

carried out policy of segregation, and appears to have already produced a demonstrable eugenic effect: for the application of a common standard to representative portions of the two population groups reveals evidence showing that the incidence of insanity is actually greater in the Southern group.

Similarly, it would appear that the progressive increase in the relative number of institution inmates, observed throughout the country during the past several decades, is also but an indication of more thorough segregation which has, in all probability, been attended by the same eugenic effect.

I conclude, then, that such evidence as is available, far from showing that insanity is on the increase, tends to show rather that it is on the decline.

THE VALUE OF A SANITARY SURVEY IN THE TEACHING OF HYGIENE

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It may be a surprise to the readers of *THE JOURNAL* to learn that hygiene is included as a major subject in the curriculum of only three medical schools in this country, namely, the University of Pennsylvania, the University of Michigan and Harvard.

The teaching of hygiene is becoming increasingly difficult, on account of the widening scope of the subject, including preventive medicine, sanitary engineering, vital statistics, epidemiology, industrial hygiene and public health activities generally. It has become necessary to establish special schools with graded courses to meet the demand of training men to become public health officers. It is slowly being recognized that the training received for the M.D. degree, even in our best medical schools, does not properly fit a man to enter public health work. Sanitation and hygiene has become a separate profession.¹

At the Harvard Medical School, the teaching of hygiene in the required course consists of (a) lectures and demonstrations; (b) laboratory work; (c) sanitary excursions, and (d) sanitary survey. This required course comes in the second year of the medical curriculum. Special emphasis is laid on the laboratory work and the sanitary survey, for these exercises are regarded as the backbone of the course. As to the sanitary excursions, I take the class to the Antitoxin and Vaccine Laboratory, to a large city milk plant, to quarantine and other places of sanitary interest that may be examined to better advantage by a personally conducted tour than by individual visits. In addition to the required course, a fourth year elective is offered for those who desire to dip a little deeper into some phase of the subject.

The sanitary survey was first used as a method of instruction in the School for Health Officers of Harvard-Technology and met with such signal success that I later introduced it into my course in preventive medicine and hygiene at the Harvard Medical School.

Each student in medicine is required to make a sanitary survey of some city or town and to submit a report thereon. The report must consist of three elements: A, collection of data; B, interpretation of

the facts; C, criticisms and recommendations. From the following outline, which is placed in the hands of each student, some idea of the general plan and scope of the sanitary survey may be obtained:

WATER:

- (a) The water shed—sources of pollution, methods of collection, storage, purification.
- (b) Public or private wells.
- (c) Examine a sample of the water in your laboratory exercise; interpret results.

SEWAGE:

- (a) System—if purified or treated, how?
- (b) Efficiency.
- (c) Relation to health of this or other towns.

GARBAGE, REFUSE, ASHES:

- (a) Method of collection.
- (b) Disposal.
- (c) Relation to health.

VITAL STATISTICS:

- (a) Death rate.
- (b) Infant mortality.
- (c) Specific rates for:
 - (1) Typhoid.
 - (2) Tuberculosis.
 - (3) Measles.
 - (4) Scarlet fever.
- (d) Submit samples of blanks used by the department of health, especially those for deaths, births, marriages, and notifiable diseases. Fill out a death certificate and a birth certificate. Give a list of the diseases, notification of which is required by the board of health. Give criticism of activities, including distribution of educational and other pamphlets issued by the board of health.

MILK:

- (a) Report on the sanitary condition of one farm and one dairy. Use score card.
- (b) Amount of milk pasteurized and by what method.
- (c) Amount of milk "certified." If possible visit and report on farm producing it.
- (d) Examine a sample of the milk in your laboratory exercise; interpret results.

SANITARY NUISANCES:

- (a) Sources of odors.
- (b) Dust—causes and method of prevention.
- (c) Rubbish and general cleanliness. Empty lots.
- (d) Flies and mosquitoes.
- (e) Rats and vermin.
- (f) Stable and manure.
- (g) Breeding places of mosquitoes.
- (h) Smoke.
- (i) Unnecessary noises.
- (j) Piggeries.
- (k) Legal definition of a nuisance, and method of preventing or abating nuisances.

INDUSTRIAL HYGIENE:

- (a) Sanitary condition of one tenement, based on an inspection.
- (b) Ventilation of one large building.

TUBERCULOSIS:

What measures are taken to prevent its spread?
Should some other disease be prevalent, what measures are taken to control it?

SCHOOLS:

- (a) Visit and report on one school—ventilation, lighting, temperature, cleanliness, toilets, playgrounds, etc.
- (b) Medical inspection of schoolchildren. How conducted?
- (c) Diseases for which children are excluded from school.

