept below 1,000 p. p. m., the safe limit for inhalation, a nonflammable condition will be assured. However, if the exhaust system is not properly arranged, a flammable mixture may be produced in areas not normally entered by workers. Local exhausts and general ventilation suitable for various type of spreading are specified.

Precautions against static and other electrical hazards are given. Humidification of 60 to 70 percent when feasible is the best static preventive. Personnel should be grounded, preferably by conductive shoes. Dangerous processes should be conducted in a separate building with fire and explosion protection.

[NAT. SAFETY NEWS]

(1048) Allergic contact dermatitis due to rubber. F. A. Ellis and J. M. Seigel. *Arch. Dermat. & Syph.* 58:405–408 (Oct.) 1945.

Two cases of dermatitis from contact with rubber are presented, together with some of the findings of Schwartz, Tulipan, and Peck. Synthetic latex is often the cause, but the authors were unable to identify the offending ingredient.

(1049) Dermatitis venenata from rubber gloves. E. Traub. *Arch. Dermat. & Syph.* 53:205 (Feb.) 1946.

A case of dermatitis due to rubber gloves is presented. When patch tested

with material from the rubber gloves, the patient had a strong positive reaction.

(1050) Occupational disease hazards in the chemical and rubber industries. L. Greenburg and S. Moskowitz. *Month. Rev., New York State Dept. of Labor* 25: 61–66 (Nov. 1–Dec. 1) 1946.

The hazards of the chemical and rubber industries are discussed generally. Brief consideration is given to the method of entrance of poisons into the body, definition of types of atmospheric contaminants, and methods of control of disease hazards. Special attention is given to the occurrence and prevention of dermatitis in the rubber industry.

(1051) Dermatitis due to rubber balloon. Queries and Minor Notes. *J. A. M. A.* 133: 1174 (April 12) 1947.

In a case of dermatitis from contact with a rubber balloon, a patch test with the materials in the balloon gave a positive reaction. The dermatitis in this instance may be due to the accelerator agents or chemical compounds used in the curing process of the rubber and found on the balloon's surface or may be due to the dye.

(1052) Contact dermatitis from rubber accelerator. Queries and Minor Notes. *J. A. M. A.* 134: 1577 (Aug. 30) 1947.

Arasan (50 percent tetramethylthiuram disulfide) has been used as a rubber accelerator for many years and has frequently caused dermatitis. Ointments do not rate high as protectives against contact dermatitis, but one that leaves a dry, water-insoluble film is suggested as a possibility. The use of rubber gloves free from the material in question, impervious sleeves, goggles, and protective ointment on the face, with a change to clean clothes after work, may give relief.

(1053) Pruritus vulvae from rubber due to allergic sensitivity to alkali. G. H. V. Clarke. *Brit. J. Dermat.* 60: 57–60 (Feb.) 1948.

A female patient had genital pruritus after marital relations, and she noticed that elastic caused similar irritation of the skin. The irritant was traced to the presence of free alkali from potassium oleate, used as a stabilizer in the manufacture of condoms. The author believes the effect of the alkali was that of an allergic sensitization, rather than a simple chemical irritation.

(1054) Dermatitis from rubber gloves. Queries and Minor Notes. *J. A. M. A.* 139: 129 (Jan. 8) 1949.

A discussion is given of two types of surgeons' gloves: one made of pure gum latex, imported in the liquid form; and the so-called cement type, made from Para rubber, imported in the form of smoked sheets. The latex glove is said to be cheaper and to have superior wearing qualities. However, most hospitals prefer the cement type of glove, due to the belief that latex gloves cause a higher incidence of allergic reaction in persons wearing them. So far as is known, no studies have been made as to the relative sensitiveness of skin when in contact with the two types of gloves.

The problem of preventing dermatitis is a complex one, due to the use of various types of synthetic rubbers, to the necessity of adding various chemicals to all the rubbers to make them suitable for rubber gloves, and to the compounds formed in curing or vulcanizing. References are given for further study.

(1055) Sensitivity to rubber materials: An analysis of one hundred twenty-five cases of eruptions proved to be caused by rubber articles. M. Leider, D. Furman, and A. A. Fisher. *A. M. A. Arch. Dermat. & Syph.* 65: 587–595 (May) 1952.

Characteristics of 125 cases of sensitivity to rubber and the resulting eruptions are described. Treatment of the dermatitis involved strict avoidance of contact with the rubber. In rubber sensitivity, it is sometimes possible to obtain substitutive products because of the great variety in composition. Specific allergens in rubber are not readily determined because of the complex nature of the material. However, in view of the widespread use and generally innocuous nature of rubber, the sensitizing potentials of the materials in it must be low.

(1056) Studies on the toxicity and skin effects of compounds used in the rubber and plastics industries: I. accelerators, activators, and antioxidants. F. S. Mallette and E. von Haam. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 5: 311–317 (Apr.) 1952.

A review is presented of the toxicologic literature of compounds used as accelerators, activators, and antioxidants in the rubber industry. Twelve compounds used in the industry are investigated with respect to their irritancy and sensitizing potential. Compounds of all three groups were primary irritants, but

the antioxidant groups contained many substances that were moderate sensitizers.

Although these studies do not show the actual industrial hazard, they reveal a potential industrial hazard and supply data on which to base further studies.

(1057) Studies on the toxicity and skin effects of compounds used in the rubber and plastics industries. II. Plasticizers. F. S. Mallette and E. von Haam. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6: 231–236 (Sept.) 1952.

The authors report on the investigation of 25 plasticizers, with regard to systemic toxicity, primary irritancy, and sensitizing capacity.

(1058) Studies on the toxicity and skin effects of compounds used in the rubber and plastics industries: III. Carcinogenicity of carbon black extracts. E. von Haam and F. S. Mallette. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6: 237–242 (Sept.) 1952.

Studies on mice demonstrate that carcinogens are present in commercial carbon blacks, in contrast to clinical experience in industry. This discrepancy may be explained on the basis of the good hygienic conditions found among American workers. Also, carcinogenic materials are probably present in extremely low concentrations.

(1059) Rubber hazards for the skin. Annotations. *Lancet* 263: 672 (Oct. 4) 1952.

(1060) A study of rubber adhesives in shoes as the cause of dermatitis of the feet. I. H. Blank and O. G. Miller. *J. A. M. A.* 149: 1371–1374 (Aug.) 1952.

Contact dermatitis of the feet due to antioxidants and accelerators used in rubber adhesives of shoes is discussed. The allergen most frequently found was the antioxidant monobenzyl ether of hydroquinone, which is used in the rubber adhesive in the combined linings of the shoe. A number of patients were specifically sensitive to other rubber antioxidants and accelerators.

(1061) Synthetic rubbers: their chemistry and dermatological aspects. G. E. Morris. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 8: 540–546 (Dec.) 1953.

The chief chemical involved in synthesis of rubber is 1,3-butadiene, and modifications of it with acronitrile or styrene. The accelerators, antioxidants, plasticizers, and activators are probably all potential irritants and sensitizers. Silicone rubber seems to be dermatologically inert.

(1062) Leukoderma produced by antioxidants. G. A. Spencer. *Arch. Dermat. & Syph.* 58: 215–219 (Aug.) 1948.

Four cases of contact dermatitis followed by leukoderma are reported. Two of the workers affected were employed in processing rubber containing *agerite alba* (monobenzyl ether of hydroquinone). They gave positive patch tests to this compound as well as to the rubber that they were handling.

The third case followed the application of adhesive tape; and the fourth contact with a compressed paper sweatband in a hat. The latter cases gave positive patch test reactions to the suspected materials, but it was not possible to learn the nature of the antioxidants used in those materials.

(1063) Pigmentary disturbance following exposure to monobenzyl ether of hydroquinone. E. T. Bernstein and P. M. Sachs. *Arch. Dermat. & Syph.* 59: 542–548, 1949.

Four more cases are reported of contact dermatitis from rubber containing *"agerite alba"* as an antioxidant. In three colored workers depigmentation occurred in both exposed and nonexposed cutaneous surfaces, representing depigmentation by absorption and also by peripheral extension. One of these patients developed a leukoderma without an antecedent dermatitis, but all three patients had positive patch tests to monobenzyl ether of hydroquinone. The pigment disappeared from the patch test sites several weeks after the reaction. However, withdrawal from the occupational exposure resulted in return of pigment to the leukodermic areas after an interval of months.

In the white patient, exposure to *agerite alba* resulted in an erythema followed by intense, black hyperpigmentation. A positive patch test with *agerite alba* showed hyperpigmentation as well as mild inflammation. A second white patient, referred to but not reported in this series, developed an eczematous dermatitis without any disturbance of pigmentation.

Biopsies show that the pigmentary changes involve the adnexal structures as well as the epidermis itself.

(1064) Dermatitis and secondary leukoderma due to fabric lined rubber gloves. I. Botvinick. *Arch. Dermat. & Syph.* 53: 334–335 (Mar.) 1951.

A case report is made of a white woman who acquired a severe contact dermatitis followed by transitory leukoderma after the use of Bluette brand rubber gloves. The dermatitis was aggravated by contact with natural latex rubber gloves.

(1065) Occupational leukoderma from rubber dust and debris. S. J. Zakon and A. L. Goldberg. *Arch. Dermat. & Syph.* 64: 441–443 (Oct.) 1951.

Antioxidants are added to rubber, since it usually deteriorates rapidly on exposure to air. One such antioxidant is a monobenzyl ether of hydroquinone. This substance is leached out of the rubber by sweat, and is apt to create areas of depigmentation.

