during the last three of which he was violently convulsed. It is possible that this seizure was embolic in character, but considering that during the last year of his life he had been getting stouter, and that he had been complaining very frequently of severe headaches, it seems much more probable that his sudden death was due to rupture of a vessel, induced by the mental excitement of the few last days of his life. I regret there was no *post-mortem* examination. His father, I may mention, had an apoplectic seizure at the same age (52), which he survived for ten years, crippled by paralysis. It is very satisfactory to note that so far as the aneurysm is concerned he was practically cured and restored to usefulness, having had no recurrence of his serious symptoms from the moment he was put under appropriate treatment. The completeness of the cure of course depended largely upon the patient having put himself under treatment at an early period of his disease, and this again was due to the severity of his symptoms. But even when an aneurysm has made much greater progress than in Mr. A.'s case, the treatment by iodide of potassium, properly carried out, is capable of relieving suffering and prolonging life.

At this moment I have under my care a lady who, twelve years ago, was found to have an aneurysm springing from the upper part of the descending aorta, pressing backwards and projecting with a fluid pulsation through the ribs, between the left scapula and the spine. The tumour was not only eating away the ribs, but into the spinal column and pressing on the nerve roots. Numbness and tingling were constantly present on the left side, and every now and then acute nerve storms of almost unbearable pain shot through the nerves up the neck and down to the finger tips and points of the toes, also round the left intercostals, and often terminating in a violent fit of uncontrollable sickness. Unfortunately there was not a single narcotic in all our then repertorium that the patient could tolerate: one after the other was tried in vain, they only complicated matters and made the patient worse. By-and-by, however, the iodide told, the sac began to contract and the pressure symptoms to diminish, the sufferings gradually and slowly ceased. Bedridden for ten years, and often suffering the most intense agony, the patient for the last two years has been moving about free from pain, except when this is excited by some accidental twist or over-exertion. All the objective signs of the aneurysm are still evident enough, though modified from what they were. The pulsating tumour is diminished in size and firmer in character, and the subjective symptoms have slowly and gradually disappeared, coincident with the shrinking of the sac. There could not possibly be a case more instructive, or one in which the remedial powers of the iodide of potassium could be more severely tested or more evident.

APPARENTLY SUCCESSFUL CULTIVATION OF THE BACILLUS LEPRÆ.

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AND

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[A Preliminary Communication.]

WE have succeeded in isolating and cultivating from leprosy tissues, removed under all aseptic precautions from patients *intra vitam*, a bacillus which may fairly claim to be the true bacillus of leprosy. The original material was obtained from three lepers, whose ears were enormously thickened. In each of the three cases the lobe of the ear was cut off with sterilised knives, after all the parts had been scrupulously cleaned in the ordinary manner. Then the removed mass, which was about as large as a good-sized pigeon's egg, was divided into two parts with another sterilised knife, and from the centre of the mass a small piece was removed and at once dropped into ordinary nutrient *bouillon*. Three tubes were thus charged, one from each case. One of the tubes became contaminated with the staphylococcus albus, but the other two remained pure and have given the same results.

Examining these two latter tubes three days later, the *bouillon* was seen to be clear, and cover glass preparations

showed free bacilli, morphologically identical with the bacilli of leprosy, which also resisted the decolorising power of nitric or hydrochloric acid; in fact, they could easily be stained by the Koch-Ehrlich method. No other bacilli could be discovered by the microscope, and subsequent agar-agar plate cultivations showed this bacillus alone to be present in the *bouillon*. A glycerine agar tube was now inoculated and kept at body temperature for several days. After twenty-four hours a minute colourless transparent nodule resembling a dewdrop was noticed on the surface of the agar, and by the fourth day slight growth in the depth of the nutrient medium was visible. The interstitial growth never, not even after weeks, became very well marked, the bacillus being strongly aerobic. By the fifth day the surface of the agar was covered by a greyish-white pellicle, resembling dew-drops. The microscope at this stage revealed a small and slender bacillus, which reacted to Koch-Ehrlich's method of staining, and undoubtedly was a pure cultivation of the bacillus found in the *bouillon*. It differed from the leprosy bacillus as found in the tissues in this: that (a) it took up aqueous methyl blue much more rapidly, and (b) did not retain the fuchsin with such tenacity; otherwise, morphologically and in other respects, it resembled this bacillus closely. Stained by Gram's method, the gentian violet was well retained.

