

lasting only a few hours, sometimes recurring again in the evening. They are not due to conjunctival secretion. Usually the failure of vision follows the dropsy, but in some cases it is noticed at the same time, and in two cases it preceded the dropsical signs by a short interval. Such patients complain much of the sight becoming very foggy after looking at near objects. Two-thirds of the cases showed pathological cupping of the disc from 2 to 6 D. in depth—a few showed only physiological cupping, though usually of considerable extent, and a few showed no cupping at all. The retinal veins are usually engorged, and both they and the arteries showed marked pressure-pulsation in several cases. Priestly Smith's scotometer frequently gave negative results, Bjerrum's sign being absent. The fields were generally contracted, especially at the nasal side. In none was the eyeball enlarged. None had K. P. or signs of iritis past or present. None of the patients had markedly small corneæ. Two were myopes. Two-thirds were men and one-third women. The ages of all except two were under 36. Eight were under 28 and there was no family history of glaucoma forthcoming.

The questions naturally arise as to whether these cases are really glaucoma, and if they are, or whatever they are, are they due to epidemic dropsy? That they are directly due to that disease is rendered probable by their numbers and by the ages at which they have been met with. A case now and then of ordinary chronic glaucoma occurring in a subject of epidemic dropsy would not prove anything, even if two or three occurred in the same family, for nothing is commoner than to find more than one member of a family attacked by chronic glaucoma. It is of the ordinary type, however, and is usually met with in elderly subjects.

When we find cases of unusual type—varying from cloudiness of the cornea with halos and slight increase of tension, up to almost complete blindness with marked increase of tension, deep cupping, etc. (still of unusual type, however—as regards anterior chamber, pupil and injection), occurring in young people who are the subjects of, or recovering from, epidemic dropsy, we cannot refuse to regard the latter disease as being the cause of the former. The fact, that some of the classical signs of glaucoma were absent does not prove much. It rather confirms the view that the disease really is true glaucoma. For we know that in buphthalmus or glaucoma in young subjects, such as most of those patients were, the pupil is rarely dilated, the anterior chamber is never shallow, and the tension is not always much increased. The grosser signs of buphthalmus, *viz.*, enlarged globe, displacement of the lens and irido-donesis, would not be found in cases that had lasted so short a time as these.

Supposing that the disease is glaucoma due to epidemic dropsy, how does the increased

tension come about? Rise of intra-ocular tension must be due either to increased formation of lymph or to diminished outflow. Both conditions may be present. In the cases now described evidence of diminished outflow is incomplete. The anterior chamber is not shallow and the filtration angle *appears* open while the ciliary veins are not enlarged. There were no signs in any case of inflammation of the uveal tract, so that this may be excluded as the cause. Having regard to the cardiovascular phenomena met with in epidemic dropsy it seems reasonable to attribute the ocular symptoms to a passive congestion of the uveal tract leading to increased production of lymph. These cases tend to prove A. Terson's view that glaucoma may in some cases be nothing more than œdema in a closed cavity. Extensive observations on the blood pressure in epidemic dropsy are wanting, but in several of these cases it was taken by Martin's modification of Riva-Rocci's sphygmomanometer and proved to be low as indeed one's pulse examinations had led one to expect. In the few in which it was high the patients were elderly, and the certainty of the connection between the rise in tension and the dropsy was less certain. The explanation may be, therefore, that there is a passive œdema and transudation of lymph into the eyeball, setting up increase of tension with all its consequences. This transudation would be the more effective if the lymph secreted or filtered off were of a more colloid nature than the ocular lymph usually is. The excretion through the folds of the pectinate ligament into the canal of Schlemm would be interfered with thereby and tension more easily raised. There is no evidence, I believe, as yet to show what the lymph or serum composition or blood coagulation time is in epidemic dropsy. Again, the question arises, could the increased secretion and possibly altered composition of intra-ocular lymph be due to irritation of secretory nerves in the eyeball? This takes us back to Donders' explanation of glaucoma, and considering the strong views held by many as to the identity of epidemic dropsy and beri-beri (a disease in which the nerves are markedly attacked by the poison), it is a question that should be taken into account.

