INTRODUCTORY.

There came recently under the care of one of us (D. B. T.) an Egyptian soldier (Case 1) with a peculiar skin lesion, the character of which is well shown in the accompanying photographs taken by Dr. Beam. The patient was sent to the Wellcome Research Laboratories, where it was suggested that it would be well to examine the contents of the skin lesions and also to make a histological examination of the growths. This was done by one of us (A. B.), with the result that large numbers of a species of Leishman-Donovan body, presumably L. tropica, were found; but, while some sections of the growths bore a close resemblance in their pathological histology to true Oriental sore, others presented peculiar features. Indeed, both clinically and histologically the condition was at first suggestive of that rare skin disorder which bears many different names, but is perhaps best described as benign multiple cystic epithelioma or epithelial cystadenoma of the skin. The history showed that we were dealing with a disease of considerable interest, an interest not lessened by the discovery of a second very
similar case, which in all probability had become infected from the first.

It is proposed in the present paper to discuss the condition generally, to give the clinical histories of the two cases, and to deal with the microscopic findings, leaving till a later period the account of the attempts which are being made to cultivate the parasite, the animal inoculations, the feeding experiments with insects, and the question of prophylaxis and treatment.

Case 1.—A. H. (fig. 1), soldier in No. 4 Company, 16th Battalion, Egyptian Army, aged 20, an Egyptian fellah from the village of Nezli Bedeni in the Mudirieh of Minieh, Upper Egypt. He is a stoutly-built man, not very intelligent, in good condition, but not of such fine physique as is usually seen amongst the Egyptian soldiery. He has had five months' service in the Egyptian Army, the last four months of which have been spent in the Sudan.
Admitted to the Military Hospital, Khartoum, on October 9th, with soft, pink, keloid-like raised growths on the face, neck, shoulders, arms, back, and inner surface of the thigh.

Family History.—Father, aged about 70, developed similar growths six years ago, and at the present time they are more numerous and much larger on his body than on that of his son.

Since the growths appeared he has become a lunatic and has lost his hearing. The tumours are said to be in some instances many inches in diameter, and have never showed any sign of ulceration or breaking down. Mother dead, cause unknown. Brothers: One brother and one step-brother, neither is affected; the former, aged about 40, would appear to be phthisical. Sisters: Six in number and all unaffected save one. Eldest aged about 35; youngest aged
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about 12. The eldest sister is married, and has three girls, all healthy. The second sister has two children, a boy and a girl, both healthy. The third sister has one girl who is healthy, but the mother has for the past four and a half years suffered from the same skin disease as her brother. She became infected when living at home, and in her case the tumours are about as numerous as in the brother's. Her husband shows no sign of the disease. The fourth sister has one girl who is healthy. The two youngest sisters are unmarried. A paternal uncle died of phthisis four years ago. An aunt, aged 75, is healthy. Patient's grandparents are dead, cause of death unknown.

Personal History.—As a child patient had small-pox. There is no history of any venereal complaint. No history could be obtained as regards the presence of insect parasites in his house or village.

History of Present Illness.—The growths, which, as will be seen, occur for the most part in groups (fig. 2), began to appear first of all upon the left side of the neck two years ago, when he was living in his native village. Then the left side of the face became infected eight months ago, followed by the right shoulder and right upper arm six months ago. Four months ago the neoplasms appeared on the outer surface of the left forearm, and fourteen days ago very small papules presented themselves on the inner surface of the left thigh about the region of Scarpa's triangle. In addition, growths, the date of appearance of which is uncertain, are present over the insertion of the left deltoid, and nearly in the centre of the back slightly to the left of the spinal column.

The growths are said by the patient to appear first as small, pink, circular points raised above the surface of the skin and of about the size of a pin's head. They grow until they reach the size of a pea, when secondary points appear to develop at the periphery of the primary growths, and as a rule separated from these latter by narrow tracts of healthy skin. These secondary tumours develop and become absorbed into the parent growths. As a result the main tumours increase in size and the whole mass takes on an irregular shape.

