the poison was developed after the milk had been delivered. This was also found to be the fact on questioning the servants of the family poisoned. The milk had been received in a tin can, which it was their business to keep clean, and it had been immediately subdivided into two portions. One portion was placed in an earthen dish to raise cream, and the other was used during the same morning as fresh milk, without causing the slightest trouble. The symptoms of poisoning were caused by the first portion, after standing over night. The above facts seem to show that the tyrotoxicon was developed during the twenty-four hours after the milk was received.

The only explanation of its development that can at present be given is, that the cans used for obtaining the milk had not been thoroughly scoured with boiling water, and that a little old milk remaining on the inside edges of the can had undergone a peculiar fermentation, and had caused the development of a sufficient amount of tyrotoxicon, during the twenty-four hours it had remained in a cool place, to produce the poisonous action.

Professor Kinnicutt describes thus fully the above case, as up to this time almost nothing is known as to the cause of the formation of tyrotoxicon in milk. He has, he thinks, pointed out one way in which it may be developed, namely, the use of cans which have not been kept perfectly clean; but it is only by the careful examination of a number of cases that it will be possible to decide whether the formation of the poison is due solely to such causes.

THE PASTEUR INSTITUTE. — The Paris correspondent of the *New York Medical Record* contributes to that journal an interesting letter describing the opening of the Pasteur Institute, which occurred Nov. 14, in the presence of a large assembly presided over by the President of the Republic. The proceedings were opened by M. Bertrand, permanent secretary of the Academy of Sciences, who made a eulogistic speech on M. Pasteur and his numerous scientific researches. Dr. Grancher, M. Pasteur's principal assistant, then read a report of the work done in antirabic inoculations since the middle of 1885, when the first two human beings were inoculated. He stated that the number of persons treated at Paris in the Rue d'Ulm and the Rue Vauquelin during the years 1886–87 to July 31, 1888, was 5,384. The rate of mortality had been 1.34 per cent for 1886, for 1887 it was 1.12, and for 1888 it was 0.77 per cent. This rate of mortality comprises the deaths of persons who were affected with rabies the day after inoculation; but, remarked Dr. Grancher, even these figures are very striking, as the estimated mortality previous to the discovery of this method of treatment was 15.90 per cent as given by the reporter of the Council of Hygiene of Paris. Dr. Grancher informed his hearers that twenty laboratories for antirabic inoculations have been established in different parts of the world, — seven in Russia, five in Italy, and one each in Roumania, Austria, Brazil, Cuba, and the Argentine Republic, — while two more will shortly be opened at Chicago and Malta. The staff of the new institute are disposed of as follows: Dr. Grancher, with the assistance of Drs. Chantemesse, Charrin, and Terrillon, will attend to the department of the treatment of rabies; M. Duclaux, one of M. Pasteur's most ancient pupils, and now professor of biological chemistry at the Faculty of Sciences, will direct the laboratory of general microbiology; M. Chamberland is charged with microbiology in its relations with hygiene; Dr. Roux will teach the microbian methods in their applications to medicine; Drs. Metchnikoff and Gamaleïa of Russia will study the morphology of inferior organisms and comparative microbia. The new institute will thus, as expressed by M. Pasteur, serve as a dispensary for the treatment of rabies, and will at the same time constitute a centre of researches for infectious maladies, as well as a centre of instruction for the study of microbiology, and will be open to medical men of all nationalities.

IS THE RACE DEGENERATING? — An English newspaper has been making a collective investigation regarding the questions given below: "1. Does your experience suggest to you that the race of Englishmen is degenerating physically? 2. Do you think that the great advance in the healing art is responsible for keeping alive much weak life that will in time affect the whole race injuriously? 3. Do you think that the increased indulgence in physical sports has, on the whole, a good influence on health? 4. Has it ever struck you that probably the great attention paid to health in these days may be producing an anxiety about bodily ailments which is a disease in itself?" Answers have been received from a long array of practitioners, among whom are the names of eminent London physicians. The general view taken, according to the *Medical Record*, is that Englishmen are not degenerating, but that, on the whole, the race is improving in vigor.

TO INVESTIGATE DISEASES OF SWINE. — The commissioner of agriculture has appointed a commission, consisting of Professor William H. Welch of Johns Hopkins University, Dr. E. O. Shakespeare of Philadelphia, and Professor T. J. Burrill of the University of Illinois, to investigate the subject of swine-diseases in the United States, and the methods of their treatment and prevention.

MENTAL SCIENCE.

A Statistical Study of Sleep and Dreams.

