amounts were added to meat and the mixture was submitted to the process as described for strychnine, both alkaloids were readily detected in the final chloroform extract.

Experiments with atropine have, so far, been less successful. The substance is readily enough adsorbed by kaolin, but, probably because it is so easily hydrolysed, we have never succeeded in obtaining a recovery of more than 50 per cent. of the amount added to meat. Usually the recovery has been less than this. With 10 mg. of atropine originally added, however, we have never failed to detect the alkaloid in the final chloroform extract. This is disappointing, although the recovery of atropine is notoriously difficult with the standard Stas-Otto process. Further experiments will, we hope, enable us to obtain better results, and, in particular, experiments are to be made on the extraction of the kaolin without added alkali. It is a reasonable supposition that the process, if it can be suitably modified to give good results with the less stable alkaloids such as atropine, will be as satisfactory as the present method in dealing with the more stable ones.

Need for Further Tests

It is evident that, although it promises well, the method of adsorption on kaolin requires much further testing and possibly modification in detail before it can be applied confidently to the detection of organic poisons in medico-legal work. To be of the greatest possible use it must be applicable to many substances besides alkaloids. Into this field we have not yet ventured very far. Antipyrine, however (as one would expect from its structure), behaves like the alkaloids. Veronal, tested as an acidic substance in contradistinction to the basic alkaloids, is not adsorbed by kaolin, fuller's earth, franconit, or alumina from acid solution; it is, however, readily adsorbed by animal charcoal (Merck's carbo medicinalis), especially easily from a warm solution. After adsorption on charcoal it is readily eluted by ether, though not by chloroform. For the elution the charcoal was moistened with acetic acid and extracted with ether. The ethereal extract was filtered to remove suspended particles of charcoal and evaporated. The purity of the recovered veronal was shown by determination of its melting-point. The recovery varied in different experiments from 75 to 90 per cent. of the amount used (20 mg.).

When both strychnine and veronal were added to minced meat it was found possible, after treatment with trichloroacetic acid, to adsorb the strychnine on kaolin, from which it was later recovered by the chloroform extraction method previously described. The trichloroacetic acid extract from the kaolin still contained the veronal, which was then removed by adsorption on charcoal and elution with ether. Both strychnine and veronal were recovered in good yield and in pure state.

Summary

It is shown that in the extraction of alkaloidal poisons from viscera the laborious and time-consuming Stas-Otto process may be replaced by treatment of the minced material with trichloroacetic acid. This at once yields a water-clear filtrate free from protein and fat, and containing the whole of the alkaloid originally present.

From this filtrate the alkaloid can conveniently be removed by adsorption on kaolin, from which after neutralization it is eluted by hot chloroform. After removal of the alkaloids veronal can be adsorbed on charcoal and eluted with ether.

The method is being tested further and extended to other organic poisons.

We wish to take this opportunity of thanking Mr. J. Whittaker, senior technician in the biochemical laboratory of the Edinburgh Royal Infirmary, who has carried out a number of analyses using the method we have described, and has independently obtained results similar to those reported in this note. We have also to acknowledge a grant from the Moray Research Fund of the University, which covered the expenses of the work.

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AFFECTIONS OF THE EYE WITH RELATION TO SKIN DISEASES *

BY

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There is no lack of evidence to prove that the care of skin diseases is in many ways closely linked with ophthalmic practice. Some overlapping of these specialized branches of medicine is necessitated by the mere fact that the eyelids are covered by skin; and this skin, like that of the rest of the body, may be afflicted by a large number of different lesions—for example, eczema, gangrene, gumma, and lupus. But the amount of actual overlapping is far greater than can be explained by any such simple fact. Dermatologists and ophthalmologists have many other reasons for pooling their clinical experience and acknowledging common interests. In the first place, the eyelids are one of the favourite starting-points for rodent ulcers and various other diseases; secondly, the skin in this situation is loosely attached and exceptionally sensitive; thirdly, there are certain skin diseases with important eye complications; fourthly, ocular treatment may require to be modified owing to the state of the adjacent skin; and incidentally the eye must be safeguarded in applying certain remedies to the upper part of the facial skin.