The patient complains that the growths itch intensely when exposed to the sun's rays, and that they pain him when pressed or when they come violently into contact with anything hard. The people of his village pronounced him "Waash," i.e., unclean, and refused to eat with him.

Clinical Examination.—General appearance healthy, expression dull and apathetic, no wasting, no sign of any systemic disease,
no glandular enlargement. Heart, lungs, liver and spleen normal. Urine, no sugar, no albumin.

The growths in the situations indicated resemble nothing so much as the mountains on a relief map (fig. 3) looked on from above. There is the main elevation with spurs and ridges projecting from it, these latter representing the secondary growths which have united with the parent lesions. The tumours are of a definite pink colour, contrasting well with the brown pigmented skin, have a shiny aspect, are neither scaly nor ulcerated, and show no signs of breaking down. To the touch they feel smooth, firm yet soft in consistency, are easily movable, and are not adherent to the deeper tissues. When punctured they either yield blood alone, or blood with serum, or blood and a small quantity of white,
cheesy sebaceous-like material. After puncture the site of injury heals readily and a small scale or scab forms. This is well seen in fig. 2. On section, to the naked eye the growths appear fibrous.

![Image of Neck growth](image)

**Fig. 4, Case 1.**—Neck growth.

The following are the measurements of the growths:—

- On the face ... ... ... 20 mm. x 18 mm.
- On the neck ... ... ... 35 mm. x 15 mm. (figs. 3 and 4).
- Over insertion of left deltoid ... 5 mm. x 5 mm.
- On outer surface left forearm ... not measured—excised.
- On right shoulder ... ... ... 20 mm. x 14 mm.
- On right upper arm ... ... ... 29 mm. x 18 mm.
- On left thigh... ... ... 23 mm. x 24 mm.
- On back ... ... ... 24 mm. x 24 mm.

**Blood Examination.**—An examination of blood taken from the finger made on October 10th showed 6,050,000 red blood-corpuscles and 5,600 leucocytes. Leucopenia therefore is present. The hämo-
globin was not determined—the blood was of a good colour. Its coagulability was markedly increased. A differential leucocyte count was made with the following result:

- Eosinophiles ... ... ... ... ... ... ... ... ... ... ... ... 11.6 per cent.
- Polymorphs ... ... ... ... ... ... ... ... ... ... ... ... 57.4 "
- Mononuclears ... ... ... ... ... ... ... ... ... ... ... ... 4.2 "
- Large lymphocytes ... ... ... ... ... ... ... ... ... ... ... ... 8.6 "
- Small lymphocytes ... ... ... ... ... ... ... ... ... ... ... ... 16.2 "
- Transitionals ... ... ... ... ... ... ... ... ... ... ... ... 3.0 "

With the exception, therefore, of a marked eosinophilia, the result probably of infection with metazoan parasites, so common in these fellaheen, the count was normal. No protozoal parasites of any kind were found.

Very different was the differential count in blood taken at the same time from the growth on the neck. It gave:

- Eosinophiles ... ... ... ... ... ... ... ... ... ... ... ... 2.2 per cent.
- Polymorphs ... ... ... ... ... ... ... ... ... ... ... ... 26.8 "
- Mononuclears ... ... ... ... ... ... ... ... ... ... ... ... 23.6 "
- Large lymphocytes ... ... ... ... ... ... ... ... ... ... ... ... 40.8 "
- Small lymphocytes ... ... ... ... ... ... ... ... ... ... ... ... 3.2 "
- Transitionals ... ... ... ... ... ... ... ... ... ... ... ... 3.2 "
- Basophiles ... ... ... ... ... ... ... ... ... ... ... ... 0.2 "

There were many free nuclei of disintegrated mononuclears. Here, then, we find a marked increase of the larger mononuclear cells at the expense of the polymorphs. The blood was taken by means of a fine capillary pipette thrust through a small needle puncture into the depth of the growth. This slight operation was not unattended with pain, the patient wincing and complaining.

