the nervous mechanism of the arterial wall, and the blood composition or blood content acting directly on the vessel wall. In the earliest stage of toxæmia the arterial system partakes of the general atony, and there is hypomyotonia; but as the blood impurity, being absorbed from the alimentary tract, continues to circulate, it acts as an irritant or stimulant to the arterial wall, causing hypermyotonia. It is to be noted, however, that apparently considerable time elapses before permanent hypermyotonia, with changes in the muscular coat, appears, for on taking the blood pressure in these cases it is found to be subnormal, though the artery is hypertonic to the touch. On palpating the brachial artery definite local thickenings are felt in the arterial wall, small portions being affected. This occurred in 20 per cent. of cases examined.

Relation to Cardiac Irregularities.—The variety of toxic heart now under consideration does not reveal much of particular interest. Sinus arrhythmia is often present, as is generally the case in tachycardia, but it has been noted where this is absent. Isolated premature contractions, both ventricular and auricular, are of common occurrence—if anything, more frequently the latter; this may possibly be due to the action of the toxins on the thinner, less vascular muscle of the auricle. Auricular fibrillation is rare. I can only record one case which could be definitely traced to severe pyorrhœa. Willius states that streptococcic infections are one of the causes of auricular flutter, resulting in local injury to the heart muscle. It was not met with in the present series. Sino-auricular block, more common in infections of an acute nature, has not been seen, neither has pulsus alternans, which Mackenzie noticed in temporary cardiac exhaustion. Minor degrees of partial heart-block have been observed.

Electro-cardiographic changes are of considerable importance and are an indication of the damage to the heart muscle.

1. Very short rest time or diastole (τ - ρ).
2. Diminution in value of the waves—that is, the amplitude of their excursions is lessened, and the α and τ waves are flattened. (The α wave shows the state of the ventricular muscle with regard to nutrition, and the τ wave the strength of contraction.)
3. Left-sided preponderance.
4. Inversion of τ (lead iii).
5. Complete inversion of lead iii is a sign of severe toxæmia.
6. Lengthening of the α - τ interval.

Willius states that the normal limit of the α - τ interval is between 0.24 and 0.28 sec. Accepting this, then conductivity is definitely delayed in certain instances. It is only reasonable to suppose that impulse transmission is as liable to modification as any other function of heart muscle in toxæmic processes, where all the other functions may be involved. Lengthening of the ρ - α interval has not been noticed, but this may be explained by the fact that the auriculo-ventricular node is specialized tissue, and therefore behaves in an independent manner. It is particularly in lead iii that the signs of poisoned heart appear; α in this lead is chiefly a left ventricular event. Why should there be left-sided preponderance?

There is no sign of left ventricular hypertrophy in uncomplicated cases. It is argued that the arterial hypermyotonia, already mentioned, is responsible for this by creating increased resistance to the blood flow. The τ wave negativity is due to changes in the cardiac function affecting contraction preponderance resulting from functional myocardial fatigue, thereby altering electropotential.

CONCLUSIONS.

1. There appears to be a definite connexion between left-sided preponderance and a hypertonic state of the arterial wall. When by treatment the toxins are removed, and can no longer act as irritants to the wall of the artery, left-sided preponderance disappears.
2. Coincidentally τ wave negativity in lead iii depends on the cardiac atony, and it tends to assume its normal deflection as the toxæmia becomes less pronounced, the heart regaining its power of sustained partial contraction, in which stretching is resisted.
3. From the foregoing it would seem that the generally accepted view that inversion of τ in lead iii when it appears is a normal event is incorrect.

4. The heart responds quickly to treatment directed to the removal of the focal infection and to eliminative methods such as are carried out in spa treatment, even though the poisoning has been of long duration.

5. The importance of adequate treatment to the alimentary canal, particularly intestinal, cannot be overestimated. Lack of space prevents the publication of illustrative cases.

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SEVERE DERMATITIS FOLLOWING ULTRA-VIOLET LIGHT.

BY

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THE effects of the exposure of the whole body to ultra-violet light are well known, and have now an accepted place in the treatment of disease, particularly lupus vulgaris. Ultra-violet light may also be used for its general tonic effect, for it has been observed to produce a feeling of well-being in those who have undergone a course of treatment with one of the forms of apparatus now on the market. It is not, however, so generally known that overexposure may be followed by undesirable, and sometimes even serious, results, as the case recorded below very well shows.

