the 1925-28 series, who reported for examination two to five years from the date of the injury, the findings are somewhat similar.

Result	Fractures without Displacement	Fractures with Displacement
Excellent (including perfect)	18	74
Good—that is, able to do original work, but some slight objective or subjective defect	6	10
Poor	—	3

I agree with Edwards and Clayton that pre-existing arthritis of the wrist is a not uncommon factor in influencing the type of end-result. Furthermore, apart from gross malunion, following comminution, I believe that the late development of arthritic changes in the wrist or inferior radio-ulnar joints as a direct sequel of Colles's fracture is absolutely exceptional. These results go far to controvert the surprising conclusions presented in 1929 by Grasby and Trick,¹⁵ who, after an examination of fifty cases treated at Guy's Hospital, stated that in a Colles fracture with displacement the result after two years is invariably unsatisfactory.

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SKIN DISEASES IN RELATION TO INDUSTRY*

BY

W. J. O'DONOVAN, M.D., M.P.

PHYSICIAN, SKIN DEPARTMENT, LONDON HOSPITAL

The recent death of Sir Thomas Legge has removed from English medicine a remarkable man whose contributions to the preventive side of dermatology have been a noteworthy event in the yearly reports of the Chief Inspector of Factories. His contributions to this special branch of medicine occupy a column and a half in the index of Prosser White's monumental and invaluable *Occupational Affections of the Skin*,¹ and the latter states that most of the improvements in English statutory laws for a stricter enforcement of welfare and precautionary measures are due to the initiative of Sir Thomas Legge. That the State is properly concerned in every aspect of occupational disease—preventive, curative, and financial—is sufficiently evinced by the Home Office estimate of 1932 in that, making every allowance, the total charge to all industries and employments under the Workmen's Compensation Acts and the Employers' Liability Act of 1880 would be something over twelve million pounds.

STATISTICS

Cases of dermatitis in the workmen's compensation statistics of compensation in certain occupations have

* Read in opening a discussion in the Section of Public Health at the Centenary Meeting of the British Medical Association, London, 1932.

steadily grown from 270 in 1919 to 1,802 in 1930,² occurring in a great variety of industries, but chiefly among bakers and confectioners, dye workers, french-polishers, and engineers. Certifying and appointed surgeons gave 1,938 certificates of dermatitis produced by dust or liquids in 1930, and refused 349. It is hardly realized how powerful these certificates are. If unchallenged speedily, the surgeon's opinion becomes a legal fact, and however strongly developments of the case may show him to have been wrong, his opinion in the hands of the courts is binding against the evidence of most competent, but later, dermatologists. There were, in addition, forty-four cases of ulceration of the skin, produced by dust or liquids, ninety-seven cases of skin cancer, sixty-nine cases of chronic ulcer, twenty-seven cases of anthrax, and one case of "inflammation, ulceration, and malignant disease of the skin and subcutaneous tissues due to exposure to x rays or radio-active substances" similarly certified in 1919. This return may be expected to increase with growing public familiarity with the possibility of dermatitis and its causation, which induces a psychological condition arising from the ease with which allegations can be made which are difficult to disprove. There has arisen in recent years a type of patient who may be said to suffer from a "compensation complex," and the skin, as much as any other organ, can be afflicted with traumatic neurasthenia—an example of the will of a patient to suffer unless adequately compensated. It is not widely known that the Home Office is concerned only with factories, and that there is a wide field of occupational dermatitis outside its charge.

DERMATITIS IN THE HOME

The use of the term "industrial hazard," common in American literature, tends to obscure the issue, for in the modern home to-day the housewife is exposed daily to the unsupervised use of many and mixed skin "noxae."

An antithesis between home life and work and industry should not be allowed to grow up in the surgeon's mind. The town home is to-day a small chemical factory. Run through the pages of a stores catalogue and you will realize that what is made in the factory is used in the home by those with minds of all types and skins of all varieties of hygienic care and natural fragility. The home worker has her hands immersed in water for hours at a time; hot alkaline cleansing lotions are in frequent use; strong soaps and sodas, quick chemical cleansers, and even chloride of lime are employed to save time, while strong or dilute acids are used to clean lavatory basins and closet pans. Metal polishes, furniture polishes, leather preservatives, and metal pastes are sold extensively. Quick-drying enamels and paints, varnishes, special rapid paint renovators, storage batteries, disinfectants, insecticides, and artificial plant manures are in daily use.