The development of leukoderma in the cases reported was unusual in that the 9 white women developed leukoderma not from direct handling of the rubber but from contacting oil droplets containing the antioxidant. Leukoderma developed only in 9 out of 200 workers, all similarly exposed.

(1066) Leucoderma of penis from contact with rubber. J. G. Downing. *Arch. Dermat. & Syph.* 66: 401 (Sept.) 1952.

A case of leucoderma of the glans penis is reported in a man who had been using rubber condoms for 6 years. Patch tests with a condom and with monobenzyl ether of hydroquinone were not performed.

(1067) Depigmentation from adhesive tape. Correspondence. *J. A. M. A.*, 150: 1332 (Nov. 29) 1952.

Patch tests with adhesive tape led to depigmentation; however, the active ingredient in the adhesive tape was not identified, but was presumed to be monobenzyl ether of hydroquinone.

Solvents

(1068) Research on benzene intoxication. N. Castellino. *Ricerca sci.* 13: 169–171, 1942.

Benzene intoxication, both acute and chronic, had no definite effect on the blood-sugar level. Large doses of benzene, and small doses over a long period, resulted in impairment of the deaminating function of the liver. The decrease of the concentration of vitamin C in the liver and in the adrenals was very pronounced in the final stages of benzene intoxication. This fact, considered with the decrease in vitamin C in the blood and urine reported by other authors, suggests the use of vitamin C as therapy in benzene poisoning.

In experimental benzene poisoning in animals, the blood picture was hypoglobulia, leucopenia, and thrombocytopenia, relative lymphocytosis with monocytopenia, and granulocytopenia. The intoxication may be considered as a direct hemolytic action on the circulating red cells. Histopathologic changes were noted in the lungs, liver, heart, and adrenals. Fatty degeneration was absent. Increased activity of the spleen and hyperplasia of the lymphatic vessels of the spleen, stomach and intestines, and of the reticulo-histiocytic elements in the spleen, lungs, and liver occurred. A case of benzene intoxication, with asthenia, slight changes in the constitution of the blood, and acne-like dermatitis, was cured by administration of vitamins B and C, and liver extract.

(1069) Chlorinated solvents in common use. D. H. Byers. *Indust. Med.* 12: 440–443 (July) 1943.

The most toxic of the chlorinated hydrocarbons, in descending order, are as follows: carbon tetrachloride, ethylene dichloride (1,2 dichlorethane), and trichlorethylene. Each solvent is discussed in terms of chemical and physical properties, applications in industry, principal dangers of industrial poisoning, effects upon the body, and safe atmospheric concentrations.

Some precautions to be observed in the use of trichlorethylene as a degreasing solvent are given. The institution of proper measures is stressed to prevent serious hazards in the use of hydrocarbons. The use of air tests to determine the concentration of the solvents is recommended.

(1070) Hazards of common organic solvents. H. P. Quadland. *Occup. Hazards* 5: 27–28 (July) 1943.

Financial losses from fires due to flammable liquids have increased from more

than $7 million in 1936 to $9 million in 1941. Lists of common organic solvents which constitute fire and explosion hazards, as well as those which are nonflammable and nonexplosive, are given. The *Table of Common Hazardous Chemicals*, published by the National Fire Protection Association, gives detailed information on proper safeguards against fire.

F. Flur in *Toxicology and Hygiene of Industrial Solvents* makes a threefold classification of the toxicity of common solvents: (1) Those which are harmless under ordinary conditions of industrial use, but dangerous if their vapors are inhaled in high concentrations; (2) those which cause secondary reactions in the body, from which a quick recovery is possible if the damage is not severe; and (3) solvents which may cause secondary effects which, when not fatal, may be irreparable. The last group must be handled with the greatest of care under the proper controls.

The common organic solvents in prolonged contact with the human skin will absorb the natural oils, leaving it dry and open to infection, or they may be absorbed into the body through the skin. Personal cleanliness and the use of protective creams and solvent-resistant gloves are recommended. Instructions of the manufacturers concerning the safe use of their products should be heeded.

(1071) Determination of benzene in the presence of toluene, xylene and other substances. B. H. Dolin. *Indust. Bull.* 22: 406–407 (Oct.) 1943.

A method developed for the estimation of benzene in the presence of toluene, xylene, and other substances requires little material for analysis, is rapid, and is sentitive to 8.8×10^{-4} gm. of benzene.

Means for the identification of toluene, xylene, and benzene have been given. The accuracy of the method, the sources of error, and the precautions to be taken in order to minimize the effect of the errors are discussed.

(1072) Substitutes for degreasing solvents. Missouri industrial health solvents. *Missouri Indust. Health Bull.* 2: 1 (Aug.) 1944.

Priority restrictions placed upon chlorinated degreasing solvents have resulted in the marketing of many so-called *safe* solvents. One of these is marketed under the trade name of Gunk.

The industrial hygiene laboratory of a large insurance company has shown that Gunk is basically an emulsification of a soap, neutral oil, natural coal tar acids, and water.

H. S. Hydroseal, a Gunk product, contains ethlyene dichloride. Since ethylene dichloride is very toxic, users of H. S. Hydroseal are cautioned to provide adequate ventilation and other measures for its safe employment.

(1073) Industrial exposure to butanol. I. R. Tabershaw, J. P. Fahy, and J. B. Skinner. *J. Indust. Hyg. & Toxicol.* 26: 328–330, (Dec.) 1944.

The use of butanol in six plants manufacturing waterproofed products is described. Eye inflammation will result when atmospheric concentrations of butanol vapor are above 50 p.p.m. No systemic effects may be expected if concentrations are kept below 100 p.p.m. Butanol vapors are somewhat irritating to the nose and throat. Dermatitis from the use of butanol is frequent but may be prevented by the use of a protective ointment before work and a lanolin emollient after work.

(1074) Ethylene dichloride as degreaser and paint remover. T. J. Carter. *Safety Rev.* 2: 10 (Nov.) 1945.

Industrial health reports indicate that ethylene dichloride (1,2-dichloroethane) is being used for removing preservatives from new equipment and that it is a major constituent of a paint and varnish remover. It should be pointed out that ethylene dichloride is both flammable and explosive, and that its flash point is 65° F. (open cup) and its vapor will explode when mixed with air in concentrations ranging from 6.2 to 15.9 percent. Also, it is a powerful narcotic, acts as an irritant, and has a toxic action upon the heart.

It should never be used without adequate ventilation and proper respiratory protection to prevent inhalation of vapor. The accepted maximum permissible limit for an 8-hour exposure is 100 p.p.m.

(1075) Benzol. *Indust. Health Bull.* Vol. 1, No. 2. New Jersey Dept. of Health, Trenton, 1946. 7 pp.

The properties, toxic effects, and hazard control of benzene (benzol) are presented. The toxicology includes local effect from contact, and acute and chronic systemic effects, the latter including leukopenia, thrombopenia, anemia, and interrelated changes.

Control involves excluding from exposure any worker having hemorrhages, decrease of 25 percent in white- or red-cell count, or hemoglobin below 70 percent. Directions are also given for the butanone test and combustible gas indicator tests. If more than 100 parts ben-

zene per million are present, process changes or ventilation are necessary. Medicolegal aspects and the homologues of benzene are discussed briefly.

(1076) Composition of some trade name solvents used for cleaning and degreasing, and for thinning paints. A. D. Brandt, W. J. McConnell, and R. H. Flinn. *Pub. Health Rep.* 61: 132–143, 1946.

Because of the occurrence of acute systemic poisoning among workers using solvents and thinners at a shell and bomb-loading plant, analyses were performed on representative samples of these substances. Nearly all materials were analyzed for aromatic compounds, halogenated hydrocarbons, alcohols, esters, ethers, ketones, paraffins, and naphthenes. The tables state the origin of each of the materials and the results of the analyses.

(1077) Studies of methylated naphthalene derivatives. II. Report on appraisal of the toxicity and potential dangers of solvents consisting essentially of methylated naphthalene derivatives to be used as solvents for DDT in insecticidal mixtures. J. L. Svirbely, J. E. Dunn, R. C. Dunn, W. C. Alford, C. G. Seagmiller, D. C. Peterson, W. F. Von Oettingen, and P. A. Neal. *In* Insect Control Committee Report No. 183. National Research Council, Ottawa, (Apr.) 1946. P. 10.

Seven commercial solvent mixtures, namely, Koppers Kolineum, Velsicol NR–70, Sun Aro Sol 151–B, APS–202, Velsicol AR–60, Koppers K–327, and Socony PD–44C, were studied from the standpoint of their effects on the skin of human subjects. Six of them were also studied for their effect on several species of laboratory animals.

The first three were found unsuitable for use in DDT preparations on account of their skin photosensitization properties. The other four were found less irritant than kerosene. Slight differences noted among these four did not warrant recommending one as being preferable to the others for use in insecticidal spray mixtures. Sufficient toxicologic findings were obtained to warrant certain precautions being taken to prevent excessive inhalation exposure to humans. The hazards of accidental ingestion and of possible carcinogenic action are not covered in this report.

(1078) Toxicity of solution of naphtha distillate pyroethylene and cedar oil. Queries and Minor Notes. *J. A. M. A.* 132: 252 (Sept. 28) 1946.

A mixture of naphtha distillate pyroethylene and cedar oil may cause dermatitis because of the fat solvent properties of the naphtha solvent and the skin sensitizing effect of the cedar oil. The greater the quantity and length of time of contact, the more likely it is to cause dermatitis.