Before going further, it is interesting to compare these results with those obtained by Cardamatis \(^1\) in several cases of Oriental sore in Greece. In three cases he took blood from the finger and from the congestive zone at the periphery of the lesions. His counts are not at all unlike those recorded above, and he found in the blood from the congestive zone the same marked increase of large mononuclear elements as we record in the case under discussion. Indeed, as regards his third case the counts are almost identical. As mentioned, blood taken from the growths by puncture and made into films in the usual way, when fixed and stained by the Leishman method, showed parasites belonging to the genus Leishmania. It was thought advisable to examine the contents

\(^1\) J. P. Cardamatis (May 12, 1909), "Leishmaniases en Grèce (Bouton d'Orient)," 
of nearly every one of the growths. It will be best to consider these briefly in detail.

(1) Face Growth.—Parasites numerous, both free and in the mononuclears; none seen in the polymorphs. Many of the mononuclears are crowded with them, thirty being no uncommon number in one cell. Some of these mononuclear cells are very large with much extra-nuclear protoplasm, and are evidently the large endothelial cells commonly found infected in cases of kala-azar and Oriental sore. The free parasites occur singly, in pairs, and in the larger groups which have been so often described by various observers. As many as twelve lying in close apposition were counted in one clump. The blepharoplasts are both rod-shaped and spherical. Single, somewhat large forms with curved blepharoplasts were noted. In addition there are small coccoid bodies which may be free nuclei or special parasitic forms, and there are also somewhat pear-shaped or wedge-shaped cells staining a light rose pink, and exhibiting each a small spherical nucleus but no blepharoplast.

(2) Neck Growth.—The parasites are not so numerous as in (1). They show vacuoles better, and occur both free and in the mononuclears (fig. 5). Curved blepharoplasts were again noted in some of them. Blood and white cheesy matter mixed were also obtained from this growth, kept in a sealed, sterile capillary tube for six
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hours at room temperature (about 35° C.), and then smeared and stained. Parasites were found free and in mononuclears, and groups of what seemed to be large cocci were observed, as was a number of pale blue homogeneous, structureless masses with regular outlines, probably formed from the matrix of ruptured host cells.

(3) **Left Upper Arm Growth.**—Parasites fairly numerous. Coccoid bodies and pink pyriform and wedge-shaped cells present; small clumps comparatively common. A large cell noted which stains a pale blue, and contains a faint indication of what may be a large nucleus, although the latter stains more faintly than the cell protoplasm. Similar large blue cells have been seen in splenic smears from cases of kala-azar.

(4) **Left Forearm Growth** (subsequently excised).—Serum and a little blood was obtained. There were many parasites in the mononuclears. Cells like degenerated leucocytes present.

(5) **Right Shoulder Growth.**—Large numbers of parasites both free and in the mononuclears. Free clumps well seen. Degenerated white cells noted.

(6) **Right Upper Arm Growth.**—Parasites very numerous and are more spherical in shape than in the other films. Mononuclears crowded with them. Vacuoles well marked. Rod-shaped, curved, and spherical blepharoplasts. One form noted with two nuclei, a well-marked vacuole and a single curved blepharoplast. This possibly represents a dividing parasite. Some very curious masses observed, either the result of fusion or of division. A small accessory growth situated close to the main tumour also showed the parasites.

(7) **Growth on Back.**—A film made from the content of this small growth showed no parasites.

(8) **Thigh Growths.**—From these tiny tumours only white, cheesy, sebaceous-like matter was obtained. Films were made of it and coccal forms of two kinds were found, one resembling those seen in the smears of similar material from the neck growth and taking on a deeper stain than the other, which consisted of small cocci of the usual type occurring largely as diplococci.