Oedema of Eyelids

Since they form part of the face and are continually exposed to view, the eyelids are rendered conspicuous by slight changes such as would hardly be noticeable if they occurred elsewhere. Their skin, being thinner and more delicate in texture than that of any other part, is remarkable for its rapid distensibility by oedematous fluid. Thus in some cases of disordered renal function the eyelids are puffed out in the absence of any evident swelling elsewhere. The eyelids also respond with rapid swelling not only to the inflammatory processes involving their immediate anatomical relations, such as styes, conjunctivitis, or acute infection of the tear sac, but also to abscesses that are, relatively speaking, remote. One case recently sent for ophthalmic treatment was a boy whose right eyelids showed considerable oedema. Noticing that the whole of his right cheek was unduly prominent, I asked him to open his mouth, whereupon he was immediately seen to be suffering from an upper bicuspid abscess.

The sudden enormous swelling of the eyelids that is so well known in ordinary "black eye" from a blow with a fist finds an inflammatory counterpart in the dramatic

* Read in opening a discussion in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, Belfast, 1937.

distension that occurs in conjunctival chancre, or ordinary gnat-bite, or erysipelas of the upper part of the face. The last-mentioned disease is, of course, one of the diagnostic pitfalls in this region, because herpes zoster ophthalmicus patients have often been labelled with the diagnosis of erysipelas. In spite of repeated textbook warnings this mistake is not unknown to-day. Confusion is most likely to arise during the early stages, in which there may be spreading oedema and redness of the skin of the eyebrow and upper lid before the characteristic distribution of the zoster rash has manifested itself.

An interesting result of less sudden swelling of the lids is provided by the condition of blepharochalasis, which was first described by Fuchs in 1896. Since that time a number of cases have been collected and commented on in different countries by many observers, including Benedict, so that it is now well established as a clinical entity. The onset is, as a rule, soon after puberty. The upper lids become swollen, at first intermittently, for perhaps a few hours; and then the patient may be free from signs for a few days or even weeks. As time goes on, however, the attacks tend to last longer and longer. These repeated attacks of distension lead to permanent changes in the skin, consisting of redness, thinning, and bagginess. Both the upper lids are usually involved sooner or later, even if at first the condition should be unilateral. In long-standing cases ptosis may supervene, and the skin often becomes creased into innumerable fine wrinkles. There has been much speculation concerning the radical cause of this complaint, which has been closely compared with angioneurotic oedema.

Chemical Irritants

One result of the recent great advances in synthetic chemistry has been to multiply the number of compounds which are known to injure the skin. Thus new industrial diseases are constantly arising to replace some of those which have been eradicated by the enormous improvements in factory conditions brought about during the last two decades. To such substances the eyelids may react in two ways: first, from direct local irritation; secondly, as the expression of an allergic reaction involving their skin before the less delicate skin elsewhere has yet become affected. Certain face powders and other cosmetics have been known to produce acute blepharitis in both these ways. Orris root in shampoos has sometimes caused severe and prolonged oedema of the lids. Hair dyes, certain plants, scents, vapours, and even turpentine in paint may have the same disturbing result among susceptible people, so that the explanation of an attack of blepharitis sometimes requires much ingenuity.

The intolerance displayed by some people towards atropine and other mydriatics is variable in amount, and may be so severe as to simulate erysipelas. It may arise on the first day that the drug is administered, or it may only supervene after long-continued application. It has often been noticed that many of the patients who develop atropine irritation showed a similar intolerance for each successive drug administered as a substitute for atropine—for example, hyoscine, duboisine, and homatropine. This clinical observation would now appear to find a rational support in recent work done by Ridley. He maintains that not only is irritation from a mydriatic predictable by means of a skin test, but that the different mydriatics have a definite quantitative relation to each other so far as their irritative capacity is concerned. By means of specially prepared serum-atropine, experimental immunization against this intolerance has been effected. In the course of his paper, which was read at the

Ophthalmological Society of the United Kingdom Congress this year, Ridley emphasized the extreme rarity of atropine intolerance in the absence of some congestive disease of the eye.

