sanitary precautions will succeed completely in safeguarding the force from infection, since it will certainly be exposed to three sources of infection, difficult or impossible to control, namely: (*a*) Men in the incubation stage of typhoid who have accompanied or joined the force. (*b*) Unsuspected typhoid carriers. (*c*) Contact with the inhabitants of the country in which typhoid may be present.

3. The preventive value of antityphoid inoculation is now universally recognized, and is well known to all who have served in India.

4. As it was not found possible to inoculate the force on mobilization, only a small percentage of the men will have been protected, but it should be practicable, by seizing every opportunity, to raise the number of inoculated very considerably. If a unit is likely to be stationary for a short time, advantage might be taken of this with the consent of the general staff, to inoculate a certain number of men,—for example, a company or half a company, and in this way a whole regiment or other unit might be protected, without any serious interference with its duties. In the same way individual men temporarily disabled by minor ailments, or otherwise available, might be inoculated. It is strongly urged that medical officers lose no opportunity of introducing and carrying through some such system.

5. Antityphoid vaccine has been sent to the base depot of medical stores, and will be issued, as required, on requisition.

THE value of the output of recoverable gold, silver, copper, lead and zinc from mines in California in 1913, according to Charles G. Yale, of the United States Geological Survey, was $26,812,489, an increase of $428,543 over the 1912 production. All the metals except zinc showed an increased yield, although the ore treated was less in quantity and there were fewer mines reporting a production than in 1912. The total recoverable value of gold from California in 1913 was $20,406,958, of which the deep mines produced $11,570,781, or 56.7 per cent. The total increase in the gold production was $693,480, of which $502,966 was in the yield from deep mines. The gold production was larger than in any other year except one since 1864. This great output was due entirely to the operations of the dredging companies and the larger deep mines, as the number of mines operated in 1913 was 245 less than in 1912. Of the gold recovered from placer mines the gold dredges reported $8,090,294, which was nearly 92 per cent. of the placer gold mined and nearly 40 per cent. of the total state yield in 1913. Since the commencement of gold dredging in California, 15 years ago, the gold recovered from this source has amounted to $63,505,485. Most of this large yield has been derived from ground which could not have been mined profitably under any of the old methods of gravel mining. The 410 deep mines sold or treated 2,495,958 tons of ore, a decrease of 145,539 tons, compared with 1912. Most of the siliceous ore, which amounted to 2,031,429 tons, was treated at gold and silver mills, yielding an average recovery of $5.61 a ton in gold and silver. The 448,439 tons of copper had a recoverable value of $1.84 a ton in gold and silver and $11.74 in copper. The 14,267 tons of lead ore treated had a recoverable value of $11.24 in gold and silver and of $23.11 for all metals. The zinc ore shipped in 1913 amounted to 1,823 tons, which was considerably less than in 1912. The recoverable silver in 1913 amounted to 1,378,399 fine ounces, valued at $832,553, an increase of 78,263 fine ounces in quantity and of $32,969 in value. The copper ores from Shasta county contained about 60 per cent. of the 1913 production of silver from California.

UNIVERSITY AND EDUCATIONAL NEWS

DR. WILLIAM J. YOUNG has given $25,000 to the Medical Department of the University of Georgia for the improvement of its library.

THE Company of Drapers of the City of London has made a grant of £500 a year for three years in aid of the work of the Department of Applied Statistics at University College, London, including the Galton Laboratory of Eugenics and the Drapers' Biometric Laboratory.

DR. FREDERICK A. SAUNDERS has resigned the professorship of physics in Syracuse Univer-

sity to accept the corresponding position in Vassar College.

DR. LAWRENCE E. GRIFFIN has been appointed professor of zoology in the University of Pittsburgh.

DR. ROBERT M. OGDEN, of the University of Tennessee, secretary of the American Psychological Association, has accepted the chair of psychology at the University of Kansas.

DR. FRIEND E. CLARK has resigned his position as professor of chemistry in Center College, Danville, Ky., to become professor of chemistry in West Virginia University.

SAMUEL W. GEISER, B.S. (Upper Iowa, '12), has been appointed professor of biology at Guilford College, North Carolina.

DEAN A. WORCESTER, B.A. (Colorado, '11), has been appointed associate professor of psychology in the University of New Mexico.

DR. HAROLD CHAPMAN BROWN, of Columbia University, has been appointed assistant professor of philosophy in Stanford University.

IRENE HUNT DAVIS, instructor in chemistry at the University of Washington, has been promoted to be assistant professor of chemistry.

THE following have been recently appointed to positions in George Peabody College for Teachers: Mr. Charles C. Colby, from the Minnesota State Normal School, as associate professor of geography; Miss Ada M. Field from Teachers College; Miss Blanche Evelyn Hyde from Newton, Mass., as assistant professors of home economics; Dr. William F. Russell, honorary fellow in Teachers College, as associate professor of secondary education. Dr. Leonidas C. Glenn, professor of geology, and Dr. John J. Luck, assistant professor of mathematics, of Vanderbilt University, have been secured to give special courses at the college.

DR. THEODORE SHENNAN, at present pathologist to the Royal Infirmary of Edinburgh, has been appointed regius professor of pathology (Sir Erasmus Wilson Chair) in the University of Aberdeen, in the place of the late Professor George Dean.

DISCUSSION AND CORRESPONDENCE

DO AZOTOBACTER NITRIFY?

UNDER the caption of "Fixation of Atmospheric Nitrogen" Mr. Dan. H. Jones, in the *Transactions* of the Royal Society of Canada, Third Series, 1913, Vol. III., Sect. IV.,[1] gives the results of certain experiments tending to show that the azotobacter form nitrates in their body tissues. He states:

> Cultures of each variety in Ashby's solution when one month old gave the nitrate reaction with phenolsulphonic acid colorimetric test. As the cultures get older, up to several months, the reaction to the test gets slightly stronger. This nitrate is retained almost altogether in the bodies of the organisms. Cultures filtered through Berkefeld filter gave only a trace of nitrate in the filtrate and a strong reaction in the mass of organisms which did not pass through the filter. The filtrate plated out showed that some of the organisms had passed through the filter. But as it took about ten days to filter enough for a test it is possible that the organisms had grown through the filter in that time. Probably the presence of a small number of organisms in the filtrate was responsible for the trace of nitrate in the tests. Mass growths on Ashby's agar, when mature, gave a strong nitrate reaction.

The author does not state to what extent pigmentation had taken place, but as the material experimented with represented old cultures it is probable that a considerable degree of pigmentation was present. He says:

> As the cultures get older, up to several months, the reaction to the test gets slightly stronger.

The present writer was deeply interested in this subject in connection with work which he was doing in 1910 and 1911 and stated in describing some samples of soil used in studying the subject of fixation,[2] that

> a certain sample gave, at the beginning of the experiment, an unsatisfactory growth of azotobacter but thirteen days later another culture made from the same sample gave a heavy membrane in four days on which brown points developed on the eighth or ninth day.

Again on page 93 of the same bulletin it is stated:

[1] The title of the article is "A Morphological and Cultural Study of Some Ozotobacter."

[2] Bull. 178, p. 87, Colo. Expt. Sta., 1911.