The other *bouillon* tube which had not been contaminated gave exactly the same results. Several agar tubes were now inoculated from the original growths on agar. It was, however, found that though at first the bacilli reacted well to Koch-Ehrlich's method, they gradually lost this power. With advancing age, however, they regained it more or less, and now, that is, after a month, in every specimen a goodly number of bacilli is found to retain the red stain well.

It was soon ascertained that the bacilli grew exceedingly well at the ordinary (Indian) temperature, and this facilitated matters much. Gelatine and glycerine *bouillon* tubes were now inoculated from the original agar cultivations. The gelatine soon liquefied, and after a week or so a pellicle like the one on the agar covered the liquefied gelatine. Before the pellicle was formed, the bacilli did not react well to the Koch-Ehrlich method of staining. But as soon as the pellicle was well marked, the great majority of them reacted well, and the bacilli in fact were unmistakably like the leprosy bacilli in the tissues, and they now took up the methyl blue less rapidly, as before. In the glycerine *bouillon* tubes also a week or ten days later a similar pellicle was observed, the *bouillon* remaining clear, and the liquid in the immediate neighbourhood of the pellicle being mucoid andropy. The bacilli in their morphological and chemical characters were identical with those obtained from the gelatine. It was found that as soon as this pellicle was well marked on either gelatine or glycerine *bouillon*, then the Koch-Ehrlich reaction offered most success, and aqueous methyl blue the worst. It must, however, be remarked that in some specimens the fuchsin was rather badly retained, in others almost all bacilli retained it well. Gram's method always gave good results at this stage.

On potatoes, which were sterilised in test tubes, and prepared according to the methods recommended by Roux and Hueppe, not even after four weeks was any growth visible. As potatoes are in the majority of cases acid, a growth was attempted on neutral and faintly alkaline potatoes, but with no result. Eggs, inoculated after the manner employed by Professor Max Wolf (Berlin) for actinomycetes are at present under observation; and animals are likewise being experimented on. The bacilli, as might have been expected, showed, in a hanging drop, sluggish spontaneous movements.

We consider our bacillus to be a pure cultivation of the bacillus lepræ, for the following reasons: (a) The manner in which the material was obtained excluded contamination from outside; (b) two cases under exactly the same conditions gave absolutely identical results; (c) in the original tubes free bacilli, which undoubtedly were leprosy bacilli, were found, and these gave rise to a growth on agar-agar, which, chemically and morphologically, agreed with the bacillus of leprosy with the slight differences stated above; (d) cultivations on gelatine and glycerine *bouillon* were still more convincing.

Animal experiments have not given definite results as yet, but it must be remembered that such in the case of leprosy are always conducted with great difficulty. Even implantation of tissues into animals has only once been successful in the hands of Melcher and Ortmann, of Königsberg. We are thus, necessarily to a great extent, tied down to reasoning from chemical and morphological phenomena. And, as far as these are concerned, we think that we may claim more for our bacillus than Uffreduzzi, Gianturco, and Boinet before us could do. There seems to be no doubt that the staining reaction, to a great extent, depends on histological and chemico-physiological changes, and it may be fairly hoped that in time we may succeed in making our bacillus as resistant against nitric acid (20 per cent.) as the bacillus in the tissues. In conclusion, we wish to state that tubes have been despatched to several Continental laboratories to invite the criticism of authorities like Professors C. Fraenkel and Baumgarten, and that we hope shortly to give a more detailed account of our work.

UNILATERAL ABSENCE OF EAR, BILATERAL SUPERNUMERARY AURICLES, AND DEVELOPMENTAL DEFORMITY OF RIGHT SIDE OF FACE AND FEATURES.

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MAN A FOOK, Chinese male, aged 38; previously a silk worker in Canton, but now a beggar in Hong Kong, not from inability to work, but from being thrown out of employment owing to the works having been burnt twelve months ago.