(1079) A much delayed case of a pathological condition of the blood, lymphosarcomatous in type, caused by benzene. J. Bousser, R. Neyde, and A. Fabre. *Bull. et mém. Soc. méd. d. hôp. de Paris* 63: 1000–1004, 1947.

Periodic examination of a 42-year-old man engaged in spraying a paint containing benzene showed a blood picture which was slightly abnormal. After his withdrawal to other work, the blood condition soon returned to normal.

Three and one-half years later, he was found to have generalized enlarged glands. A diagnosis was made of aleukemic lymphomatosis. This affection was ascribed to benzene, following detection of benzene in the blood. The spleen was enlarged, but not the liver. There was severe digestive disturbance. Still, the blood picture was hardly disturbed. Rapid cachexia developed, with mild, but definite, hyperglycemia.

After death, a large lymphosarcomatous mass, invading the pancreas and stomach, was found in the abdomen. Benzene was found in appreciable amounts in both the spleen and the glands. This case is the first instance in which lymphosarcoma has been ascribed to the action of benzene.

(1080) Toxicity of methylene dichloride and methyl chloride. *J. A. M. A.* 133: 145–146 (Jan. 11) 1947.

The toxicity of the two compounds is discussed in relation to a case of contact dermatitis due to a refrigerant agent. Methylene dichloride (dichlormethane) is considered comparatively innocuous, except in instances of gross acute exposures, while methyl chloride provides a considerable risk.

(1081) Toxic effects of Casite. Queries and Minor Notes. *J. A. M. A.* 134: 924 (July 5) 1947.

The use and characteristics of Casite are given. A naphtha derivative plus a base of light engine oil is probably the cause of possible dermatitis, *naphtha jag*, or *chronic naphtha poisoning*.

(1082) Correlation of boiling ranges of some petroleum solvents with irritant actions on skin. J. V. Klauder and F. A. Brill, Jr. *Arch. Dermat. & Syph.* 56: 197–212 (Aug.) 1947.

Classification of petroleum products by the boiling ranges and other means of identification are given. Details are given of patch tests to determine which classes of petroleum products irritate the skin. The variations of reaction on the skin of white persons, Negroes, and persons with occupational dermatitis are considered.

The irritant properties of the oils should be considered as well as their suitability for the jobs which are being undertaken. It is concluded that dermatitis caused by petroleum solvents is a nonspecific sensitivity.

(1083) Degreasers and their dangers. H. L. Krieger. *Indust. Med.* 16: 403 (Aug.) 1947.

The potential hazards associated with the use of Permachlor, or trichlorethylene, as a degreaser are discussed. The concentration of this substance must be kept beneath 100 p.p.m. Recommendations are made to avoid any toxic effects. Contact with the fluid or its vapors is to be avoided, and excessive evaporation should be stopped. Permachlor is a fine degreaser but must be controlled, since it can cause dermatitis and other toxic conditions.

(1084) Epidermal application of diethylene glycol monoethyl ether (Carbitol) and some other glycols. Absorption, toxicity and visceral damage. P. J. Hanzlik, W. S. Lawrence, J. K. Fellows, F. P. Luduena, and G. L. Laqueur. *J. Indust. Hyg. & Toxicol.* 29: 325–341 (Sept.) 1947.

Results are given of the epidermal application to the clipped skin of rabbits, in single large doses or daily smaller doses, of diethylene glycol monoethyl ether, carbitol solvent, and some other members of the ethylene series as such, or in mixtures. The possible practical significance of the results is discussed especially with regard to the safeness of application of diethylene glycol monoethyl ether (Carbitol) epidermally. The safe concentrations and doses are given. It is advised that the pure chemical be used, rather than technical Carbitol, in preparations for human skin application.

(1085) Toxicity of polyethylene glycols by repeated epidermal applications. F. P. Luduena, J. K. Fellows, G. L. Laqueur, and R. L. Driver. *J. Indust. Hyg. & Toxicol.* 29: 390–392 (Nov.) 1947.

The research reported was carried only far enough to indicate the need for further study. Definite doses of polyethylene glycols were applied to the skin of rabbits. The glycols seemed more toxic to one group of rabbits which was fed rolled barley than to another group with a more complete diet. Areas of hydropic degeneration of the kidney tubular epithelium were found at autopsy in the rabbits fed rolled barley. Compound 400 seemed to be nontoxic, while glycols 200 and 1,500 showed a large degree of toxicity.

(1086) Occupational dermatitis of the nails and paronychia following use of "Permachlor" diluted with methyl alcohol. H. M. Hedge. *Arch. Dermat. & Syph.* 57: 428–429 (Mar.) 1948.

A 51-year-old white woman had worked in a radio factory for 3 years with a permachlor solution. Three weeks after methyl alcohol was introduced as a diluent, her fingers became numb. Two weeks later, the edges of the nails became black and lost all luster; in 2 weeks more they began to fall off. New, thickened, *hump* nails grew, associated with so much pain that she was unable to sleep.

(1087) Myelogenous leukemia resulting from benzol poisoning. J. D. Sacca. *New York State J. Med.* 48: 1619–1620 (July 15) 1948.

A man exposed continually to benzol for 4 years, developed a syndrome clinically typical of myelogenous leukemia with corroborative blood findings. In view of the literature cited, there appears to be a strong correlation between chronic exposure to benzol and the leukemic process developed in this otherwise normal white man.

(1088) Physiologic effects of industrial solvents. J. H. Foulger. *J. A. M. A.* 139: 826 (Mar.) 1949.

The uses and mechanism of effect of solvents in industry and the home are discussed. The physiologic effect of the inhalation of vapors is considered as probably due to interference with tissue respiration. Symptoms produced are described with special reference to the effects on blood pressure. Recommendations are given to the manufacturer, seller, and user of solvents and to the physician caring for a patient.

(1089) Dermatitis due to turpentine oil. G. Lejhancová. *Pracovní Lékařství.* 2: 73, 1950.

Seventy-eight cases of dermatitis due to turpentine are reported. The chemistry of turpentine is discussed, and its mode of action on the skin is analyzed. The author obtained good results in treatment by means of specific parenteral desensitization with ascending doses of turpentine.

(1090) Toxicity of ethylene dibromide determined on experimental animals. V. K. Rowe, H. C. Spencer, D. D. McCollister, R. L. Hollingsworth, and E. M. Adams. *A. M. A. Arch. Indust. Hyg. & Occup. Med.* 6: 158–173 (Aug.) 1952.

Ethylene dibromide (1,2-dibromoethane) is widely used as a constituent of fumigants, in *leaded* gasolines, and as a solvent. The toxicologic effect of this material on experimental animals is reported. It was found that application to the rabbit ear caused a slight irritation. However, covering the site with an occlusive bandage resulted in severe burns and percutaneous absorption of toxic amounts of the material.

Prolonged or frequent contact should be avoided in handling the material. It is particularly important to prevent contamination of any covering of the skin. Should contamination of clothing occur, the clothing must be removed promptly, and the skin cleansed thoroughly with soap and water.

(1091) Ether dermatitis. P.-J. Michel. *Lyon med.* 33: 741–744, 1952.

Ether is used frequently as a detergent, particularly for the removal of adhesive plaster. It is apt to irritate the skin when so applied. It may produce a patch-like dermatitis, of varnished appearance, eroded, with swelling and abrasion of the superficial epidermal layers. Such a dermatitis may be extremely painful. Ether should be used with caution and not applied to areas of dermo-epidermatitis or eczema.

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Treatment

(*See also Drugs; Metals*)

(1092) Examination and utilization of Hungarian yellow petrolatum for therapeutic use. L. David. *Ber. Ungar. Pharm. Ges.* 18: 285–93, 1942.

Paraffin base petroleum is preferable for preparation of medicinal quality petrolatum. Petrolatum from naphthene base and mixed base petroleum, and that prepared from Hungarian petroleum, are often irritating to the skin. Methods of testing petrolatum are discussed.

(1093) Metol dermatitis as an occupational disease of photography. E. Wagner. *Phot. Korr.* 78: 26–7, 1942.

The symptoms produced on the skin (usually on the hands and under the arms) of workers who are allergic to Metol are briefly described and their similarity to those of frostbite and eczema is pointed out. The irritation caused by contact with hydroquinone and pyrogallol also produces symptoms resembling those of Metol. Swelling and degreasing of the skin by developer alkalis aggravate the action of Metol.

(1094) Notes on treatment of respirator dermatitis. E. C. Jones. *Brit. M. J.* 1: 757 (June 19) 1943.

Thirteen patients having respirator dermatitis used calamine lotion and liniment, solution of aluminum acetate, and various creams, such as 1 percent ichthammol in zinc oxide cream. This form of treatment was unsatisfactory. The next 12 patients were given a lint mask soaked in isotonic solution of sodium chloride which was applied to the face areas continuously. When the weeping areas became epithelized, either zinc oxide cream or 1 percent ichthammol paste was applied. The latter method of treatment produced prompt healing.

(1095) Cutaneous reaction to BAL in humans. M. I. J. Davis. Publication Board Reports No. PB 11444, U. S. Department of Commerce (July 18) 1943.

Studies indicate that sensitivity, having combined characteristics of contact and true allergic sensitivity, developed on human skin following prophylactic treatment of lewisite burns with single appli-

cations of BAL eye solution. Only bland lotions or ointments should be used in the treatment of these reactions.

(1096) Creosote burns. A. D. Jonas. *J. Indust. Hyg. & Toxicol.* 25: 418–420 (Nov.) 1943.