Blepharitis

Dermatologists and ophthalmologists have now for a long time been aware that blepharitis is often the result of, and indeed an actual part of, the condition of seborrhoea, or, less often, of pityriasis. The seborrhoeic facies accompanied by blepharitis is particularly well marked in post-encephalitic Parkinsonism, as has been pointed out by Krestin and others. In the still more serious condition of sycosis the eyelids may suffer so badly that the resulting blepharitis may persist long after the sycosis has settled down. In small children a large proportion of the worst cases of chronic blepharitis begin during convalescence from measles. In view of the grave disfigurement and severe disability which may be occasioned by long-continued blepharitis it is of the utmost importance that the therapeutic resources of these two branches of medicine should be pooled. The disfigurement is mainly due to loss of eyelashes combined with redness of the lid-margins. As a result of chronic scarring in this neighbourhood the sharp lid-margin tends to become obliterated into a rounded line, so that the lower lid is less accurately apposed to the globe. There is also some displacement of the lower punctum, and these two factors combined lead to interference with the normal drainage of tears. The ensuing epiphora may become further aggravated if the patient repeatedly wipes the lower lid in a downward direction. Chronic dermatitis may develop in the adjacent skin, so that a vicious circle is set up. Moreover, the growth of the remaining eyelashes may become so distorted that they scratch the eyeball in the act of blinking, thus causing aggravation of the existing conjunctivitis as well as recurrent attacks of keratitis.

Concerning the immediate local treatment of blepharitis there are two main desiderata: first, that any crusts accumulated at the roots of the lashes should be removed; secondly, that the skin of the eyelids should be treated as gently as possible. Admittedly the thorough removal of inspissated secretion from the lid-margins makes some manipulation inevitable, but this can be kept within reasonable bounds if precautions are taken to soften the crusts by preliminary sponging with clean cotton-wool soaked in warm water. Sponging should, of course, be in the direction of the eyelashes, and not transversely. Repeated application of strong chemicals is assuredly wrong treatment in the great majority of cases. It may reasonably be argued that a preliminary painting with some mild caustic, such as silver nitrate or protargol, is of benefit in selected cases, but in my opinion it is impossible for the skin in this situation to tolerate the frequently repeated application of such substances. There is no need for any large list of lotions. Sodium bicarbonate (2 per cent.), perchloride of mercury (1 in 15,000), and normal saline solution will cover the needs of most cases so far as lotion is concerned. As the individual response of patients is so variable, benefit can be obtained by changing the lotion from time to time, especially where progress is disappointingly slow. Where there is much dermatitis of the neighbouring skin the utmost care must be taken not to let excess lotion flow over. Careful sponging is more to be recommended than sluicing from an undine. Strong ointments should be likewise avoided. In most cases petroleum jelly is as likely to do good as any of the more complicated remedies.

Styes

Encouraging results have been obtained during recent years from the treatment of styes by autogenous vaccines. The usual causative organism is the *Staphylococcus aureus*, and it can be as obstinately persistent and troublesome in this situation as in other parts of the body. Lowered resistance to this organism is often quite compatible with extremely good general health. In many cases of recurrent styes the refraction is normal, the general health good, and the rest of the body is free from staphylococcal outbreaks. It is not to be wondered at that an enormous number of different remedies have been administered by all the usual channels in an attempt to cure repeated styes of doubtful origin.

Damage to the Cornea

By reason of its ectodermal origin the cornea shares the susceptibility of the skin to certain infections and dystrophies. Thus in myxoedema degenerative changes sometimes occur in the cornea comparable to the skin disorder which is characteristic of that disease. Severe corneal ulceration is by no means uncommon as a complication of small-pox. Measles is another notorious cause of corneal ulcers. One of the most dangerous of all skin diseases for the eye is pemphigus, which may lead to desiccation and progressive contraction of the conjunctiva, symblepharon, and widespread corneal opacity. Dermatitis herpetiformis may act in the same way.