**Morphology of Parasites.**—For the most part the parasites conform to the typical *Leishmania tropica*, but will probably require special and detailed description. Practically all the forms which have been described in Oriental sore are present, but careful examination will be necessary in case differences, either in structure or arrangement, exist. At present we need only mention the curved blepharoplasts, which struck us as peculiar, and the bodies
staining a rose-pink. Examination of sections stained with eosin and haematoxylin showed these latter to be plasma cells.

The special form of large cocci found in the growths containing no Leishmania and in the cheesy matter from the neck tumour also claim attention. They are four to six times the size of the small cocci present, and tend to stain very feebly at their centres. Indeed, some of them present centrally placed unstained areas. They may occur in clumps or in pairs and then may resemble in some measure huge gonococci. It is not likely that they are concerned with the Leishmania infection save in the way of symbiosis.
Carter\(^2\) has pointed out that \textit{L. tropica} grows best in culture when associated with masses of cocci and bacteria.

Although the suggestion as regards the origin of the blue, homogeneous masses may be correct, it is curious that many of them are very regular in outline, spherical or oval, and resembling, as one may say, for want of a better term, "washed out" lymphocytes whose nuclei have vanished. The white, cheesy matter is no doubt sebaceous in origin.

\textit{Histopathology of Growths.}—The first growth excised was a

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure7}
\caption{Section of small growth first removed showing proliferation of the rete Malpighii. Van Gieson's stain. \(\times 50\) diam.}
\end{figure}

small one, accessory to that on the left forearm, subsequently removed.

The tissue was fixed in formol alcohol, hardened in alcohol, cleared in xylol, imbedded in paraffin, and after the usual treatment stained in a variety of ways. The earlier sections were slightly thick, and at first glance exhibited all the appearance of a squamous carcinoma of the skin. The most prominent feature is the presence of numerous typical cell-nests (fig. 6), which, accord-

![Image](https://example.com/image.png)

**Fig. 8.**—Cell-nest showing pigments in central inclusion. Van Gieson's stain. *x* about 100 diam.

...ing to Lazarus-Barlow, may for all practical purposes be taken as diagnostic of that condition. Leaving the clinical history out of account, however, it was soon evident that we were not dealing with a malignant growth. There is an increase in the rete Malpighii, long branching columns of which stretch down into the underlying tissue (fig. 7), but there is no actual invasive process,

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3 W. S. Lazarus-Barlow (1903), "The Elements of Pathological Anatomy and Histology."
and there are no isolated masses of prickle cells. In these respects the condition resembled a papilloma. The cell nests, however, are most typical. At the centre of one of the nests (fig. 8) there is a clear, glistening, oval body about 28 μ by 18 μ, containing numerous grains of what is undoubtedly pigment. It is evident that there has been a hyper-chondrification of the stratum corneum, as the body stains in the same way as the horny layer, giving rise to this curious appearance, an appearance not unlike a large molluscum body, but clearer, more glistening, and, as mentioned, studded throughout with pigment. It is known that in the negro's skin pigment granules may be traced from the stratum granulosum to the outermost layers of the stratum corneum. The same is no doubt true, though to a less extent, of the Egyptian. The cells of the rete show marked perinuclear vacuolation, while the papillary layer of the skin is hypertrophied, or at least appears to be so, invading and even cutting off and disintegrating portions of the rete, while itself invaded by infiltrating cells. There are islands of cellular tissue studded about in the mass of the prickle cells (fig. 6). In these earlier sections the subepidermic tissue presents the appearance of a cellular connective tissue undergoing inflammation and some proliferation, and does not apparently conform to the descriptions in English text-books and papers of subepidermic tissue in Oriental sore, albeit examination with high powers of the microscope showed that the cytoplasm of numerous large cells with vesicular nuclei was full of Leishman bodies. These showed up best in sections stained by Van Geison's method or by hæmatin. Free parasites were also visible in the dilated capillaries, in mononuclear leucocytes lying amongst the cells, no doubt as a result of diapedesis, and between the cells themselves, presumably in the sero-fibrinous effusion. Some of the smaller vessels in this tissue showed distinct endarteritis.

