CHART I.

GONOCOCCUS ANTIGEN.

Anticomplementary Titration.

Tube	Antigen 1 : 20	Complement 1 : 20		Amboceptor units	Sheeps' corpuscles		Result
1	0·05	0·25	0·9 per cent. saline sol. added to 0·5 c.c. Shake and incubate ½ hour in water bath at 37° C.	1½	0·25	Tubes shaken and incubated for ½ hour in water bath at 37° C.	Complete hæmolysis
2	0·1	0·25		1½	0·25		,,
3	0·15	0·25		1½	0·25		,,
4	0·2	0·25		1½	0·25		Slight inhibition
5	0·25	0·25		1½	0·25		Marked inhibition
6	0	0·25		1½	0·25		Complete hæmolysis

CHART II.

FIXATION TEST.

Positive Serum.

Tube		Patients' serum	Antigen 1 : 10	Complement 1 : 20		Amboceptor units	Sheeps' corpuscles 2·5 per cent.	Result after incubation ½ hour in water bath at 37° C.
1		0·015	0·05	0·25	0·9 per cent. saline to 0·5 c.c. Incubate ½ hour at 37° C. in water bath	1½	0·25	Slight inhibition
2		0·025	0·05	0·25		1½	0·25	Complete inhibition
3		0·5	0·05	0·25		1½	0·25	,,
Control test without antigen	4	0·015	—	0·25		1½	0·25	Complete hæmolysis
	5	0·025	—	0·25		1½	0·25	,,
	6	0·5	—	0·25		1½	0·25	Slight inhibition

REFERENCES.

[1] *Wien klin. Wochenschr.*, 1906, xix, p. 894.
[2] *Deutsch. med. Wochenschr.*, 1906, lxx, p. 36.
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[4] *Journ. Exp. Med.*, 1907, ix, p. 588.
[5] *Johns Hopkins Med. Bull.*, 1907, xviii, p. 255.
[6] *Journ. Med. Research*, 1907 xvii, p. 223.
[7] *Amer. Journ. Med. Sci.*, May, 1911; *Ibid.*, September, 1912; December, 1912.
[8] "Infection, Immunity, and Serum Therapy," Kolmer, 1915, p. 477.

ADMINISTRATIVE NOTES.

ON LOUSING AND DISINFESTATION.

WE have received from the author, Professor Nuttall, F.R.S., a copy of the special edition of some 160 pages of his very full article in the May number of *Parasitology* upon combating lousiness among soldiers and civilians. This special edition has been distributed by him to the Allied Armies gratuitously, a graceful and most useful act.

Professor Nuttall is as well known in North America as he is in Great Britain, he having been a distinguished member of the staff of Johns Hopkins Hospital prior to his transfer to Cambridge, where he is now Quirk Professor of Biology. To him we owe the pioneer general study upon the rôle of insects in the distribution of disease. He writes, therefore, with peculiar authority. Not only does he afford a thorough study of the various methods, practical and impractical, which have been brought forward to combat the plague of lousiness in armies, but, what is more important, he details his own studies and their outcome. This combination of original work and full bibliographical detail is evidence of Professor Nuttall's early training. It is characteristic of the best studies in the various branches of science emanating from the United States.

The basal problem in combating the plague of lice in armies is how to destroy these pests at once effectively and economically. Great hopes had been centred by the British authorities upon the Thresh Disinfector, but for any large body of men this is found too leisurely in its action. Any attempt to pack large numbers of articles into the chamber leads to faulty penetration.

It is not mentioned by Professor Nuttall that the first practical method of using steam heat for large bodies of clothing was that evolved by Lieutenant-Colonel Amyot, C.A.M.C., some years before the War (at Sudbury, Ontario), and put into effect in the Canadian First Division in 1915, when he was Sanitary Officer of that Division—namely, the establishment of chambers in which clothes can be hung loosely, the air and the clothes being heated by steam pipes around the room before live steam under pressure is turned on. The huts described by Captain J. T. Grant, R.A.M.C., on p. 459, and the railway vans converted into steam disinfectors on p. 461, *et seq.*, are applications of Lieutenant-Colonel Amyot's principle.

But notable as was the advance inaugurated by this officer, yet further advances were possible, and Professor Nuttall relates in detail how his observations in 1915 demonstrated that lice and their nits are killed by exposure to dry heat at the comparatively low temperature of 55° to 61° C. for ten minutes. Major H. Orr, C.A.M.C., then Captain and Sanitary Officer, Shorncliffe area, now Sanitary Officer 3rd Canadian Division, was already engaged in a research upon disinfestation. His results seemed to indicate that it was heat rather than coke fumes which brought about the destruction of lice and their nits in his experiments. Consulting Professor Nuttall regarding the life-history of pediculi, he learnt from him the outcome of his studies, and at his suggestion continued the work on a larger scale. Authority was obtained to build a hut in which he could carry on experiments under practical conditions. His preliminary tests showed that exposure at 54° C. or at 60° C. for fifteen minutes was lethal. To allow a good margin of safety under working conditions, Captain Orr adopted an exposure at 60° to 65° C. (140° to 149° F.) for fifteen minutes. By this exposure no harm is done to clothing of any order (including leather articles), and if they be hung loosely in the chamber all pediculi and their eggs are surely destroyed. All that is required is a hut, moderately heat proof; a brazier large enough to heat it and maintain the temperature, and clothes lines or hooks upon which the clothing can be suspended loosely.

This system has been in action at Shorncliffe since the autumn of 1915. It is in active operation in all the Divisions of the Canadian Army Corps, and "Orr's huts" are now to be employed throughout the British Army overseas. To quote Professor Nuttall: "Incidentally, I desire to put on record that the credit for having first employed hot-air huts belongs