The patient whose case we relate was an unusually healthy man aged 72 years. He informed us that he was accustomed to take in the evening what he termed an artificial sun bath. The lamp used for this purpose was placed above the bed, and as a rule an exposure of about ten minutes allowed for a single application. On October 10th, 1924, while thus engaged, he happened to fall asleep, with the consequence that the lamp continued to play over him for one hour and ten minutes. The immediate effect was a severe burning of the skin similar to that seen after ordinary sunburn, the front of the body and legs becoming at first bright red and swollen, subsequently desquamating. We were surprised to find that the back, a region that was not, so far as we can ascertain, directly influenced by the light, also became affected in a similar but slighter fashion.

Then an interval of about seven days elapsed, when further and more serious effects developed. The body, both back and front, was at this stage markedly pigmented, the right leg was swollen with in places raw areas exposing the papillae, and a similar but less pronounced condition was observed over the left leg. On October 22nd a general erythema of the trunk and extremities was noted, with urticaria, and the patient was very much disturbed by the severity of the itching, which seriously interfered with rest and sleep. Three days later, although in the interval the oedema had diminished considerably, there was an extension of the eruption to the face, which became puffy and wept in places.

So far the general condition had given no cause for anxiety, but on October 27th a marked change occurred, possibly as the result of the absorption of toxic substances from the damaged skin. There was restlessness, disturbance, and little and fitful sleep; the cardiac rhythm became disordered, extra-systoles developing. The patient continued to be gravely ill for some four days, then rallied and appeared to be out of immediate danger.

Although this satisfactory state of affairs can be recorded as regards the general condition, the integument continued to be extensively affected, the ears weeping, the face peeling freely, while the whole scalp exhibited a branny desquamation. The back was also desquamating slightly, and the skin there was still considerably infiltrated: the nails were striated and rough. The appearance of the skin of the

shins and backs of the hands was striking, it being shiny, thin, and stretched. Later, on November 10th, an extensive purpuric eruption developed on the legs, the petechiae being so numerous as to be almost confluent. This, however, was not associated with any further trouble, and indeed from this point the convalescence was uninterrupted, and to-day the patient enjoys his normal good health.

Accidents of this kind are probably extremely rare, but it is not difficult to imagine a chain of events similar to those described above occurring where ultra-violet light is used without medical advice and in a similar fashion—drowsiness, sleep, and in consequence an unduly prolonged exposure. The mishap may serve as a warning against the irregular use of a special method of treatment. Nothing, however, that has been said should be taken as discrediting a remedy of great value when properly employed.

Whether the phenomena related above should be considered representative or not we cannot say. There are at least some features which seem peculiar, and to them attention may be drawn. First, that an interval of days elapsed between the original burn and the subsequent dermatitis; secondly, the severity of the toxæmia, considerable enough indeed to place the patient's life in jeopardy and to give occasion for considerable alarm as to the outcome; and, thirdly, the fact that the skin on the back was affected, although this part of the body was not directly exposed to the ultra-violet light.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

ASIATIC BILHARZIA DISEASE.

DURING the past twelve months nine cases of this disease have been reported by me on the frontiers of British India and China, where its existence had previously been unsuspected. Other cases have no doubt escaped notice.

As to the African form of bilharzia, there seems very little doubt that, originating in Egypt, the affection travelled south until at the present time the whole continent is involved and the disease has spread to the islands of the New World. The question is whether the more deadly Asiatic variety, starting as it probably did in the Far East, has gradually spread west, and whether the confines of British India are the present westerly limit. If so, how long will they remain so?

As regards Yunnan itself, there are two large freshwater lakes at Yunnan, Fu and Tali Fu, which are possibly breeding grounds for *Oncomelania hupensis*, etc. In its northern watershed arise Burmese rivers—for instance, the Shweli and other branches of the Irrawaddy, the Salween, etc., while on the eastern side the Yangtse-Kiang takes origin. If the sources of these rivers are continually being reinfected there appears to be no limit to the spread of the disease through Burma. It would appear that preventive measures should be directed towards two main channels—namely, to get rid of the disease in human beings by vigorous treatment with tartar emetic, after Christopher-son's method; and to destroy the intermediate host—the snail. Both have their advocates, but the former appears the weakest link in the chain to attack, and one which offers the most promising results. At the same time much research work on the carrier snail awaits the enthusiast.