The hazard of creosote burns should be kept in mind in the erecting of wooden structures. The symptoms and signs from exposure to creosote are given, conjunctivitis being the most common. The dipping of sills in creosote solution and the sawing of creosoted lumber are hazardous.

(1097) Safety in the operation of anhydrous hydrogen fluoride alkylation plants. R. Benson. *Nat. Petroleum News* 35R: 532–536 (Nov. 3) 1943.

New safety precautions are required in the design and operation of alkylation plants because of the nature of the anhydrous hydrogen fluoride used as a catalyst. Mechanical features have been incorporated in the plant design to minimize accidental discharge of acid to the atmosphere. These include locating the acid-carrying equipment in a pit provided with the means for neutralizing any escaping acid, and exhaust systems for removing or neutralizing acid or vapors from sections opened for repairs or other purposes. Special types of neoprene or rubber clothing are provided for various classes of work, and precautions are taken to prevent injury to workmen exposed to contact with the acid. First-aid treatment is described.

(1098) The inactivation of phosphorus on the skin. M. W. Goldblatt and S. H. Oakeshott. *Brit. M. J.* 1: 128, 1943.

A new preparation for inactivating phosphorus on the skin is described. It consists of copper oleate, trichlorethylene, Turkey-red oil, and surgical spirit. A method of application is suggested. It is claimed that this is an improvement over previous methods employed for preventing or minimizing the effects of phosphorus burns.

(1099) Hazards from silicon and fluorides. Queries and Minor Notes. *J. A. M. A.* 124: 268 (Jan. 22) 1944.

Specific information is lacking on the physiologic action of calcium silicide, which is used as a reducing agent for electric furnace slags; also, of fluoride gases, calcium carbide, sulfur dioxide, and iron oxide. In general, however, silicides are comparatively inert materials. All fumes which are liberated as fumes in the process described should be regarded as possible acute irritants. Whether they cause progressive chronic disease of the skin or respiratory tract is unknown.

(1100) Neutralization as a therapeutic principle in contact dermatitis. N. P. Anderson. *Arch. Dermat. & Syph.* 49: 176–182 (Mar.) 1944.

In a previous paper the author presented a point of view as to the causation of contact dermatitis, namely, that it has a toxic chemical origin. This etiologic aspect has been neglected in both principle and therapy.

Four different points of attack can be conceived as applying to this problem of a cutaneous irritant: First, a direct chemical neutralization may be used; second, one may detoxify the chemical irritant by another chemical which reacts to form either an insoluble or a nonirritating compound; third, the chemical phenomenon of adsorption may be employed; and fourth, the unusual emulsifying and detergent properties of the new synthetic wetting agents may be used to remove toxic chemicals from the skin, both in prevention therapy and perhaps in the therapy of the dermatitis itself.

The possible applications of the above principles are described in the treatment of dermatitis resulting from the following: cyanide, chromates, dichromates, paraphenylenediamine, trinitrotoluene, trinitrophenol, iodine, fluorides, mercurials, arsenic, barium, formaldehyde, and the alkaloids.

(1101) Antidote for spilled poisons. *Indust. Med.* 13: 807 (Oct.) 1944.

It should be remembered that, rather than wasting time in looking for specific antidotes, one should use the general measures of (1) removing the poison and (2) supporting the respiration, heart, and vasomotor tone.

(1102) Treatment of eczematous contact dermatitis with intravenous injections of sodium thiosulfate. A. Strickler. *Arch. Dermat. & Syph.* 50: 251–253 (Oct.) 1944.

Intravenous injections of aqueous solution of sodium thiosulfate have been employed in treatment of eczematous contact dermatitis with good immediate results and with some degree of partial desensitization. These results are evidenced by return of some patients to their previous work without suffering a

relapse. The way in which this treatment operates is obscure.

The suggestion by Anderson that study of the chemical antidotes for the various agents capable of causing a contact dermatitis is both timely and constructive.

(1103) Overtreatment dermatitis. L. E. Gaul. *J. A. M. A.* 127: 439–442 (Feb. 24) 1945.

Often, skin lesions are subjected to imprudent topical therapy, with the result that the patient acquires a secondary irritation from the remedies applied. In such cases, the past treatment patch test is of value in that it reveals the presence of an irritant or sensitizer in the remedies already used, it permits prescribing a preparation suitable to that particular lesion, and it helps to decide the occupational or nonoccupational etiology of the dermatitis.

(1104) Over-treatment of industrial dermatitis—dangers and prevention. J. Driver. *Indust. Nursing* 4: 23–24 (Aug.) 1945.

Many cases of industrial dermatitis are made worse by overtreatment or the application of the wrong remedy. The misuse of sulfa preparations, for example, is often followed by local sensitization of the skin; also, sulfa drugs photo-sensitize, so that severe reactions may occur upon exposing sulfa-treated areas to ultraviolet rays. Other common errors include the use of ointments containing sulfur, phenol, resorcinol, tar, benzocaine, and other compounds, frequently resulting in contact dermatitis; the use of warm or hot applications, which often aggravate eruptions; and the use of oil or grease in acute cases, which may cause further disturbance. Self-medication of patients should be discouraged.

(1105) Penetration of surface tissues with copper by iontophoresis. A. J. Pereyra. *Arch. Dermat. & Syph.* 52: 96–105 (Aug.) 1945.

Iontophoresis increases the electrodeposition of copper on the surface of the genital tissue of rabbits treated with copper sulfate solutions. By adding aerosol MA to solutions of copper sulfate, the penetration of copper by iontophoresis was increased about 25 times. Solutions of copper and aerosol MA or the organic copper salt applied topically without iontophoresis do not penetrate. Copper is prevented from penetrating surface tissues by the tissue proteins which combine with it. The amounts of copper introduced into surface tissues by iontophoresis depend on the strength of current employed, the duration of the treatment, and the concentration of the salts used.

(1106) Antivenin ("Latrodectus mactans"). Council on Pharmacy and Chemistry. *J. A. M. A.* 129: 1017 (Dec.) 1945.

Use of antivenin is recommended in the treatment of patients suffering from symptoms due to bites inflicted by the black widow spider. Prior to use, tests for serum sensitivity should be made. Associated treatment with hot plunge baths, magnesium sulfate, or calcium gluconate and barbiturates may be used.

(1107) Treatment of dermatophytosis and hyperhidrosis with formaldehyde and cupric sulfate iontophoresis. Edward D. Freis. *Arch. Dermat. & Syph.* 53: 34–38 (Jan.) 1946.

Eighty-five patients with various grades of epidermophytosis were treated by formaldehyde iontophoresis. Moderate infections reacted promptly; severe ones were rendered more severe because of the too vigorous treatment.

Fourteen patients with hyperhidrosis were treated by three daily treatments with resultant complete remissions.

Thirty-five patients were treated by cupric sulfate iontopheresis for dermatophytosis. The results were uniformly satisfactory from the mild to the acute severe cases.

(1108) Overtreatment dermatitis of the feet. G. B. Underwood, L. E. Gaul, E. Collins, and M. Mosby. *J. A. M. A.* 130: 249–256 (Feb. 2) 1946.

The human foot has become the target of unbelievable abuse. The abundance of proprietary remedies for athlete's foot is referred to.

The post-treatment patch tests in over 400 dermatologic cases showed positive reactions in 40 percent to one or more of the remedies used. The most frequent constitutents of these remedies causing dermatitis were mercury, phenol, and ethyl aminobenzoate.

The cutaneous tissue reaction denoting sensitization is often wrongly considered infection. Dermatitis pedis requires a differential diagnosis, and the assumption of fungi as the cause promotes and lends countenance to the deplorable practice of daubing. The remedies for this situation include: (1) Requiring warning labels on all mercurials; (2) creation of a board for the examination of all new therapies and diagnostic procedures before they reach untrained

hands; (3) provision of postgraduate training in dermatology; and (4) initiation of a vigorous educational program.

(1109) Pyribenzamine in the treatment of itching skin conditions. R. L. Baer and M. B. Sulzberger. *J. Invest. Dermat.* 7:147–150 (June) 1946.

Patients with urticaria, atopic dermatitis, or pruritis associated with various dermatoses were treated with Pyribenzamine. One-half of the cases of urticaria responded to the treatment, but no therapeutic value was shown in controlling the eruption and itching in most cases of atopic dermatitis. Some therapeutic value was associated with various dermatoses. Despite the lack of side effects noted, the authors believe that regular medical and laboratory examinations should be carried out on all patients using this new class of drugs over long periods.

(1110) The management of bacterial infections of the skin. D. M. Pillsbury. *J. A. M. A.* 132:692–698 (Nov. 23) 1946.

Bacteria are responsible directly or indirectly for a considerable proportion of the disease affecting the human skin. The normal skin harbors an enormous number of bacteria which are ordinarly harmless, and remain stable in kind and number. However, heat and moisture may greatly change the number, and pathogenic bacteria may suddenly appear and may be extremely difficult to dislodge. The factors in the protection given by the skin against bacterial invasion are not well understood, and further basic study is needed.

When the integrity of the skin is disturbed, and harmful bacteria become residents of the diseased area, it is important to avoid the use of measures that may further irritate the skin. Penicillin has a limited value in skin treatment, with the disadvantage of increasing sensitivity. Local application of sulfonamides has little or no place in present-day therapy. The development of penicillin or sulfonamide compounds with decreased sensitizing capacity is needed. There is also need for nonsensitizing chemical antiseptics which have a greater antibacterial power in vivo than those now available.

(1111) Development and use of BAL. M. B. Sulzberger and R. L. Baer. *J. A. M. A.* 133:293 (Feb.) 1947.