AN INDIAN SCREW-WORM.

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THE name "Screw-worm" is so tersely descriptive of the larva in question, both as regards its appearance and its boring properties, that it seems a mistake to limit it to the American species.

Theobald, in Braun's "Animal Parasites of Man," says:—"This (*Lucilia Macellaria* [Fabricius]) is an American fly, which deposits its eggs on ulcers, in the auditory canals, or nostrils of persons sleeping in the open air. The larvæ ("screw-worms"), which are provided with strong spines, work themselves into the nasal and frontal sinuses, into the pharynx, larynx, etc., perforate the mucous membrane and even the cartilage, and may cause the death of their host." He makes no mention of its occurrence outside the American tropics, although he records the fact that the maggots of other blue-bottle and green-bottle flies may be found in the wounds or natural apertures of man in other parts of the world.

The fly is labelled with so many synonyms that one cannot but suspect some confusion of species. *Chrysomyia* or *Compsomyia Macellaria* seems to be the name most generally accepted, but *Lucilia Macellaria* is frequently quoted, and Theobald gives the additional synonyms of *Lucilia Hominivorax* and *Calliphora Anthropophagar*. The latter titles appeal to anyone who has seen the horrible lesions produced by these man-eating maggots. Manson gives a short but graphic description of the American form of myiasis, and suggests that similar anthropophagous larvæ must exist in Africa and the Eastern tropics, although they have not yet been identified. MacLeod, in Allbutt's system, says:—"This fly (*Lucilia Macellaria*) occurs principally in South America, but it has also been encountered in North America, Cochin China, and Tonquin.

It is not a very far cry from Indo-China to Assam and Eastern Bengal, and the climates in summer are practically identical, so it is permissible to suppose that the cases mentioned by MacLeod were due to the maggots described here.

Besides, as Daniels points out, the American fly has a striped thorax, whereas none of the green-bottles associated with this case had any markings whatever.

The fly and its larvæ are common enough, and the latter are frequently present in the sores of cattle and more rarely in dogs and cats.

That the disease is rare in man is only due to the fact that even the filthiest and most lethargic coolie objects to flies crawling about his ears or nostrils, and even if oviposition has been accomplished, the first irritation of the young maggots would in most instances lead to their speedy expulsion. Of my own cases all have been wretched, cachectic creatures, undermined by malaria, anæmia, or enteritis, marked with the scabs and pustules of neglected itch or ring-worm, and lethargic and filthy in the extreme.

The Fly.—This muscid is about the same size as the ordinary domestic blue-bottle, and has

the same dashing noisy flight. Its thorax and short, round abdomen are of a uniform metallic green, and exhibit no stripes or other markings. It is comparatively hairless, although the lens shows a few strong longitudinal bristles on the posterior part of its thorax. It has large brown compound eyes and small antennæ with plumose arista. The proboscis is soft and in constant use, apparently feeling or tasting everything as the fly crawls actively over open sores or fouled dressings or bedding. Like other *Lucilia* it is not particular what it eats, or where it lays its eggs, and I have reared screw-worms on a piece of putrid meat; but they undoubtedly prefer living sores, and may be found burrowing in the festering wounds of bullocks, dogs and cats. That man is so rarely attacked is only due to the fact that he will not tolerate any form of myiasis that he can possibly avoid.