At this stage one may quote the description given by Fordyce of the histo-pathology of multiple benign cystic epithelioma. He says that under the microscope the tumours are seen to be “made up of irregularly rounded, oval and elongated masses and tracts of epithelial cells corresponding to those in the lowermost layer of...
the epidermis and in the external root-sheath of the hair-follicle. The epithelial masses may be distinct or made up of intercommunicating bands and tracts, in some places resembling coil-ducts. Cell 'nests' are met with as in malignant epithelioma, enclosing horny, granular and colloid tissue. Colloid degeneration of individual cells is also encountered in the cell masses. The connective tissue about the cell collections is somewhat condensed, but is not the seat of any inflammatory process."

It must be confessed that for the most part this description applied very well to the earlier sections studied, and it was found that Allan Jamieson, quoting various authorities, speaks of epithelial cystadenoma as a species of acanthoma, while the description he gives does not differ markedly from that stated above.

It will perhaps be interesting also to consider some of the latest utterances in English or American text-books on the histo-pathology of true Oriental sore.

Manson says little: "Section of the papule displays an infiltration of the derma by a mass of small round granulation cells. These lie between the elements of the tissues, particularly about blood-vessels, lymphatics and sweat-glands; towards the centre of the lesion they completely replace normal structures."

Wright in his original paper states that "the lesion consists essentially of a very extensive infiltration of the corium and papillae by cells, accompanied by atrophy and disappearance of the epidermis of the part. The infiltrating cells are plasma cells, various kinds of lymphoid cells, and large cells with single vesicular nuclei and a relatively large amount of cytoplasm in which are large numbers of the micro-organisms. These large cells, over extensive areas, are very numerous and constitute the principal part of the infiltration. They are regarded as proliferated endothelial cells."

Brooke mentions the researches of Carter, Reihl, Leloir, Unna and Kuhn, «who all found it to be a chronic sero-fibrinous inflammation. There is a round-celled infiltration of the skin and subcutaneous tissue. In the centre of the nodules this infiltration is so dense that the tissue elements are entirely disintegrated. The

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6 W. Allan Jamieson (1901), "Skin Diseases in Gibson's Text-Book of Medicine."
9 G. E. Brooke (1908), "Tropical Medicine, Hygiene and Parasitology."
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Lymphatic vessels are dilated and there is much oedema. Necrosis proceeds in the centre of the infiltrated tissue. There is cornification of the hair root-sheaths, preventing a subsequent new growth of hair at the spot. There is endothelial proliferation of the blood vessels, often leading to their entire obliteration.

Christopher and Stephens in their latest edition do not deal with the subject, nor does Daniels. The English translation of Scheube’s work has a passage much like that in Brooke’s book.

There is an infiltration of the skin and subcutaneous tissue with small round oval cells, multi-granulated and giant cells, and also a few leucocytes. In the centre of the nodules, over which the epithelium is attenuated, the infiltration is so dense that the tissue elements are entirely disintegrated, while towards the periphery the cells form small centres, mostly situated in the vicinity of blood vessels and lymphatics and sweat glands. The lymphatic vessels and spaces are uncommonly wide and there is much oedema. In the centre of the infiltrated tissue small necrotic particles are enclosed, and this, when the sections are stained, exhibits large fibrinous contents; the tissue otherwise also contains much fibrin (Unna). Those hairs that still exist are, according to Kuhn, partly broader, partly narrower, occasionally ravelled, and they always exhibit a granular appearance. The root sheaths are sometimes dilated. Here and there the inner root sheaths, and to a great extent the outer root sheaths, are also transformed into a shiny mass, probably cornified. In the connective tissue around the hair follicles cavities are found filled with shiny, flaky masses which, according to the way they are cut on section; appear of a round or oval form. In consequence of the cornification of the root sheaths no new growth of hair is possible. The blood vessels exhibit endothelial proliferation which may lead to their entire obliteration.