I prefer, then, to use the term "exogenic dermatitis" to cover any dermatitis due to any sort of external irritant, and to name it if possible. The result of the application of external irritating agents to the skin over a long or short period of time is the appearance of a reaction varying in all degrees from an allegation of discomfort up to itching, smarting, or burning, and through stages of redness, punctate or confluent, up to a pustular, scaly, warty, or malignant ulcerative reaction. A very thorough treatment of this entire subject, but one which is unavailable in translation, is that by Ullman, Oppenheim, and Kille.³

CAUSATIVE AGENTS

Though the list is inexhaustible some classification of causal agents is called for. Prosser White published an extensive classification under thirteen headings at the International Congress on Industrial Accidents and Diseases, held in Amsterdam in September, 1925. A

less critical division, however, should suffice, and I suggest four headings:

1. Mechanical or physical—abrasion, heat, cold, actinic and other rays.
2. Plants and their products—resins, wood dusts, lacquers, morphine.
3. Living agents—bacteria, fungi, mites,⁴ filter-passing viruses.
4. Chemicals: (a) inorganic acids and salts; (b) hydrocarbons, oils, tar, pitch, anthracene; (c) dye products.

Physical Causes

Galloway⁵ was, I think, the first to draw attention to lupus erythematosus due to exposure to hot sun amongst Thames watermen. Cases due to exposure have been acknowledged by the Ministry of Pensions, and if aggravation of lupus erythematosus by occupational exposure to cold or sun were brought to trial, the ambit of compensation would at once be considerably enlarged. X-ray workers in the medical profession are to-day well protected from x rays, but I have seen palsy and deep ulceration on the contact surfaces of index fingers of both hands in a woman who held three of her children's heads in position for complete x -ray epilation and so received fifteen times a safe dose.

Plants

A plant dermatitis of unusual recurrence in susceptible individuals is chrysanthemum dermatitis. Nurserymen suffer every October, and skin thus affected reacts so acutely that the experimental application of a chrysanthemum leaf to the back for twenty-four hours will produce a scarlet leaf on the skin that can be accurately photographed.⁶ Pyrethrum belongs to this family of plants, and insecticides made from it will produce in the factory worker's hands (a) a vesicular eruption—the commonest; (b) a transient erythema; (c) a papular dermatitis; (d) an anaphylactic type with reddening of the face and an erysipeloid rash. Hop dermatitis, which occurred as a minor epidemic in my clinic in September, 1924, has not appeared for three years running. Probably climatic influences allow of great variation in the susceptibility of the worker's skin.

Chemicals

The acne plugs and indolent boils that form on the skin of engineers exposed to much lubricating or cutting oil are well known, but the incidence is falling off and the preventive measures strongly advised by Dr. J. C. Bridge, now Senior Medical Inspector of Factories, should be widely known. He states that oil dermatitis is emphatically preventable by the use of an "alkaline antiseptic wash such as the liq. sodae chlorinat. with boric acid (B.P.C.)." Its value is becoming known in many large engineering works, and is becoming the accepted method of removing oil effectively from the skin while disinfecting it at the same time.

DIAGNOSIS OF TRADE DERMATITIS

Dr. Overton,⁷ with her wide official experience, stresses that an enormous number of cases of trade dermatitis are caused, not by the substances encountered at work, but by their removal by methods harmful to the skin. The french-polisher removes the stains arising from his occupation with soda-water of varying strengths (the stronger, the quicker the toilet) or with methylated spirit. Painters acquire skin disease, not from their paints, but from the use of turpentine or its synthetic substitutes. Alkalis in some form or other are always appearing as cleansers. Paraffin to remove grease from the skin takes its toll, together with other de-greasing agents such as turpentine, petrol, naphtha, acetone and its substitutes, and methylated spirit.