The history of the development of BAL is reviewed. Studies of the important antiarsenical effects of BAL in vitro, in laboratory animals, and in human beings are summarized. The action of BAL in counteracting the toxic effects of antisyphilitic arsenicals is reviewed. The recommended dosages schedule for BAL is presented, and the undesirable side effects listed.

(1112) Pompholyx and its treatment. B. Schuster. *Northwest Med.* 46:298 (Apr.) 1947.

Pompholyx (dyshidrosis, cheiropompholyx) is common in both sexes, although more frequent in women. It is especially prevalent among cosmeticians or beauty shop operators. However, the author has seen lesions on board ship during the war, when men were in a tropical climate for as brief a period as 3 weeks.

Women who frequently have their hands exposed to chemical irritants, such as soaps or chemicals for dishwashing or laundry, strong oxidizing solutions, laboratory chemicals, and other irritants, are more subject to the condition. If lesions are present, solutions in common household use definitely aggravate the condition. It is most common in young adults, but may occur in children and the aged. It is least frequently seen in hard laborers.

Of a total of 17 cases treated, 13 were considered therapeutically successful. The successful use of Benedek's vaccine of *B. endoparasiticus Benedek* is described in four cases, of which three patients were women. The average number of injections for response to Benedek vaccine was 8, with only 2 injections in the quickest response and 27 in the case under treatment for the longest period of time.

Of the four cases that were considered therapeutic failures, the average number of injections was 19, ranging from 14 to 26.

It was noted that in cases where a local reaction developed at site of injection, the therapeutic results were generally more rapid than in those who showed no local reaction.

Each patient was told that there would probably be an exacerbation of symptoms following the second or third treatment, after which the symptoms would quickly subside. When the patients came in for the fifth treatment, in nearly every case they reported that the intense itching had subsided or disappeared between the third and fifth treatment.

(1113) The use of isotopes in medical research. J. H. Lawrence. *J. A. M. A.* 134:219–225 (May 17) 1947.

Various radioactive isotopes are presented, together with their uses in the

treatment of some of the neoplastic and hyperplastic diseases.

P32 is used for selective localization in the treatment of skin cancer. The localization is accomplished by soaking a piece of absorbent paper with the desired amount of beta-ray-emitting radioactive phosphorus and applying it to the lesion for the calculated length of time. In this way the predetermined dose in roentgens of superficial irradiation is delivered during the following several hours or days. Since the beta rays penetrate less than 1 cm., most of the irradiation is delivered to the neoplastic cells and not to the deeper, uninvolved tissues.

(1114) Irritating effects of 9,9-dibromofluorene. J. R. Sampey; Anne B. King; T. A. Roe, Jr.; and S. J. Childress. *Science* 105: 621 (June 12) 1947.

Upon exposure to 9,9-dibromofluorene, a worker developed a severe skin eruption which manifested itself by red blotches on the back of the left hand and wrist and, eventually, both forearms and and face. Benadryl therapy relieved the itching, and within a few days the face peeled and the blotches began to dry on the arms.

(1115) Contact dermatitis. Simplification of therapy and of the search for causes. R. L. Sutton, Jr. *J. Missouri M. A.* 44: 481–484 (July) 1947.

Contact dermatitis is defined, and the lesions and course are described. A method for determining the cause of the irritation is given. This method appears to represent the simplest and most efficient approach, and makes it possible, without use of patch tests or guesswork, to identify the cause of and cure puzzling cases in only a few weeks.

A typical conversation between physician and patient is presented. The patient is instructed on how to live in a chemically safe environment.

(1116) Prevention of reaction to BAL. M. Tye and J. M. Siegel. *J. A. M. A.* 134: 1477 (Aug. 23) 1947.

The symptoms of various reactions seen in treatment with BAL are reiterated. In view of the resemblance between these symptoms and those seen in serum sickness, a patient was given 0.6 cc. of 1–1,000 solution of epinephrine hydrochloride intramuscularly.

The symptoms subsided immediately. The patient was then given 25 mg. of ephedrine sulfate orally one-half hour before each injection of BAL.

A second case reaffirmed the foregoing observation. The patient was given 50 mg. of ephedrine sulfate before each injection of BAL. The ephedrine was omitted before the seventh injection. Lacrimation, headache, and burning sensation of the skin resulted. All further injections were preceded with the administration of 50 mg. of ephedrine sulfate, and the patient remained symptom-free.

(1117) Skin sensitization to BAL. T. Cornbleet. *J. Invest. Dermat.* 9: 281–282 (Dec.) 1947.

The author reports an eczematous contact-type dermatitis of his fingers in the areas that had been in contact with a syringe containing BAL molecule. This does not preclude the possibility that some substance with a structure similar to that of BAL might be the sensitizer.

(1118) Coal tar in dermatology: An improvement in its physical properties without any change in its therapeutic action. F. C. Combes. *Arch. Dermat. & Syph.* 56: 583, 1947.

A new *low temperature retort crude coal tar* does not have the objectionable qualities of crude coal tar but retains in full its therapeutic usefulness. It is miscible with water, forming a collodial solution, and with collodion, glycerin, oils, and fats.

Pastes and ointments made with it are smooth and homogeneous and do not seem to impede exudation or evaporation from the skin surface; they rarely cause acne or pustular folliculitis. Half an ounce of the tar added to a lukewarm bath is nonstaining and antipruritic. If the tar is removed 15 minutes after application, the skin remains sufficiently photosensitized for 72 hours for the Goeckerman treatment. It can be used on hairy spots of the skin and can be removed with water. *Spot-touching* with 10 percent of the tar in collodion is useful in scattered lesions.

Thirty-six patients with various dermatoses have been treated with this tar.

(1119) Failure of 2,3-dimercaptopropanol (BAL) in treatment of argyria. J. Rosenthal and A. Ollswang. *Arch. Dermat. & Syph.* 57: 743–745 (Apr.) 1948.

Unsuccessful treatment with BAL of a patient with decided generalized argyria of 6-year duration seems to confirm the conclusions of earlier investigators, based on studies of animals.

(1120) Acute mercury poisoning treatment with BAL and in anuric states with continuous peritoneal lavage. R. Batson and J. C. Peterson. *Ann. Int. Med.* 29: 278–293 (Aug.) 1948.

The evolution of the treatment for acute mercury poisoning is discussed.

A patient with severe mercury poisoning treated with BAL and whose prolonged anuria was combated successfully by peritoneal irrigation is reported. These therapeutic measures are discussed in detail.

An outline for the treatment of acute mercury poisoning is proposed.

(1121) Overtreatment dermatitis in dermatitis venenata due to plants. G. B. Underwood and L. E. Gaul. *J. A. M. A.* 138: 570–582 (Oct. 23) 1948.

An extensive study is reported of the ill effects of remedies usually self-applied in the treatment of dermatitis due to poison ivy and other plants. Patch tests were applied, both with the plant apparently responsible and with the *remedy*. Extracts or oleoresins from the plants did not produce lesions; it was necessary to collect the plants themselves for the tests. Over 75 percent of the patients, distributed as to age and sex, were found sensitive to the remedies used. Many of the ointments and other remedies used had been saved for many years, and some were decomposed or had attacked the container.

Patch tests were also made with pure ingredients of these remedies, and the response varied from two or three to a large number of positive reactions toward each. Effects are discussed in detail.

The following causes are found for overtreatment dermatitis: (1) Lack of knowledge of how to care for the skin; (2) treatment of symptoms; (3) treatment of signs; (4) confusion of pharmacologic actions; and (5) wrong diagnosis. Numerous cases were self-treated, but in many more the family physician was at fault. This experience stresses the need of a council on dermatologic hygiene and therapeutics.

(1122) Tattoo. A. M. Ring. *J. A. M. A.* 138: 790 (Nov.) 1948.

For *tattooing in reverse* the most widely used method is thoroughly to tattoo 40 percent tannic acid into the lesion with needles, after which 50 percent silver nitrate is applied to the area until a hard adherent crust is formed. The area is bandaged, and the crust is allowed to come off naturally.

(1123) The metabolism of skin: Effect of vesicant agents. E. S. G. Barron, J. Meyer, and Z. B. Baker. *J. Invest. Dermat.* 11: 97, 1948.

The effect of military vesicants and BAL on the enzymes concerned in cutaneous metabolism is discussed primarily. Information about the normal oxygen uptake and glycolysis in human skin and about the utilization of aminoacids, fatty acids, and carbohydrate intermediates of rats is given.

(1124) Contact dermatitis. R. L. Sutton, Jr. *Arch. Dermat & Syph.* 59: 36–41 (Jan.) 1949.

Contact dermatitis is an injury of the skin which heals when the offending contactant is removed from the patient, and which will not heal if irritant or allergenic materials are applied.

Therefore, the patient is allowed to use only cool water and clean towels for wet dressings, and petrolatum as an emollient. Garments are judged safe if they have been used repeatedly in the 6-month period prior to the dermatitis, with no evidence of irritation.

Once the dermatitis has subsided, the patient is exposed to each suspicious contactant singly, and the reaction to actual exposure noted. According to the author, the selection of agents for patch testing requires guesswork; this method does not. Failures occur when the disease is not a pure contact dermatitis and secondary factors, such as infection, are not taken into account and treated.

(1125) Management of common occupational skin diseases. N. P. Anderson. *J. A. M. A.* 139: 912 (Apr. 2) 1949.