Firth, in Allbutt’s “System of Medicine,” has quite a lengthy description as follows:

“The histology of these sores has been thoroughly worked out; and if sections be made of the initial papule before ulceration no difficulty is experienced in demonstrating that the whole thickness

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of the skin and subjacent tissue is infiltrated with lymphoid and epithelioid (mesoblastic) cells, accompanied by more or less complete disintegration of the normal tissue elements thereby. In the centre of the papule the infiltration by young round cells is so complete that little can be seen of the sweat glands. Towards the edges of the diseased area the new cells occur in isolated clusters or groups, chiefly round the blood-vessels or lymphatics. The infiltration does not seem primarily to involve either the hair follicles or the sebaceous glands. The individual cells of this infiltration vary from 7 to 9 \( \mu \), their nuclei from 5 to 6 \( \mu \); the nuclei are large, generally single, but in parts multiple. The anatomical structure of the papule and surrounding skin indicates that Oriental sore is of the type of a granuloma; in fact the most elementary microscopical examination of the lesions shows that it is a reaction of the skin against some virus of low virulence, which has produced granulomatous changes in the corium beneath and round the ulcer. So chronic are the changes which are sometimes met with that a close resemblance to tuberculosis may be occasioned. It is important to bear this in mind, because it has several times been suggested that certain of these lesions are tuberculous. Doubtless, syphilitic and tuberculous ulcers have from time to time been placed in this group, but that there is an entity to which the term 'Oriental sore' is applicable, which is due to some virus different from syphilis and independent of tubercle bacilli, seems certain."

Jackson, on the other hand, states that the pathological anatomy of tropical ulcer needs to be cleared up by further study. None of these accounts, it will be seen, mentions the presence of cell-nests, or even the increase in the rete Malpighii which was so marked a feature in the sections of the small growth first studied. We were inclined to ask if this tumour was taking on malignant features, if it was a true Oriental sore in the papular stage, or if these descriptions referred only to the ulcerative stage of the lesion. Manson's brief statement, however, distinctly mentions section of the papule.

Another and larger growth of four months' duration—that on the outer surface of the left forearm—was excised and examined. After excision, blood was taken from the cut surface, but no parasites were found in it, nor were they present in blood-stained serum obtained by thrusting a capillary pipette through this surface and some distance into the tumour mass. This is a point of some interest.

14 T. W. Jackson, Tropical Medicine, 1907.
Thin sections were made of the growth, and stained by Leishman's method, with Heidenhain's iron-haematoxylin, with haematin, Van Gieson's stain, eosin and methylene blue, haematoxylin and thionin blue, and, following Nattan-Larrier and Bussière, with carbol-thionin.

![Image](attachment:image.png)

**Fig. 9.**—Section of second growth excised showing down-growths of rete. The cellular, infected layer is well seen. Hematein stain.

The appearances presented by these sections were much more like the description quoted. There was not nearly so great a proliferation of the rete Malpighi, though here also, in some parts, a tendency to downgrowth and to the formation of cell-nests (fig. 9)

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was noted. A study of the sections stained with eosin and methylene blue, however, showed that the cells present in the subepidermic layer answered very closely to those mentioned by Wright. Indeed, all the classical signs were to be observed, and there could be little doubt that the condition was identical with that found by many observers. In these sections there were not, as a whole, nearly so many parasites as in those of the small growth first examined, and they seemed to be confined to the endothelial cells and the mononuclears. In certain areas, however, sections stained with carbol-thionin and carefully differentiated with spirit showed a heavy infection of the cells (fig. 10).

Fig. 10.—Section of larger growth on the outer surface of the left forearm. Carbol-thionin stain.