THE application of general scientific methods to the problems of mental action has everywhere brought results of interest and value, and especially pleasing has been the success attending the study of the statistics of mental phenomena. Observations in themselves trivial, apparently accidental even, when intelligently grouped together, bring to light truths only dimly suspected and poorly understood. The errors of individuals in part disappear in the average, and results obtained by one method are controllable by others. A very striking innovation, with the help of the statistical method, into an obscure region of mental action, is attempted in a recent study coming from the University of Dorpat, Russia.[1] A series of questions were drawn up, and five hundred copies distributed. Of these, over four hundred were returned filled out; and it is upon these answers, which the author declares unexpectedly clear and accurate, that the conclusions of this paper are based.

Each observer, after stating his name, age, sex, and occupation, set himself to answering the following questions regarding his sleep and dreams. The persons were divided into three classes: 1. Students (151 in number); 2. Other males (113); 3. Females (142).

I.—Dreams.

1. Do you dream every night, frequently, seldom, never? "Nearly every night" was grouped with "every night," making 99 such answers; "frequently," "very frequently," etc., were reported 133 times; "seldom," etc., 153 times; and "hardly ever," or "never," 15 times; 6 were undecided.

2. Are your dreams vivid? This was answered affirmatively 216 times; negatively, 175; undecided, 15.

3. Can you well remember your dreams upon awakening? "Yes," 194; "no," 203; "undecided," 9.

II.—Sleep.

1. When do you go to bed?

2. When do you rise?

3. Are you tired in the morning upon awakening? Do you become tired early in the evening? 38 were tired both morning and evening, 104 in the morning only, 95 in the evening only, 169 at neither time.

4. How long does it take you to fall asleep? This question is difficult to answer, and the general tendency will be to overestimate the time; and this was partly taken into account.

5. Do you sleep through the night without awakening? "Yes," 261; "no," 143; "undecided," 2.

6. Is your sleep deep, or light? Is it easy, or difficult, to wake you? "Light," 202; "deep," 166; and 26 reported "deep sleep, but easy to wake."

7. Can you go to sleep at day-time when desired? "Yes," 103; "no," 294; "undecided," 9.

8. Are you accustomed to sleep at day? When and how long? This question was used with Nos. 1 and 2 to obtain the duration of sleep per twenty-four hours.

[1] Statistische Untersuchungen über Traüme und Schlaf, von Friederich Heerwagen, in Philosophische Studien, v. 2, 1888.

III. — Work, Disposition.

1. When is mental labor easiest to you? "In the forenoon," 182; "late in the afternoon," 6; "at evening and night," 133; "forenoon and evening," 43; "no difference," 28.

2. What is the nature of the work? The object was to ascertain whether the kind of work limited the time of doing it, but the question was not successfully formulated.

3. Do you suffer with nervous disorders (headache, uneasiness, moodiness)? A decided "no" was given only 18 times; "seldom," 196; and "yes," 210.

4. Is your temperament sanguine, choleric, phlegmatic, or melancholic? "Sanguine," 132; "choleric," 70; "phlegmatic," 74; "melancholic," 20; various combinations, 102.

The results for the two sexes were so different that they demanded separation, while the students formed a homogeneous class interesting as a special study. The first problem that was proposed was the relation between the frequency and the vividness of dreams. It appears that 62.5 per cent of those who dream every night dream vividly, 60.5 per cent of those who dream frequently, and only 26.8 per cent of those who dream seldom, showing that the vividness of dreams increases very markedly with their frequency.

Next, how is the intensity of sleep related to the frequency of dreams? Of the students who dream nightly, 68 per cent have a light sleep (and only 28 per cent a deep sleep); of those dreaming frequently, 40 per cent; of those dreaming seldom, 32.8 per cent. Similar percentages for the other males are 68.8, 42.1, and 39.3; and for women, 72.4, 60, and 50 per cent. We conclude, then, that frequent dreams are a concomitant of light sleep, though the relation is far from universal.

These are the questions that formed the starting-point of the investigation. The rest of the information is grouped together in one large table and an admirably arranged diagram, from which more conclusions can be drawn than can find mention in this *résumé*. Those that the author singles out may be noted.

As regards sex, women have 73 per cent of their number dreaming nightly or frequently, while students have only 50 per cent, and the other males 48 per cent. Again: 63 per cent of the women sleep lightly, and only 42 per cent of students, and 44 per cent of other males. We conclude, then, that women have a very much lighter sleep than men, and that their dreams are proportionately more frequent.