London, W.C.1.

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MYELOGENOUS LEUKAEMIA IN A NEGRO: FAILURE OF TRYPARSAMIDE.

THE case here recorded is of interest for the following reasons: (1) The rarity, in a district where the spleen is frequently enlarged from such diseases as malaria, trypanosomiasis, and bilharziasis, to find this sign due to leukaemia. (2) The fact that massive doses of an arsenic-rich compound tryparsamide failed to affect appreciably the

course of the disease. The patient received a total of 12 grams (representing 3 grams or 46 grains of arsenic) by intravenous injection within a fortnight. (3) In spite of this there was no amblyopia, although similar doses employed in the treatment of cases of trypanosomiasis with central nervous infection would have almost certainly produced very serious visual disturbance. As an example may be quoted the case of an adult male who three years ago showed trypanosomes in the cerebro-spinal fluid, but who after treatment with a similar quantity of tryparsamide in the same interval of time became completely blind, but is still in excellent health with a normal cerebro-spinal fluid.

This tolerance is the more remarkable in that retinal changes and haemorrhages are commonly found in the leukaemias, and incidentally supports the view that sleeping sickness patients are predisposed by the toxin of the disease itself to the development of arsenical neuritis of the optic nerve. The following are the clinical and haematological details:

Saidi, a male aged 20, complained of fullness of the abdomen, attended with dyspepsia and some shortness of breath. The condition had developed gradually and there was no history of haemorrhages or other symptoms. He was well nourished, though obviously anaemic and somewhat flabby. No oedema or swellings of lymphoid tissue were detected, but the spleen was enlarged and filled almost the entire left side of the abdomen. Its margin was hard and nodular.

A blood count on July 24th, 1924, was as follows:

Red blood cells*	...	...	2,950,000 per c.mm.
Haemoglobin	...	...	65 per cent.
Colour index	...	...	1.1
White blood cells	...	...	485,000 per c.mm.
Polymorphs	...	...	39 per cent.
Myelocytes	...	...	33 "
Large mononuclears	...	...	19 "
Lymphocytes	...	...	5 "
Eosinophils	...	...	3 "
Mast cells	...	...	1 "

* There were the usual signs of deterioration together with normoblasts and megaloblasts.

After a week's treatment by rest, the white blood cells, on July 30th, numbered 346,000 per c.mm. Tryparsamide (2 grams of a 40 per cent. solution) was injected intravenously.

On August 2nd the white cells numbered 390,000 per c.mm.

Tryparsamide (3 grams) injected.

On August 6th there were 454,000 white cells per c.mm. Tryparsamide (4 grams) injected.

On August 13th the white cells numbered 339,000 per c.mm. Tryparsamide (3 grams) injected.

On August 30th the white cells numbered 450,000 per c.mm.

The patient's symptoms were not alleviated, and he refused to remain longer in hospital.

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RUPTURE OF SCLEROSSED ARTERY.

I DESIRE to put on record the following case. The sketch showing the rupture is from an x-ray photograph.

A man, aged 48, received a heavy blow on the back of the right leg from some falling timber. When I saw him there was extensive bruising of the whole calf. This was treated in the ordinary way and was later massaged. The massage rapidly reduced the discoloration and swelling, with the exception of an area near the middle of the leg and just behind the internal margin of the tibia. A swelling of the size and shape of an egg persisted in this area;

it was much paler than the surrounding parts and was fluctuant. The swelling did not pulsate; it was diagnosed to be a deep haematoma. On the eighth day it was aspirated and bright red blood was removed. Firm pressure was then applied, but the swelling re-formed. Some days later it was again aspirated. A small notch could then be felt in the margin of the tibia. Pressure was again applied, but the swelling once more returned, on this occasion to a lesser degree. The leg was x-rayed on the sixteenth day, with the result shown.

There is an irregularity in the line of the posterior surface of the tibia, corresponding to the notch. The posterior tibial artery is in a fairly advanced condition of arterio-sclerosis; at the level of the notch the artery has been driven against the bone and has broken. The fracture of the artery is shown faintly but distinctly. The swelling ultimately subsided and there was no apparent interference with the circulation in the foot.

Birkenhead.

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