At certain points the infiltration of the epidermic layers by the round-celled growth was evident, but at most points there still persisted a considerable layer of the rete. We could find no evidence of actual necrosis, nor were giant-cells visible. It was not until we consulted the recent French work on Tropical Medicine by Jeanseilme and Rist that we found a description of anything like the condition seen in the sections of the first small growth observed. There, however, we came across an excellent account of the histopathology of "bouton d'Orient." These authors state that the
dominant changes consist in a thickening of the rete Malpighii (hyperacanthosis) and an incomplete keratinization of the corneal layer (parakeratosis). The prickle cells are separated one from the other by an interstitial oedema and perinuclear vacuolation occurs. They go on to describe the state of the sub-epidermic tissue in much the same way as other writers, but lay stress on the foci of necrosis and the presence of giant-cells. Their diagrams, both of skin sections and of the periphery and centre of a typical inflammatory nodule, are very instructive, and save for the absence of cell-nests and the presence of the giant-cells, might apply to our sections of the small growth first removed and studied.

It is then, we think, evident that the skin disease under consideration is an example of what is called "Oriental sore," but it appears to be a type not prone to ulceration. In this case some of the growths have been present for two years, and even when punctured tend to scab and heal immediately. In the father's case the tumours have persisted unchanged, save as regards size, for six years, in the sister's case for four and a half years. The patient has been very closely questioned on these points, and is very definite in his reply.

Has such a condition been previously reported? With one exception we can find no record of such being the case. Some writers speak of the papules persisting for a long period (Cardamatis mentions one of two and a half months) and others of chronic papules which abort, but in no instance is any indication given that growths may attain the size they have done in this case without showing any sign of breaking down.

The exception mentioned is given by Cambillet, who recently described the case of a small native boy in Algiers who presented on the right cheek a tumour which, to judge from the photograph...

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16 Is it not possible that the result depends upon the reaction of the tissue to the virus? If this be strong the epidermic layers thicken, if weak they are destroyed. It may be so, or special forms of Leishmania may produce their own specific results; or, again, symbiosis with cocci or bacteria may play a part.

17 A portion only of the small growth showing the cell-nests was excised. The wound healed rapidly, and now the nodule presents much the same aspect as it did before part of it was removed.


19 See, however, note at end of this paper.

20 Cambillet, "Un cas de bouton d'Orient à Flatters (Alger), ibid., July 21st, 1909.
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given, must be almost identical with the face-growth in our case. It commenced as a small papule, increased in size until, at the time the paper was written, it measured 3 cm. in diameter and showed no sign of ulceration or discharge. It had persisted for a year in this state. On puncture it yielded blood and "de petits grumeaux blancs" and in smears Leishmania tropica was found. He concluded that the case was one of "bouton d'Orient," and certainly this term is much more applicable to his case and ours than that of Oriental sore. The latter in any case is a misnomer, as instances have been described from Bahia by Juliano Moreira, and recently from Bauru in Brazil, by Lindenberg,21 who found Leishman bodies present. His work has been confirmed by Carini and Paranhos.22 We think cases of this kind might with advantage be termed Leishman nodules, as the word nodules sufficiently describes the growth, and practically all are agreed that L. tropica plays a part, and probably the chief part, in their etiology. It is true that some are apparently anxious to abolish the term Leishmania as applied to the parasite altogether and substitute for it Crithidium or Herpetomonas, but the word is now so familiar and in such general use that it might with advantage be retained and applied, in its modified form, as above indicated. Apart from what has been said there is other evidence pointing to this case being one of Leishman nodules.

1. The condition is known to occur in Egypt.
2. Exposed parts of the skin are chiefly affected, the Egyptian fellah being accustomed to work stripped to the waist.
3. The coagulability of the blood is increased; markedly so.

Carter,23 however, points out that in Oriental sore more than one person of a family or household is rarely or ever attacked, while, as already mentioned, our second case, about to be described, appears undoubtedly to have derived his infection from the first, two of whose family also suffered from the disease. Gros24, who has published an account of four cases on the Algerian littoral, is of Carter's opinion. In no instance was infection transmitted from his cases to those in contact with them. How close this

23 Captain R. M. Carter, loc. cit.
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contact is likely to have been anyone conversant with Eastern customs and usages knows; Gros concludes that le bouton d’Orient paraît donc peu contagieux.