It is important for the physician to know the financial and medicolegal implications involved in occupational dermatoses. These affections account for 65 percent of all occupational diseases in the United States, exclusive of accidents. Certain criteria for diagnosis are listed. The importance of physical examinations and patch tests are discussed. Infectious eczematoid dermatitis is described. Treatment is presented from the point of view of what to avoid, since incorrect treatment causes much trouble. Prophylactic recommendations are given.

(1126) Species of Aloe (other than "Aloe vera") in the treatment of roentgen dermatitis. L. J. A. Loewenthal. *J. Invest. Dermat.* 12: 295 (May) 1949.

The use of *Aloe vera* in medicine is quite old, and some of the history is re-

viewed. However, the author has found that *Aloe arborescens Mill* and *Aloe mutabilis Pillans* are equally efficacious. Two cases are presented which were cured by *Aloe arborescens*.

(1127) Standing orders for traumatic cases in industrial dispensaries. T. W. Nale. *Indust. Med.* 18: 230 (June) 1949.

Standing orders for the industrial nurse in an industrial medical dispensary are presented. These relate to care of the many traumatic conditions that need immediate treatment before the physician can arrive and to the many minor traumatic conditions that can be given preliminary treatment by the nurse.

(1128) Removal of black powder stains. Queries and Minor Notes. *J. A. M. A.* 135: 1041 (Dec. 13) 1949.

The treatment for removal of accidental black powder stains resolves itself into the methods of removing tattoo marks. Surgical, electrolytic, and chemical methods are described.

(1129) Fuorides. Indust. Health Bull. Vol. 3, No. 5. New Jersey Dept. of Health, Trenton, 1949. 13 pp.

The most toxic compound of fluorine is hydrogen fluoride, but inorganic salts of fluorine are active. Poisoning occurs by primary irritant action on the skin or mucous membrane; poisoning may also be evidenced in acute and chronic systemic effects. Acute poisoning is rare on account of the irritating nature of the gas. Chronic poisoning involves mottling of teeth and bone changes. Medical and engineering controls for safeguarding workers and the surrounding population are discussed briefly. The maximum allowable concentration for fluorides is given as three parts per million of air by volume.

(1130) Industrial dermatitis due to manganese treated with BAL. C. Ceresa. *Med. d. lavoro* 42: 26 (Jan.) 1951.

A case of an erythematous, papular exanthem is reported in a worker breaking up and loading manganese ore. His exposure was of two months' duration. Associated with the cutaneous disease was hepatomegalia with an abnormal liver-profile, and an acute bronchitis. The injection of BAL in oil, 200 mgm. a day for 14 days, was followed by a return to normal health. The urinary excretion of manganese was determined before, during, and after therapy with BAL. An increased urinary excretion of manganese was observed during therapy with BAL.

(1131) Cortisone acetate in skin disease. L. Goldman, R. G. Thompson, and E. R. Trice. *A. M. A. Arch. Dermat. & Syph.* 65: 177–186 (Feb.) 1952.

Cortisone applied topically to the skin in ointment form in concentrations up to 750 mg. per 30 gm. of ointment produced no significant therapeutic response in 114 patients. Cortisone injected into the skin by syringe and needle and by hypo-spray, in general, gave negative results. The local injection of Compound F, on the other hand, showed definite inhibition of both the local eczematous and the local tuberculin type response.

(1132) Treatment of vitiligo. M. Sekla. *A. M. A. Arch. Dermat. & Syph.* 65: 358–359 (Mar.) 1952.

The author cites the literature and his own experience in the Linn treatment of vitiligo with the crystalline derivatives of the fruits of Ammi majus. The compounds used by the author were ***meladinin*** tablets and ***meladinin*** paint.

(1133) Use of dimercaprol (BAL) ointment in chronic chrome dermatitis. H. N. Cole, Jr. *A. M. A. Arch. Dermat. & Syph.* 67: 30–36 Jan.) 1953.

A survey of the chrome dermatitis problem is presented, together with the rationale for the use of dimercaprol (BAL) in its management. Results are given of a small-scale animal study which showed 25 to 50 percent improvement within one week in animals with experimentally produced chrome dermatitis treated with 3 percent dimercaprol ointment.

A clinical study of seven cases of chronic chrome dermatitis is presented. Intolerance to dimercaprol was noted in a single case. Two hospitalized patients with severe dermatitis showed complete clinical remission within a period of 2 weeks with the daily application of 3 percent dimercaprol ointment to the affected areas. The four remaining patients still exposed to chromates have shown up to 75 percent improvement with the continued daily use of the ointment for periods ranging from 2 to 5 months. No other instances of intolerance or sensitization have been noted.

It is suggested that local use of 3 percent dimercaprol ointment may be of value in cases of chronic heavy metal dermatitis, particularly in chronic chrome dermatitis, for which the clinician has no other agent of known value or spe-

cific action to offer. Patients should be hospitalized to get the best results.

(1134) Nonsurgical treatment of cutaneous beryllium granuloma. A. A. Fisher. *A. M. A. Arch. Dermat. & Syph.* 68: 214–216 (Aug.) 1953.

The patient developed granulomatous lesions following laceration by a broken fluorescent light bulb. A small cutaneous granuloma lasting for 5 months healed following immobilization and application of boric acid ointment.

A larger cutaneous beryllium granuloma did not respond to the treatment which had healed the smaller lesion. It healed after 2 months' application of 5 percent Cortisone in oxycholesterol-petrolatum ointment.

Tropical Disease

(1135) Vaccination against Jericho boil. I. Katzenellenbogen. *Ann. Trop. Med.* 36: 28 (June) 1942.

An attempt was made to produce Jericho boil (Oriental sore) by the inoculation of leishmania bodies from the spleens of Syrian hamsters infected with *Leishmania tropica* or of cultures of *Leishmania tropica.* One hundred and sixty-seven persons were inoculated, 82 with leishmania bodies, and 85 with cultures. Of these, 152 were followed up, and in 135 of them a lesion developed. The incubation period varied from 2 to 8 weeks. In seven subjects, lesions developed in areas remote from the site of inoculation; it is probable that these persons had been inoculated during the incubation period of a natural infection. In endemic centers, newcomers and residents hitherto uninfected should be inoculated.

(1136) Desert sores. H. M. Rapport. *Brit. M. J.* 2: 96, 1942.

The writer gives his impressions after treating 1,000 cases of desert sores. When the diet lacked green vegetables, there seemed to be an increase in cases. Neglect, dirt, and contact with sand made them worse. Flies appeared to spread the disorder. Two cases were proved to be due to diphtheritic infection. The condition is almost universal among troops in the desert. Newcomers were especially susceptible and fair-skinned men particularly so, but Egyptian and Libyan natives were also affected. As a prophylactic measure in the desert, every man was issued one 25 mg. tablet of ascorbic acid daily, and all cuts and abrasions were covered as soon as possible to keep out flies and sand.

For treatment, sulfapyridine powder and ointment were useful; also eusol and pasta flava. Frequent change of remedies is advisable, and rest in bed is essential in severe cases.

(1137) Cutaneous leishmaniasis. D. Ball and R. C. Ryan. *Bull. U. S. Army M. Dept.* 79: 65 (Aug.) 1944.

A study of 499 cases of cutaneous leishmaniasis in the U. S. Army in the Middle East is reported. The characteristic lesions, causative organism, relationship to kala-azar, mode of transmission, and treatment are discussed. This disease is limited to the skin and does not cause constitutional symptoms. Stibamine glucoside intravenously was found to be the most effective treatment.

(1138) Some observations on skin diseases with the Army in India. A. Brigham. *Brit. J. Dermat.* 56: 109–202, 1944.

Significance is attached not so much to the new diseases encountered, as to the great change in the character of the familiar dermatoses which occur in India. Trichophytosis is one of the most prevalent skin diseases.

British troops suffer more than the Indians because they are accustomed to wearing shoes and their toes are cramped. The Indians, on the other hand, do not wear shoes, thereby permitting quick dispersal of heat and sweat.

Indian men are affected while women are not, perhaps because of an endocrine factor.

Treatment is reported for warts by the application of the juice of the leaves of the Akand tree (bush of the milkweed family).

(1139) Impetigo bullosa in tropics. C. S. D'Avanzo. *Arch. Dermat. & Syph.* 52: 28–29 (July) 1945.

Among the troops in the tropics, impetigo bullosa occurred in 0.7 percent.

This disease accounted for 3.2 percent of all hospitalized cases of cutaneous diseases. Perspiration is the most important etiologic factor, and personal hygiene is the essential prophylactic treatment.

In treatment of these patients, the lesions should be opened aseptically, painted with 2 percent aqueous gentian violet, kept dry with dusting powders. Ointments only cause maceration and aggravate the condition.

(1140) Cutaneous disease of the tropics: A clinical study based on observations in Malaya. P. Fasal. *Arch. Dermat. & Syph.* 51: 163, 1945.

The more common conditions encountered among the predominant races in the four Federated Malay States and Penang are described. The commonest external irritants were the sap of the rengas tree, the sap of the upas tree, and the juice from mangoes.

It was important to exclude leprosy and syphilis in each case.

(1141) An unusual lichenoid dermatosis. L. C. Goldberg. *J. A. M.A.* 130: 775–780 (Mar.) 1946.

Unusual features of a lichenoid and exfoliating eruption in patients returned from the Southwest Pacific area are described. Involution of the lesions was often achieved by Mapharsen injections. Atabrine must be considered as an etiologic factor, although it did not exacerbate the skin lesions when used in treating malaria in these patients.

