practically everlasting. (I have seen a pig's bladder made use of for over twelve months, instead of the rubber one, and it acts quite satisfactorily). The rubber cushions of the face-piece are made of stronger material and do not give much trouble as a rule.

I am, &c.,

The Alexandra Hospital, Cosham, Hants. F. J. W. Porter, Major, R.A.M.C.

April 12th, 1911.

RESISTANT FORMS OF TREPONEMA PALLIDUM—A SUGGESTION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I have read with profit the paper on the use of salvarsan in syphilis, contributed to the April number of your Journal, by Major Gibbard, Captain Harrison and Lieutenant Cane.

Among the reasons they give as possible explanations of relapse cases after intravenous injection, there is one which specially excites my interest at present, namely (b) "a developmental stage exists in which the parasites are always resistant (analogous to spore formation in some bacteria)." This suggestion, I venture to think, is probably the correct one, in view of what I have recently discovered as regards granule-shedding in the case of our spirochete of Sudanese fowls. I believe most, if not all, the pathogenic spirochætes will be found to present this phenomenon, both naturally at the crisis (in spirochaetal diseases which present a crisis), and when subjected to the action of such a drug as salvarsan. I have already found the granules of Sp. granulosa penetrans to be resistant, and the fact that their staining affinities are peculiar may perhaps be explained on the supposition that they are of a "spore" nature, and hence require special staining methods. In this connection, reference may be made to a paper by Bosanquet on Sp. anodontæ and a most suggestive article on spirochæte morphology and classification by Dobell. I think if the authors of the paper on salvarsan in syphilis were to employ the dark-field method of examination, they might obtain light

1 A. Balfour (April 1st, 1911), "The Infective Granule in certain Protozoal Infections, as Illustrated by the Spirochaetosis of Sudanese Fowls." British Medical Journal.


Correspondence

on the problem with which they deal. I am at present trying to obtain a suitable case of syphilis, in order to see if the Treponema pallidum is or is not a granule-shedder.

I am, &c.,
Wellcome Research Laboratories,
Gordon College, Khartoum.
Andrew Balfour, M.D.
Director.
April 23rd, 1911.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR.—With reference to the short note on granule-shedding in spirochaetes which I sent you from Khartoum, on April 23rd, I have now, thanks to the courtesy of Major F. F. Carroll and Captain McK. Saunders of the Egyptian Medical Service, had an opportunity of examining by the dark-field method a preparation put up by Captain R. G. Archibald from a case of syphilis. It consisted of serous fluid obtained by scraping the surface of a buccal mucous tubercle which had previously shown the presence of T. pallidum in fair numbers. The hanging-drop was prepared without any addition of salt or citrate solution four hours after the patient had received a dose of 0.3 gramme of salvarsan subcutaneously.

On examination Captain Archibald and I found at first many motile, highly refractile granules recalling very strongly those found in fowl spirochaetosis. There were also motionless and empty "periplasts" or cell membranes. After some search a T. pallidum was discovered actively engaged in granule-shedding, apparently in a manner identical with that displayed by Sp. granulosa penetrans. It would, therefore, seem that the hypothesis advanced in my former note is correct, that under the influence of a drug like "606" the spirochaete of syphilis sheds granules which are doubtless resistant forms and may be of a "spore" nature. The bearing of this observation on the treatment of syphilis is probably sufficiently obvious and, in any case, the phenomenon would seem to prove that the second suggestion advanced by Messrs. Gibbard, Harrison and Cane, as possibly explaining relapse after intravenous injection, is the correct one.

I am, &c.,
Wellcome Research Laboratories,
Gordon College, Khartoum.
Andrew Balfour, M.D.
Director.
April 27th, 1911.

MILITARY WIDOWS' FUND—BRITISH SERVICE.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—I would like to bring the above Fund to the notice of any of the officers of the Corps who may not know of its existence. This Fund was established many years ago for the benefit of the widows and children of