The account of our second case is therefore likely to be all the more interesting.

Case 2.—Y. S., aged 21. Soldier in No. 4 Company, 16th Battalion, Egyptian Army, an Egyptian fellah from the village of Ben Abied, in the Mudirieh of Minieh, Upper Egypt. He is a sturdy son of the soil, well nourished and more intelligent than his compatriot. He enlisted on the same day as did Case 1, and for the last five months the two men have been eating together, and sleeping side by side, while they are in the same section of the same company every parade. Patient denies having ever worn the clothes or boots of Case 1.

Admitted October 30th, with growths very like those in Case 1, situated on his left thigh, right knee and left foot. On admission he was noticed also to have a small abscess below the outer canthus of his left eye. This contained pus and was evacuated. It may be said at once that no Leishmania were found in the pus.

Family History.—Unimportant. Nothing of interest.

Personal History.—Patient states that as a small child he was possessed of an evil spirit for a year, but otherwise has been always healthy. No venereal history is obtainable and there are no signs of venereal disease.

History of Present Illness.—The first growth on the anterior surface of the left thigh appeared four months ago, i.e., one month after he came into contact with Case 1. A second lesser growth, now absorbed into the first, appeared about the same time as the a third growth, accessory to the fused first and second. A fourth on the inner surface of the right knee is three months old, and so is a fifth on the dorsum of his left foot about half an inch from the bases of his first and second toes. The tumours itch and are painful on pressure.

Clinical Examination showed the patient to be perfectly healthy with the exception of the skin lesions. These are of the same type as in Case 1. When punctured they yield blood only and films of this blood show in every instance L. tropica. These, however, are not nearly so numerous as in Case 1. The greatest number was found in the knee growth. They occur both free and in the mononuclears and present no special features. A good many of them appear to be smaller than those in Case 1. The tumours show no tendency to ulceration and quickly heal under a scab after
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being punctured. Blood from the skin covering the growths shows no parasites.

The measurements of the growths are as follows:

- On the thigh, 1 and 2 combined: 17 mm. x 12 mm.
- On the thigh accessory: 7 mm. x 7 mm.
- On the knee: 10 mm. x 10 mm.
- On the foot: 5 mm. x 5 mm.

Blood Examination.—The blood coagulates very rapidly. A blood count made by Captain Ensor on November 2nd showed 4,700,000 red blood corpuscles and 16,000 leucocytes. It will be remembered that the patient at this time had a boil on his face, probably the cause of the leucocytosis. After a week the leucocyte count dropped to 12,000, although the patient was being treated by Captain Ensor with tincture of senega according to his method in kala-azar cases. As he was anxious to test the effect of the drug the case was handed over to him and has not been studied so fully by us as was Case 1. It is chiefly of interest in that it is an example of the transmissibility of the disease and, apparently, of the same type as the disease. What was the agent of transmission? Was it a bed bug? That is perhaps the most likely insect, for bugs (C. lectularius) are a common pest in barracks tenanted by Egyptian troops. Next most likely is a Phlebotomus, said by Pressat to be blamed by the fellaheen in Egypt and regarded by Sargent and others as a possible vector.

This and other questions we would leave to a later paper, and conclude by thanking Captain Ensor, Senior Medical Officer, Khartoum, for help in connection with the cases, and Dr. Beam for the trouble he took to secure good photographs of these interesting skin lesions.

Note.

Since this paper was written a second article by Carter has appeared in which he draws attention to the various types of Oriental sore which exist in India, mentions a non-ulcerating form, apparently not identical with that we have described, and like us takes exception to the term “Oriental sore,” though without putting forward any substitute. He also refers to the possibility of there being different varieties of Leishmania, an observation with which we wholly agree and in the light of which we hope to study the parasites found in the skin lesions described.

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