(1142) Lichenoid dermatitis: Observation of two hundred cases from the Dermatology Section, Medical Branch, Dewitt General Hospital, Auburn, California. E. S. Bereston. *J. Invest. Dermat.* 7: 69–83 (Apr.) 1946.

Two hundred cases of *lichenoid dermatitis*, occurring among service personnel in malarial areas, were believed caused by Atabrine therapy. Three clinical types have in common edema, erythema, pruritus, and vesicles, usually on the dorsum of upper or lower extremities. Half the cases present eczematoid lesions; 30 percent, a lichen planus type lesion; and 20 percent, a combination of the two. Treatment is symptomatic, with evacuation from the tropics being essential.

(1143) Some observations on cases of contact dermatitis seen in South Africa. L. J. A. Loewenthal. *Clin. Proc.* 5: 339–344 (Oct.) 1946.

An analysis of 500 dermatologic cases revealed an incidence of 16 percent of contact dermatitis. The importance of recognizing the possibility of sensitization dermatitis in diagnosis is stressed. A diagnostic criterion is whether the condition promptly subsides on removal of the offending substances.

(1144) Eczematous and pigmentary lichenoid dermatitis. D. J. Wilson. *Arch. Dermat. & Syph.* 54: 377–396 (Oct.) 1946.

A highly resistant protean disease with dermatologic symptoms, occurring with great frequency in the New Guinea area and much less frequency in the Mediterranean Theater, is discussed. The cases are classified as the dry type (20) and the exudative type (80). A detailed description of the symptomatology and the pathological changes is presented.

The exact cause is not known. Such factors as low vitamin A intake, use of Atabrine, and allergy are important contributing factors, with Atabrine being the major factor.

The importance of the disease is expected to diminish rapidly as troops are moved from New Guinea and Southern Italy.

(1145) A study of miliaria rubra, tropical anhidrosis and anhidrotic asthenia. J. P. O'Brien. *Brit. J. Dermat.* 59: 125 (Apr.–May) 1947.

Miliaria rubra, tropical anhidrosis, and tropical anhidrotic asthenia are successive phases of a single disease process having blockage of the sweat ducts as the main characteristic. Miliaria rubra is the acute phase, tropical anhidrosis the chronic phase, and tropical anhidrotic asthenia is the general metabolic disturbance resulting from a serious diminution in sweat production. The symptoms are given and the stages of development are described.

It is believed that miliaria rubra and the secondary tropical anhidrosis are manifestations of a lack of sebaceous secretion on the skin. Depletion of skin lipoid is due to removal by clothing, soap powders, lotions, and alcohol, as well as to decreased sebum production. Experiments carried out with fat solvents support this statement. Tropical anhidrosis is best treated with 10 percent salicylic acid in alcohol for several days, followed by lanolin.

Wearing Apparel

(1146) Allergic dermatitis produced by wool. L. Herraiz Ballestero and A. M. Mom. *Prensa méd. argent.* 30: 494 (Mar.) 1943.

The importance is stressed of inhalants as well as contactants in dermatitis caused by wool.

(1147) Dermatitis due to resin-finished shorts and fabric. An investigation of the cause, pathogenesis, and related phenomena observed in 10 cases. H. Keil. *J. Allergy* 14: 477–491, 1943.

Ten cases of contact dermatitis due to a *special ester gum* are reported. The gum is water miscible, and therefore irritation increases from perspiration in summer. The gum may be removed by washing thoroughly. Diagnosis is easily made by patch testing with unwashed pieces of the suspected fabric. The related chemistry of resins and their derivatives is reviewed.

(1148) Dermatitis from blue uniforms. C. C. Carpenter and J. W. Banzer. U. S. Nav. M. Bull. 43: 754–757 (Oct.) 1944.

Case reports and results of patch tests are given in three cases of dermatitis following the wearing of blue navy uniforms. The authors warn against placing too much reliance on the positive patch test and recommend avoidance of contact with the dyed material to see if the eruption will disappear. Following the test, the patients should again wear their uniforms to observe the degree of irritation.

(1149) Dermatitis from clothing. L. Schwartz and S. Peck. *J. A. M. A.* 128: 1209 (Aug. 25) 1945.

Dermatitis can result from contact with wearing apparel. Irritations have been reported as arising from fabrics such as silk, wool and synthetic fibers; leather, artificial leather, furs; rubber-containing materials such as dress shields and girdles; socks, pajamas, brassieres, and other wearing apparel. Metals and their alloys used in such items as jewelry have also caused dermatitis. Dermatitis has also been reported from the use of plastics, as in spectacle frames and wrist watch straps.

The material itself may cause dermatitis, but more frequently it results from the finishes.

A good description is included on how to patch test with clothing and what to use.

(1150) Benzyl benzoate dermatitis and wool dermatitis. S. J. Shane. *Canad. M. A. J.* 54: 39 (Jan.) 1946.

In the permanent form of wool dermatitis in the soldier, there is usually a history of repeated attacks of skin disease; the lesion is usually a folliculitis involving hairy areas in contact with the uniform. If, after eruption has cleared in the hospital, the patient is allowed to wear battle dress in the ward, recurrence is early and dramatic. Discrete areas of folliculitis are produced by patch tests.

A secondary dermatitis not infrequently followed the benzyl benzoate treatment for scabies. However, this was not noted unless treatment was repeated within 2 weeks. Hence, repeated application of lotio scabei is discouraged, since the transient wool sensitivity which results may persist for an indefinite time.

(1151) Dermatitis from "sizes." Queries and Minor Notes. *J. A. M. A.* 131: 568 (June 8) 1946.

Sizing for straw hats may contain natural resins such as rosin, manila gum, and shellac, or synthetic resins such as ethyl cellulose, nitrocellulose, or sodium silicate. Coal tar is not found in sizes. Dermatitis may result from primary irritation by the solvent or may be of an allergic nature, caused by one of the solids. It usually occurs on the face because soiled fingers come in contact with the face. Frequent washing of soiled hands, the use of rubber gloves, and the use of long-handled brushes to apply the size are suggested as preventives.

(1152) Dermatitis in woolen mill workers. Queries and Minor Notes. *J. A. M. A.* 132: 961 (Dec. 14) 1946.

Dermatitis among dyers in woolen mills is not uncommon. Most of it is due to sensitization to sodium bichromate, which is used as a mordant in the dye bath. The other chemicals with which the dyers come in contact—sodium

sulfide, sulfuric acid, formic acid, and acetic acid—are all primary skin irritants in strong concentration and sensitizers in low concentrations.

The best protective measures to be used by exposed workers are the wearing of impervious sleeves, gloves, and aprons. These prevent contact of irritants with the skin. Protective ointments are less effective and in some cases are not practical because they may come off on the wool. However, if protective ointments should be used, those of the water-repellant type are the best Such types can be obtained in either the greasy form or the dry film form. An ointment consisting of 70 parts of anhydrous lanolin and 30 parts of olive oil can be used for the greasy type of ointment. The water-repelling dry type of ointment consists essentially of about 10 parts of sheliac dissolved in isopropyl alcohol with a filler of talc, titanium oxide, and sodium perborate. When applied to the skin, the alcohol evaporates and leaves a dry water-repelling film of shellac, in which is embedded the powder forming the white coating.

(1153) Allergic eczematous dermatitis due to dyes in nylon stockings. S. Dobkevitch and R. L. Baer. *J. Invest. Dermat.* 8:419 (June) 1947.

Stocking dermatitis was shown to be due to certain yellow and red dyes, not to the nylon fiber, or other substances and dyes used in manufacture. Cross sensitivity to paraphenylenediamine was demonstrated.

(1154) Sweat band dermatitis due to Thiokol (or Thioprene). V. Pirila. *Acta dermat.-venereol.* 27: 287–298, 1947.

Thiokol (different than the drug, Thiokol, which is a guaiac derivative), impregnated in paper or cloth sweat bands was the causative agent in six cases of typical sweat band dermatitis. This substance, in the form of Thioprene latex, is used in production of artificial leather and in surface protection of papers and textiles. Sensitivity to this substance is unusual since sulfur compounds rarely cause eczema or dermatitis.

(1155) The provocative test for assaying the dermatitis hazards of dyes and finishes used on nylon. A. J. Fleming. *J. Invest. Dermat.* 10:281–291 (Apr.) 1948.

Studies to determine the skin irritation or sensitizing properties of nylon have shown that it is apparently free of such properties. Tests with 14 technical dyes and various dyed nylon fabrics revealed that certain dyes are strong sensitizers. The danger of dermatitis is greater if the dye bleeds readily from the fabric. Certain hosiery finishes give rise to dermatitis. It is urged that manufacturers test the safety of new textile materials.

(1156) Textile dermatitis in men. G. A. Grant Peterkin. *Arch. Dermat. & Syph.* 58:249–264 (Sept.) 1948.

Sixty-four cases of contact dermatitis due to men's clothing are described. In 52 cases the dermatitis was precipitated by khaki; five of these cases manifested purpura. In the khaki dermatitis, a positive patch test was not always obtained; it was most frequently obtained if the patch was moistened by the patient's axillary sweat. However, all of these patients gave a positive reaction to potassium bichromate.

Undyed wool was responsible for five cases. In six cases the dermatitis was attributed to a blue dye.

Prompt diagnosis is important to avoid the establishment of a lichen vidal or a chronic, weeping eczema.

(1157) Dermatitis from shirt finish. Queries and Minor Notes. *J. A. M. A.* 139: 970 (Apr. 2) 1949.

A dermatitis resulted from the wearing of a new white dress shirt. The irritation did not recur after the shirt had undergone several washings. The dermatitis is probably due to synthetic resins used as a finish to give the shirt a better appearance.