The long continuance of an alleged occupational dermatitis should make one very suspicious of its cause. The whole of the legal battle about these cases lies upon the words "due to." Dyson⁸ says: "I recognize no difference between an eczematous trade dermatitis and eczema," and further, "the dermatitis occurs generally as a vesicular eruption between the fingers and on the hands simulating cheiropompholyx." I incline to a different view. With Sir Norman Walker, I hold that eczema is a term which has long been, and is still too commonly, applied to any wet or scaly inflammation of the skin, of the cause or nature of which the observer is ignorant. Each case must be unravelled extremely patiently for the patient may be stupid, expectant, or malicious. "There is a distinct correlation between the local occurrence of cases of bakers' itch and the centres of trade union activity."⁹ The time of the onset of symptoms must be ascertained precisely, for it may be due to a holiday sun exposure and not to work. Past treatment must be known, for the present may be a dermatitis medicamentosa. Susceptibility must be ascertained, as work that is harmless as a rule may be rendered hazardous after an attack of influenza. Again, the patient may present himself during a phase of urticaria of endogenous origin, or the attack may coincide with a seasonal exacerbation of a long-standing prurigo. An acid burn heals, a surgeon's cut heals—generally. One expects an alkali, a plant, or a sugar dermatitis to heal also. If, then, a case does not soon heal on its removal from its suspected cause, the aetiology may not be simple, but subtle. The real disease may be an anxiety neurosis with itching as a symptom, and work as work is bad for the patient's strained state, though it has not specifically caused his dermatitis, which is the product of rubbing and scratching with a "tic"-like persistence: a glove erythema of the forearms can be as truly neuropathic as the "stocking erythema"¹⁰ that is widely known. I agree with Prosser White¹¹ (loc. cit.) when he says traumatic dermatitis does not recur when the cause is removed and reasonable time has been allowed for it to heal. In idiopathic eczema recurrence is independent of known causes. Relapses may take place indefinitely. Particularly does this ruling apply to cases with a dyshidrotic history.

Patients who relate a clear story of pin-head irritating water blisters cropping out between the fingers—whatever they show to the examiner—are those who commonly take two to three years to recover. The cheiropompholyx is a reaction to a whole host of chemical, climatic, and emotional stimuli. It is a pattern or inborn type of skin reaction of the greatest frailty, and although each return to the original work may be followed by a new outcrop, it will be found that other and innocent work will produce an outcrop, and a patient healed in a hospital ward will relapse on the day arranged for his discharge. Work will increase the severity of an attack of cheiropompholyx; water and chemicals of all kinds will aggravate the irritation and remorseless scratching it receives, but if it be due to work in the sense of a *causa causans*, cure on removal will be speedy.

DYES

The chemical problems of dye dermatitis are of no clinical significance. O. Sachs,¹¹ after thorough investigation, showed that fuchsin is not poisonous, but that ill effects then reported were due to serious arsenical contamination common at the time. To us that would still be an exogenous dye dermatitis. Knowles¹² traces certain outbreaks to arsenic and chromium compounds in dyed garments. Weyl particularly incriminates dinitroresorcinol naphthol green, martius yellow, orange, metanil yellow, aurantia, sudan I, and naphthol black. It seems reasonable to hold that these dyes can only be active skin irritants if they are present in a free state, or so

loosely held in the material as to be transferable from the garment to the wearer's skin in sensible quantities by the action of moisture or sweat.¹³ A dye or intermediate which is so well fixed, mordanted, or oxidized as to be insoluble or not transferable to the skin cannot be regarded as harmful. This explains the great freedom of tailors and garment makers of all kinds from occupational dermatitis.

Percival¹⁴ demonstrated, using ursol containing *p*-phenylenediamine, that a normal person may fail to react to a 10 per cent. solution, whereas dermatitis cases react to concentrations varying from 0.005 per cent. to 0.5 per cent. This he considers to be due to an allergic state of the skin and to be idiosyncratic in nature. Who is to be held liable for idiosyncrasy? The worker or the employer, the dyer or the purchaser of a dyed article? It is difficult to see why a trader who has used proper materials and done his job efficiently and well should be liable for results so far beyond his control. We physicians have little access to industrial plants, the patient as a witness is none too sound, chemical processes are lost in the patent office or hidden in indecipherable formulae; yet the courts expect guidance, and society prevention, at our hands, and we achieve it largely because, as Professor Rasch¹⁵ of Copenhagen says, we need to become "as penetrating as a Sherlock Holmes."