The Larva.—This is most aptly described by its American name of "screw-worm." It is 16 mm. long and 3 mm. broad at its widest part. Looked at from above it is quite straight, one end tapering to a point, and the other, less tapered, forming a sucker, while the raised belts or ridges dividing its segments add to the screwlike appearance. Viewed laterally, however, this resemblance is lost owing to the natural curves of the larva. The body is white, sometimes dark with ingested blood, and is divided into 12 segments by raised belts. At both ends the belts are much smaller than the intervening segments, but in the middle of the body both elements are of equal size, the belts having a peculiar doubled appearance on their lateral aspects. These belts or ridges are darker and harder than the body of the maggot, feel horny to the dissecting needle, and are studded with short spines. The last segments of the tapered end is provided on the ventral aspect with a pair of strong, black chitinous hooklets. The other end of the larva terminates in a powerful circular sucker, armed with six teeth and provided centrally with a pair of strong, black, kidney-shaped maxillæ, hard and gritty to the touch of the dissecting needle. Immediately below this remarkable armature is a knob with 2 papillæ that appear to act as feet. The maggots, when douched from their fostering cavities, evince an intense dislike to daylight, and progress with extraordinary activity towards the nearest available hiding-place. They appear to travel backwards, stretching out their tapered extremity and striking the hooklets into the ground in front of them, and then bringing up the remaining segments by a telescopic action. The sucker, being turned upwards, takes no part in this movement.

Notes on the case.—Saro, Dom, female, age 35. Came to Assam in 1894, and for many years was one of the best coolies on the garden. During the past 12 months she suffered frequently from various ailments, including ankylostomiasis,

malaria, anæmia and dropsy. She lost weight rapidly, had a chronic cough, hectic fever and occasional asthmatic attacks, but no positive signs of phthisis. She was a very troublesome patient, and frequently absconded from the hospital, presently returning in a half-starved and filthy condition.

May 28th: Admitted to hospital suffering from Bronchitis and Anæmia, accompanied with cough and nasal catarrh, very lethargic, debilitated, cachectic, and filthy in the extreme.

June 3rd: Had an asthmatic fit, and sneezed and spat a little blood.

June 4th: Nose swollen, black spot on bridge, foul smelling discharge, streaked with blood; severe frontal headache.

June 5th: Slough on bridge of nose separated, showing deep, perforating ulcer communicating with nasal cavity.

June 6th: Douching brought away 6 screw-worms in the morning and 4 in the evening.

June 7th: Active treatment with chloroform, turpentine and nasal douche evicted upwards of 50 screw-worms.

June 8th: 40 screw-worms removed in the morning and 60 at 12 noon, none in the evening.

June 9th: No more screw-worms: Oedema subsided, pain less, fœtor diminished, and headache relieved.

June 12th: After 3 days apparent improvement, the left side of the nose and left cheek suddenly swelled up, and 70 screw-worms were removed by the nose.

June 13th: The skin below the left eyebrow sloughed, and the orbital cavity was found packed with hundreds of the maggots.

June 14th: The remains of the nose sloughed, disclosing a single cavity stripped of everything down to the bone.

June 15th: The right orbit was attacked, and the patient complained bitterly of deep seated gnawing pain in her cheeks, evidently the invasion of the antra.

June 16th—28th: The process of destruction continued in spite of active treatment, 50 to 70 screw-worms being removed daily. Both orbits were excavated and the eyeballs pierced and destroyed. The skin sloughed as the invasion proceeded until the face was entirely eaten away. There were several generations of screw-worms present, varying greatly in size, but all showed the same characteristics under the lens. The patient, though heavily drugged, continued conscious to the end, and took her nourishment regularly, although it was difficult to get anyone to attend to her properly on account of the horrible fœtor. Cerebral symptoms were unfortunately conspicuous by their absence, and she

lingered on for a month from the date of her admission.

June 28: The patient died of exhaustion.

Post mortem.—The appearance of the patient at death is shown in the last photograph. The skin, undermined by the maggots, had sloughed off from below the nostrils to halfway up the forehead. The skin of the eyelids and cheeks had also sloughed. The maggots had not attacked the skin itself except occasionally when some of their tunnels emerged on the surface. But they had attacked everything else; subcutaneous tissue, muscle, mucous membrane, cartilage, periosteum and even bone. The nasal septum had completely disappeared and the turbinates were stripped bare and gnawed down to mere ridges. The palate had escaped thanks to frequent gargling, but the Eustachian tubes were eroded, although no maggots were found in the tympanic cavity or mastoid cells. The frontal sinuses were stripped of their lining membrane, and the antrum of Highmore on each side was packed with larvæ. Both eyeballs were pierced and destroyed, and the recesses of the orbital cavities contained hundreds of maggots. The brain and its membranes showed no signs of invasion, and appeared to be perfectly normal, thus fully accounting for the unusually prolonged nature of the case.