(1158) Dermatitis among the public from new fabrics, dyes, and finishes. L. Schwartz. *Chem. & Engineering News* 27: 1358 (May 9) 1949.

Various factors are presented which should be considered in the fabric industry to prevent the production of products that might cause dermatitis. The three types of fabrics—vegetable, animal, and synthetic—are discussed in relation to potential dermatoses. No cases of dermatitis have been reported from unprocessed synthetic fibers. Dyes on fabrics rarely, if ever, are primary skin irritants, and a dye dermatitis is usually the result of an allergy or a faulty dyeing process.

The finishes on fabrics are the usual cause of dermatitis, and the various types are discussed, including the use of antimildews on fabrics. Discussion also centers on the importance of patch tests and methods of carrying them out, with emphasis on the prophetic patch tests.

(1159) Dermatitis and nylon stockings. Queries and Minor Notes. *J. A. M. A.* 149: 1610 (Aug. 23) 1952.

Untreated nylon is essentially harmless to the skin. Dermatitis from black nylon stockings does not necessarily result from the dye, but may be related to various finishing substances, such as wetting agents, plasticizers, mordants, and ester gums. If the black dye is responsible, it is probably aniline black.

Woods

(1160) The occurrence in Sweden of diseases caused by tropical wood. G. Bergquist and G. Rundberg. *Nord. hyg. tidskr.* 22: 205–220, 1941.

Ninety-two cases of disease occurred in persons working with tropical woods. Of those affected, 69 were joiners. Symptoms included an inflammatory reaction in the skin, the upper respiratory tract, and the conjunctiva. Teak wood seemed to be the most frequent cause. The duration of the disease varied from 1 to 3 weeks.

(1161) Woodworker's dermatitis in East Africa. F. O. Piorkowski. *East African M. J.* 21: 60 (Feb.) 1944.

Dermatitis is of frequent occurrence among workers who handle tropical woods. The author reports his observations on five Indians (Sikhs) who handled East African timbers. The patients were carpenters or cabinet-makers. Four of them presented an acute dermatitis venenata involving the exposed parts of the face, neck, arms, and hands. The patients were handling cedar, podo, mvule, camphor, and Burma teak woods. The mvule wood produced dermatitis in four of the five patients. This wood is also known as Uganda teak, bush oak, or roko, and comes from a tree belonging to the family Moraceae. The latter is related to the fig tree and the mulberry and grows over a large belt of tropical Africa. All eruptions improved under mild antiphlogistic applications.

(1162) Dermatitis from mahogany wood (Swietenia macrophylla). S. D. Steiner and L. Schwartz. *Indust. Med.* 13: 234–235 (Mar.) 1944.

An outbreak of dermatitis occurred in the wood shop of a boat-building company shortly after the yard started using two types of mahogany woods from South and Central America. The peak of the epidemic occurred during the hot summer months.

A total of 13 cases occurred. Four individuals were patch tested with the woods, and three of the four with extracts of the woods. Two were positive to both woods, one was positive only to the Brazilian mahogany extract, and one was negative to both, perhaps because he had become *hardened*.

Recommendations for clean work clothes, protective clothing, shower baths, and local exhaust ventilation were given. Only the first of these was carried out. However, the dermatitis subsided with the advent of cooler weather, perhaps because the workers wore more clothes and perspired less freely, or because they were desensitized by continuous exposure, or as a result of a combination of these factors.

(1163) Dermatitis venenata and keratoconjunctivitis caused by the manzanillo tree. J. S. Snow and R. D. Harley. *Arch. Dermat. & Syph.* 49: 236–239 (Apr.) 1944.

Acute dermatitis venenata, similar to that produced by other toxic plants such as *Rhus toxicodendron*, appeared in 18 patients within 1 hour of exposure to the sap of manzanillo (beach apple) tree. Areas most frequently involved were the face, forearms, upper part of the trunk, and genitalia. Eyes were involved in four patients who showed severe keratoconjunctivitis, temporary blindness caused by blepharospasm, and denudation of corneal epithelium.

The sap of the beach apple tree, pH approximately 5, is the chief irritating factor; ether extracts a toxic portion capable of producing severe eczematoid reaction. Effective in removing the sap are ether, soap and water, and sea water, in the order given. Prophylactic measures recommended following exposure include prompt immersion in sea water, preferably with eyes open, for 20 to 30 minutes, and thorough washing of the entire body with abundance of soap.

(1164) Occupational dermatitis from teak wood. F. Delor. *Med. d. lavoro* **37: 244–264, 1946.**

Teak wood, grown in East India, is widely used in Europe in the construction of ships and railroad cars. A resin which impregnates the dust of the wood causes an allergic dermatitis and a subsequent hypersensitivity which may last for years in workers who are in contact with it. The injurious effect on the skin is believed due to the action of highly alkaline salts contained in the resin.

(1165) Professional phenoldermatitis. C. Ceresa. *Med. d. lavoro* **39: 80–82, 1948.**

Dermatitis which developed on the arms of men sawing beech wood impregnated with mineral oil was found due to phenols liberated during the process of impregnation.

(1166) Allergic eczematous contact type dermatitis caused by cocobolo wood (Dalbergia). M. Leider and H. K. Schwartzfeld. *Arch. Dermat. & Syph.* **62: 125–130 (July) 1950.**

Cocobolo wood, popularly called bastard mahogany, is derived from trees indigenous to tropical forests in the Western Hemisphere. The tree family is Leguminosae, the genus is *Dalbergia,* and the important species are *retusa, hypoleuca, granadillo, calycina* and *lineata.* Cocobolo is a hard wood, beautifully grained. Because of its oil content, it is impervious to water, resists splintering, and polishes to a high lustre. The wood is used for handles for knives, forks, brushes; for mouthpieces for some wind instruments; for bracelets and other jewelry, and for policemen's clubs. Among the woods, it seems to have a high sensitizing index.

Allergic eczematous contact dermatitis from woods is an important subject in industrial medicine and in dermatology. Wood is widely used in industry and in the home. Lumbermen, sawyers, carpenters, cabinet makers and wood-wind instrument makers are highly exposed and comparatively frequently become hypersensitive. In the home, jewelry and the handles of kitchen utensils and toilet seats present the most common sources of exposure and difficulty.

The subject of wood dermatitis needs continual re-emphasis. An instance is reported of diagnosis of a prolonged, obscure dermatitis of the hands made possible by an awareness of the possibility of wood dermatitis.

The discovery of cocobolo wood as a cause of cheilitis in musicians is of interest occupationally, for this wood seems to be returning to favor in musical instrument manufacture. Its use in the manufacture of the *recorder,* an ancient wood-wind instrument increasingly popular among amateur musicians, makes it probable that more such cases will be seen in the future.

(1167) Eczema of the hands from wooden-handled objects. J. B. Howell and D. S. Blair. *Arch. Dermat. & Syph.* **62: 400–404 (Sept.) 1950.**

Dermatitis from cocobolo wood is protean in its appearances, and is suggested only by an awareness of it when considering the diagnosis of a contact dermatitis. The eruption is one which may resemble allergic reactions to penicillin or poison ivy on either a contact or a parenteral basis, dermatophytids dyshidrosis, vesicular hand eruptions due to foods, or a contact dermatitis from any other cause.

Patch testing with cocobolo wood shavings in persons suspected of being allergic to the wood was followed on two occasions by a severe local reaction at the test site, and a flare of the original eczematous areas.

An ether extract of the oleoresin with corn oil as the diluent is preferred for contact testing. Shavings from handles of suspect objects in use for some time appear to be safe, since probably some of the oleoresin in the wood has been leached out and lost.

(1168) Contact dermatitis caused by bamboo. B. L. Schiff. *Arch. Dermat. & Syph.* **64: 66–67 (July) 1951.**

Three cases of contact dermatitis due to bamboo with positive patch test reactions are reported. This pruritic dermatitis involved the exposed areas. Healing of the dermatitis was followed by marked hyperpigmentation. One patient did not experience a flare upon reexposure to bamboo, following the subsidence of his dermatitis. It is attributed by the author to *hardening,* since he had been exposed to bamboo for 30 years.

(1169) Some new toxic woods: Some new manifestations of toxicity. J. Dantin-Gallego, A. F. Armayor, and J. Riesco. *Indust. Med. & Surg.* **21: 41–46 (Feb.) 1952.**

A series of cases among mill workers handling exotic woods from Africa is presented. All of the cases uniformly presented respiratory symptoms simulating

bronchial asthma, while others showed skin involvement. The condition was attributed to inhalation of wood dust containing glucosides which were believed to break down into saponins. It was the saponins which were considered to be the irritant. Although the wood contained considerable fungi, none was specifically identified. There was no consideration of their contribution to the problem.

(1170) Dermatitis venenata due to native woods. L. F. Weber. *A. M. A. Arch. Dermat. & Syph.* 67 : 388–394 (Apr.) 1953.

This study showed that sawdust of native woods was the cause of either traumatic or allergic dermatitis. There was a long period of refractoriness to allergic dermatitis in the age group of 40 to 60 years. The results of patch tests with sawdust were in some patients confusing and inconclusive. Sensitization was permanent in those patients who could be followed.

These unusual cases had similar features, clinically. Several patients were sensitive to more than one wood, and one was sensitive to four native woods. One patient was sensitive to processed powder of the creosote bush which was used as an antioxidant for lard. One patient with allergic dermatitis due to poplar sawdust was disabled for more than half a year.

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