VALUE OF EARLY NOTIFICATION

Ample details of the treatment of industrial dermatoses will be found in the standard textbooks of dermatology by Sequeira and MacLeod and in the *Index of Treatment* by Robert Hutchison, but the adequate treatment of occupational carcinomata due to light,¹⁶ tar, arsenic, or pitch needs a special note to itself.

The early notification of definite skin lesions is of value—

(a) For the information and help of factory managements.

(b) For the maintenance of efficient medical supervision of the workers.

(c) For the dissemination of knowledge of industrial hazards and social responsibility among the medical profession.

(d) It is of dubious value if the subject-matter of notification be in any way questionable on clinical grounds, or if it be likely to give rise to fear, introspection, and contentious litigation.

Under doubtful matter, I include early pigmentary changes, drying and patchy hyperkeratosis of the skin which may be natural in advancing years, or due to sunlight and weather exposure.¹⁷

A papilloma the size of a pea is a clinical entity not to be mistaken for common infectious warts, and quite unlike a rodent ulcer. This is found as the early lesion of skin cancer in all the carcinogenic industries¹⁸—that is, pitch, tar, oil, creosote, anthracene,¹⁹ and arsenic. I have described these lesions in a series of papers in the *British Journal of Dermatology* from 1922 to 1928,²⁰ and the whole is summed up and confirmed by the workers at the International Conference on Cancer, London, 1928. Small and large tumours proved microscopically to be carcinomatous, and papules no larger than a pea proved microscopically to be true carcinomata. The incapacity resulting from these definite early lesions, single or multiple, is *nil* in any site.

In my opinion, owing to the three-monthly medical inspections in factories by skilled practitioners, large dangerous lesions will not in future be overlooked and remain untreated.

RADON IN TREATMENT

The whole field of prognosis in occupational skin cancer has been altered by the introduction of radon into the technique of treatment.²¹

Treatment by radon is most convenient and most effective. Radon gas is obtainable in minute glass seeds which are preferably sheathed in platinum or gold and inserted through a needle-prick under the surface of the cancerous papule. Unfiltered rays obtained by using glass seeds without platinum envelopes always cause painful, tedious ulcers if applied on, or inserted under, the skin.

A radon seed can conveniently contain 1.5 millicuries of radon. Its insertion takes two seconds, and the puncture is sealed with collodion. After five days the seed is expressed. The local skin reaction is slight, not disabling. Patients can continue at work during and after treatment. The result is invariably satisfactory, so that the problem of compensation should not arise.

Workers once affected need not leave the industry, since at least ten years' employment, often much more, is needed before these changes occur. While in the industry they can be supervised and treated efficiently. If they leave, later growths may easily be missed and allowed to develop dangerously. Papules can be dealt with as they arise over long intervals of time. Industry is becoming cleaner, workmen are becoming cleaner, medical skill is more and more accessible, so that the whole position of occupational dermatitis and skin cancer seems to me reasonably under our control, both clinically and administratively.

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Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

UNUSUAL CAUSE OF "SNAP-FINGER"

The following case, which has several interesting features, seems to me worthy of record.

Fifteen years ago the patient had a radical amputation of the right breast for an early carcinoma. Subsequently a lymphatic obstruction in the right arm developed, producing the usual thick limb, wrist, and hand. These were subjected to various treatments, which possibly reduced the swelling of the extremity, but did not produce a normal limb; functional activity of the limb was never seriously affected. During the last two years there had been a noticeable thickening of the central palmar fascia in the right hand, giving rise to a condition similar to, but not typical of, Dupuytren's contraction, and causing a very slight flexion of the ring and little digits at the metacarpophalangeal joints. The patient complained that her grip was weaker, and there was aching in the fingers and palm. In spite of further treatment this condition failed to improve, although it did not get noticeably worse.

About a year ago in the middle finger the patient developed "snap-finger" or "trigger-finger." This differed slightly from the typical condition in that she could easily flex the finger herself into the palm, but on extending it voluntarily