Another conclusion, the evidence of which is too detailed to present, is, that as we grow older, our dreams become less frequent, but our sleep becomes lighter; age affecting the intensity of sleep more than the frequency of dreams. The author regards the students as in the period of maximum dreaming (twenty to twenty-five years of age). The deep sleep of childhood (hostile to frequency of dreams) is then least counterbalanced by the lessening of dreams due to age. The vividness of dreams shows a similar relation to age and sex: the women dream most vividly; the students, being younger than the other men, have more vivid dreams. The power of remembering dreams is also dependent upon vividness and frequency of dreaming: it is accordingly greatest in women, and greater in students than in more mature men. The liveliness of the emotional nature, a prominent feature of women and youth, seems thus to be marked out as the causative agent in the production of dreams.

The duration of sleep should naturally be related to the habit of dreaming, but in the men no such relation can be discovered. In the women, however, it appears that those who dream frequently sleep nearly an hour longer than those who seldom dream. This difference is regarded as due to the fact that men are more under duty to break short their sleep, and thus vitiate the statistics. This is corroborated by the frequency with which the men who dream frequently declare themselves tired in the morning, indicating incomplete sleep. The need of sleep is greater in women than in men; the duration of sleep being longer, and the percentage of "tired morning and evening" and of "not tired" being 3 to 2 and 2 to 3 respectively as compared with the men. Students sleep longer, and are less tired, than other men.

The time needed to fall asleep is about the same in all three classes, — 20.8 minutes for the men, 17.1 minutes for students, and 21.2 minutes for women. In each case, however, it takes longer for those who are frequent dreamers and light sleepers to fall asleep than persons of opposite characteristics. Eighty per cent of students sleep uninterruptedly through the night, 70 per cent of other men, and only 43 per cent of women. Light sleep and frequent dreams increase the interruptedness of sleep.

The power of falling asleep at will is possessed by few. It is greater in youth than in age. Twenty-eight per cent of men, 19 per cent of students, and 20 per cent of women sleep in the afternoon, indicating a making-up of insufficient sleep on the part of the men.

The effect of dream-habits upon mental work is also evident. Those who dream seldom, or sleep deeply, are better disposed for work in the forenoon than light sleepers and frequent dreamers. The forenoon seems in general to be the preferred time of work.

The statistics regarding nervousness confirm the accepted fact that this is greater among women than men. It is greater among students than among men at large. It is, too, a concomitant of light sleep and frequent dreams. As to temperament, the phlegmatic people are quite constantly deep sleepers and infrequent dreamers.

Finally, a contrast between teachers and professors of the same average age shows the effect of occupation. The teacher, with his daily toil, has a lighter sleep and more frequent dreams; while the professor, leading a comparatively congenial and worriless life, is a deeper sleeper and a less frequent dreamer. This, perhaps, is related to the lack of visualizing power that Mr. Galton found to be current among men of science.

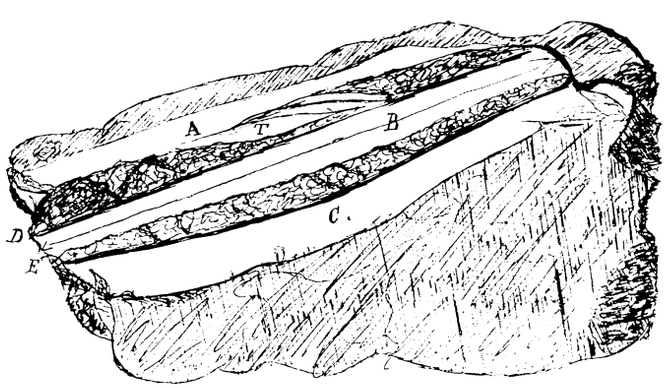
The relation between depth of sleep and frequency of dreams seems explicable on the supposition that the insensitiveness to outside excitations present in deep sleep, also induces insensitiveness to internal impressions. The threshold of mental life is raised. If the normal psychical activity is great, then, even in a deep sleeper, will the dreams be frequent, thus accounting for the exceptions.

In addition to the interesting results that this study has brought out, it increases one's sense of the utility of such inquiries, and shows the truth of Galton's experience, indorsed by the author, that "it is a much easier matter than I had anticipated to obtain trustworthy replies to psychological questions."

ETHNOLOGY.

Jade in Alaska.

LIEUT. G. T. Emmons, who is continuing his interesting researches in Alaska, recently made an interesting find at Sitka. He writes: "A bowlder of jade was dug up on the site of the present Indian village, at a depth of some three feet in loose black soil. Two pieces have been cut from it for knives or adzes, each about



20 centimetres long, from 3 to 4 centimetres wide, and from 1 to 1.5 centimetres in thickness. The three faces on which the bowlder has been cut are highly polished, and show a mottled green surface, ranging in color from a yellow green to a rich dark green. After the pieces were cut down on either side, they were broken from the body of the bowlder by a shock, probably by means of a wedge. On another side, where a wedge-shaped adze could be re-