Remarks.—About 10 years ago I had 2 cases of screw-worm in Cachar; one of which (myiasis aurium) was fatal, and the other (myiasis narium) recovered. In Tezpur District I have had one other fatal case (nasal) that died in a few days with meningeal symptoms, and two simple cases of myiasis of the scalp and hand respectively. I have no doubt the disease is fairly common in India, granting the necessary adjuncts of filth, lethargy, cachexia, and nasal or aural catarrh.

I am indebted for much valuable information to the authors mentioned in the text.

A Mirror of Hospital Practice.

NOTES FROM THE HUGHLI HOSPITAL,
1903—1909.

BY LIEUT.-COL. D. G. CRAWFORD, M.B., I.M.S.,
Civil Surgeon, Hughli.

(Continued from page 340.)

XII. *Case of fracture of the skull.* Ram Sujan Panre, Hindu male, 30, admitted to the Imambara Hospital at 10-30 P.M., on 3rd June 1906, having been knocked over by an engine, which struck the back of his head, at Bandel junction. He had a wound, $3\frac{1}{4}$ inches long, $\frac{1}{8}$ inch broad, on the back of the head, vertical from

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PHOTO., JUNE 14TH, 1909.

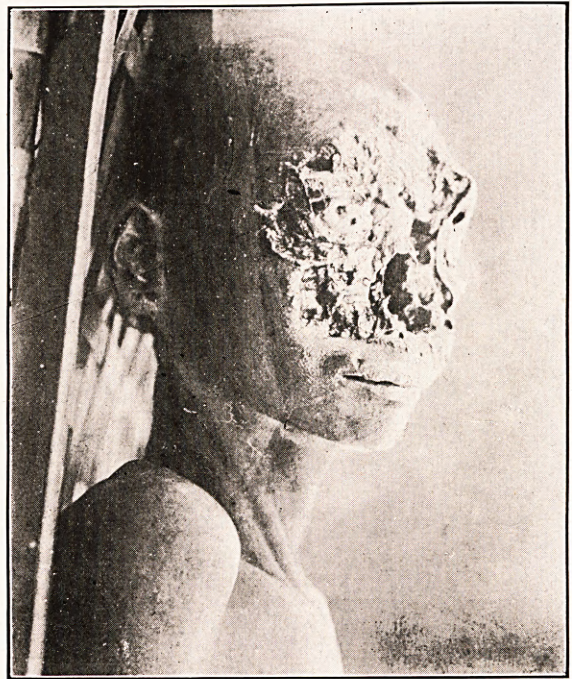
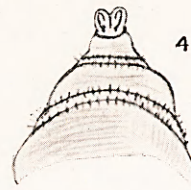
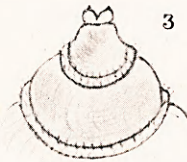
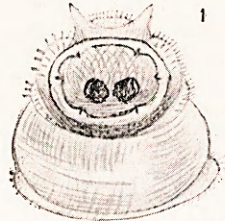
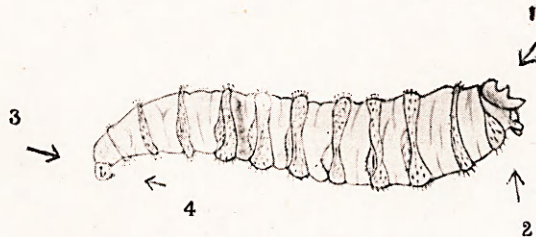


PHOTO., JUNE 28TH, 1909.
(Post-mortem.)



1. Dorsal view of sucker and footlets. 2. Ventral view of footlets. 3. Dorsal view of hooklet papillae. 4. Ventral view of hooklets embedded in their papillae.



Lateral view of Screw-worm. The arrows indicate the points of view of the four preceding diagrams. The curves are more pronounced than in life owing to the action of the spirit.