A few years ago I saw a boy, aged 14, suffering from shrinkage of the right conjunctiva at the lower fornix. The cornea of this eye was unaffected. The left eye showed marginal blepharitis, together with xerosis and shrinkage of the conjunctiva, and multiple corneal opacities. In this case there was a history of an attack of water-blister all over the body nine years previously, since which time there had been several other attacks, usually lasting about three months. For the two years immediately preceding my examination he had had no bad attack of blistering. During some of the later attacks both eyes, especially the left one, had discharged. There had also been some small ulcers on the palate and inside of the cheeks, but these had left no scars. Dr. Freshwater, who kindly examined this patient for me, was of the opinion that the skin attacks in the past were more likely to have been dermatitis herpetiformis than pemphigus.

Rosacea

Rosacea is one of the most important examples of a skin disease capable of involving the cornea. The great majority of sufferers are exempt from corneal complications. Most of them get no worse eye trouble than a mild scaly blepharitis, together with perhaps an occasional meibomian cyst. Conjunctivitis arising in the course of rosacea is often of sinister import. The characteristic rosacea conjunctivitis is associated with much photophobia and lachrymation, and does not usually remain as a mere conjunctivitis. After a while the enlarged vessels of the ocular conjunctiva show a tendency to invade the periphery of the cornea as forerunners of keratitis.

Rosacea keratitis is always accompanied by excessive vascularization of the cornea, repeated exacerbations at irregular intervals, multiple ulcers, and the gradual formation of corneal opacities which are often disposed in a wedge-shaped or tongue-shaped fashion principally in the lower half of the cornea. In the early stages it is not uncommon to find grey or white nodules at the ocular conjunctiva near the limbus. This phenomenon constitutes one of the many ways in which the clinical behaviour of kerato-conjunctivitis due to rosacea resembles phlyctenular disease. In many cases of rosacea keratitis, especially if

they can be examined at leisure during a quiescent stage, it can be observed that some of the scars are faceted as a result of the thinning which often occurs. This destruction of the corneal substance may be so rapid and severe as to produce spontaneous perforation of the cornea in a certain proportion of cases.

I believe that ophthalmic surgeons are increasingly on their guard not to overlook these cases of rosacea. Patients with a severe facial efflorescence can hardly be missed by anyone who has ever had the opportunity of being shown a case of this disease. Not uncommonly, however, the eyes may be badly affected at a time when there are few obvious signs on the face. In my opinion any obvious or even suspected case of rosacea which may happen, in the first place, to come under the notice of an ophthalmic surgeon should be referred to a dermatologist in order that the actual disease may be systematically attacked. In a large proportion of cases each relapse of keratitis will be found to coincide with a fresh outbreak of the facial trouble. Bearing in mind the fact that spontaneous improvement and long remission from symptoms, even in the absence of treatment, are frequently noted in the course of this disease, it would appear that the actual results of local eye treatment are disappointing. Some cases are said to benefit greatly from the local application of x rays, under expert control, to the cornea. Local ultraviolet light is of doubtful value. Carbolicization of ulcers is to be avoided if possible, because of the danger of exaggerating the tendency to form large adventitious corneal vessels. Atropine, normal saline solution, and the use of dark glasses should be advised until ulceration has subsided.

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DERMATOLOGICAL ASPECT OF AFFECTIONS OF THE EYE*

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Rosacea is the condition with which the ophthalmologist and the dermatologist are most often concerned together. Darier describes rosacea as a persistent passive erythema of the face, which leads to the production of telangiectases and is sometimes complicated by pustules. In one group of cases, he says, rosacea is preceded by a first stage of recurrent attacks of acute congestion of the face. In the second group it is derived from an affection of the epidermis which he has named "kérose." This we usually call the seborrhoeic state. Thus rosacea is primarily a vascular disturbance affecting the cheeks, nose, forehead, chin, and sometimes the neck and the temples. This disturbance has been most commonly attributed to digestive troubles, but I have welcomed the story of flatulence, fullness after meals, flushing after meals, alcohol, tea, etc., and any other symptoms of gastric disturbance, with some relief when such a history has been forthcoming. On the contrary, in at least one-half of my cases no amount of cross-questioning has been successful in extracting the admission of gastric or intestinal symptoms of any kind. I have, however, been

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