Front View.—1. The face is observed to be oblique, owing to the lower jaws projecting downwards on the right side. 2. The forehead is seen to remain smooth when the left is wrinkled. 3. The right eyebrow is placed three-quarters of an inch lower than the left. 4. The right eyelid aperture is a mere slit. 5. The right eyeball is undeveloped, its place being held by a mere immovable stump of connective tissue. 6. The right nostril is almost infantile. 7. The mouth droops

to the right, and is drawn to the left in attempts to whistle. 8. The right naso-labial line is present not from muscular action, but owing to the oblique development of features.

The Right Side of the Head shows: 1. Absence of any trace of the ear in the usual position; instead the skin is quite smooth, the mastoid process is unnaturally prominent in consequence, but smaller than normal. 2. The zygoma is absent, and the malar bone presents a small nodule, cartilaginous to the feel, at the spot where the zygoma ought to join it. 3. There is no temporal muscle. 4. The pterygoid ridge of the sphenoid can be felt close to the skin. 5. There is no masseter muscle. 6. Most interesting of all, the coronoid process of the lower jaw is undeveloped, the ramus running up as a mere round rod to support the condyle. 7. One inch and a half in front of the tip of the mastoid process, and one inch below the level of the same, is a heap of tough subcutaneous (probably cartilaginous) tissue, with a depression or concha near the centre. This might be regarded as the representative of the normal ear; but that it is not so may be seen by examining and studying the conditions met with on the left side.

The Left Side shows a perfect ear, but in front and below the tragus, and below and in front of that again are subcutaneous tough tissues with a central concha-like depression, almost identical with the excrescence on the right cheek.

The excrescences are almost identical in appearance, position, and apparent structure; and one is forced to the conclusion that, whilst the left is present with a perfectly developed ear, and the right side shows no other structure, therefore the right ear is totally absent.

There is no hearing on the right side, and sight, smell, and taste are absent. The right side of the tongue is smaller than the left, the right upper jaw seems compressed, the right Eustachian tube cannot be felt through the mouth, and the right palate is immovable, and speech is seriously interfered with, the patient speaking with a mumble, and almost all articulation is by lower jaw movement, and not by the tongue or lips.

The hyoid bone is present. The limbs are symmetrical. Circumference of the skull, which is fairly symmetrical, 19½ inches; cross measurement from mastoid to mastoid, 13 inches. Both measurements are considerably below the average.

The conclusions are: 1. That the right ear is entirely absent. 2. That the excrescences upon either cheek represent embryonic attempts at ear formation which by some restraining influence were wholly stopped, but that, whilst all further attempt failed on the right side, a complete ear was developed on the left. 3. That the excrescence on the right side is in no way representative of the right ear, as an almost exactly similar excrescence exists on the left side with a completely perfect ear; therefore, that the homologue of the left perfect ear is altogether absent on the right side, but that the homologue of the left excrescence or accessory auricle is met with as the right excrescence or accessory auricle. 4. That it is unique, as no case of entire absence of the ear has been recorded. 5. The conclusion as to the developmental condition appears to be that a local arrest took place during the development of both ears at the upper end of the first post-oral cleft, ending in the production of the accessory auricles met with on either cheek. That the causes of the arrest were withdrawn on the left side, whilst they obtained upon the right. 6. That the first post-oral cleft had on the left side extended beyond the seat of the first attempt of a new ear development begun upon the freshly formed part of the cleft. That on the right side no growth or extension of the cleft took place, therefore further attempts were impossible. 7. The nature of the developmental change in the petrous bones were probably of an ossific nature, preventing the possibility of the epiblastic depression necessary for the formation of the different regions of the ear. 8. That the facial nerve was never formed, accounting not only for the absence of right facial movement, but also for the absence of the development of the right muscles of mastication, owing to the motor supply of the facial nerve to the ganglion being undeveloped. 9. That some local obstruction to development during the early weeks of fetal life took place in the middle fossa of the right side of the skull, interfering with the formation of the eye and ear. The condition does not seem to be the result of cerebral but of cranial trouble.