1. Rosenau, M. J.: Courses and Degrees in Public Health Work, *THE JOURNAL A. M. A.*, March 6, 1915, p. 794.

MISCELLANEOUS:

- (a) Markets.
- (b) Provision stores.
- (c) Slaughter houses.
- (d) Cold storage plants.
- (e) Kitchens of hotels and restaurants.
- (f) Wharves.

SUMMARY—Including:

- (a) Criticisms of health activities and administration.
- (b) Recommendations.

Boston is favorably circumstanced for an exercise of this character, there being fifty-two cities and towns within 15 miles of the State House. Students are encouraged to select small communities rather than towns or cities. The student's home town or the place in which he is living may be selected with particular advantage. Some students prefer to make their sanitary survey during the pleasant days of summer, after they return home, and thus devote more time to it than is possible during the busy school term.

No special instructions are given to the student as to how to proceed with the sanitary survey, it being the intention to place the student on his own initiative, in order to bring out tact and self-reliance. Students are simply advised, first, to get acquainted with the town and some of its people; to find out something about its history, geology and geography; then to take up the water supply, sewage disposal, milk supply, schools, industries, tenements, nuisances, etc.; finally, to visit the health officer, when the student not only will be prepared to profit by the information given, but also will probably be in a situation to surprise the health officer with some facts about his town which have escaped notice.

One happy result has been that some towns have employed the student making the sanitary survey as health officer. This has been the case with William E. Brown, at York, Maine, Charles Francis Horan, at Watertown, and Andrew F. Allen, at Waltham, Mass., all of whom were students in the School for Health Officers of Harvard-Technology. The survey designed primarily as an educational excursion for the student has therefore carried the doctrine that "public health is purchasable" into many places, some of which have at once realized that the best way to obtain the benefits of preventive medicine is through the agency of a well-qualified and full-time health officer.

In the crowded medical curriculum, little time can be spared for an exercise of this character. All the students in the second year class at the Harvard Medical School, however, have in some way found the time. A few afternoons during the course are set aside for the purposes of the survey, but much of the work is actually done on Saturday afternoons, Sundays and holidays. The students themselves feel that the benefit derived fully compensates for the extra work. A certain amount of the work, such as visiting water sheds, dairies, looking for nuisances, etc., is done in the spirit of a walking excursion or a picnic.

Some of the reports prepared by second year medical students are splendid contributions, giving a complete account of all the important sanitary and hygienic features of the place studied. Many of the reports are enlivened with photographs showing good and

bad sanitary conditions. Most of them have carefully prepared charts showing morbidity and mortality rates; and some of them have a judicious summing up, with a well-considered criticism of the defects in the health administration of the town.

Another advantage of the sanitary survey is that it adds much interest to the course in hygiene and helps enliven the laboratory exercises. This correlation between the field work and the laboratory work is accomplished in part by having students bring a sample of the water supplied the town they are studying, when they make a water analysis in the laboratory. The same applies to samples of milk, of air and other specimens for sanitary analysis.

The world-old questions of pedagogics have arisen anew to plague those who are devoting their attention to teaching the new profession. The use of the sanitary survey as a pedagogic instrument is worthy of consideration by teachers of hygiene.

ABORTIVE TREATMENT OF TYPHOID FEVER BY SENSITIZED TYPHOID VACCINE SEDIMENT*

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A historical survey of attempts at specific therapy in typhoid fever shows that two distinct eras may be arbitrarily noted. Beginning with the work of Fraenkel¹ (1893) until 1912, there were numerous reports on the somewhat favorable action produced by ordinary killed or even living typhoid vaccines. The results obtained by a number of observers in about 800 cases are by no means striking, but indicate that the subcutaneous injection of various typhoid vaccines would seem to shorten the course of the disease, to lessen the number of relapses and complications, decrease the mortality, and to lead to some symptomatic improvement. In a few instances, abortive cures have been mentioned, which apparently bear a relation to the injection of the vaccine; but such cases are known to occur without any specific treatment.

In the last two or three years, certain modifications have been used in the vaccines and far more convincing results obtained, and we have been led to hope that a true specific therapy may eventually be possible. These modifications are, first, the introduction of the intravenous injection instead of the subcutaneous, and, second, the use of sensitized vaccines. Kraus,² among others, has reported a relatively large number of abortive cures following the intravenous injection of Vincent's typhoid vaccine, and still more favorable results have been reported by Ichikawa,³ who used typhoid bacilli that had been treated with the serum of patients convalescent from typhoid fever (sensitized vaccines). Both of these results have since been confirmed by the work of Ditthorn and Schultz,⁴ Goldscheider and Aust,⁵ Paltauf⁶ and others.

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* This work was planned and begun in collaboration with Edith J. Claypole, whose regrettable death on March 26, 1915, deprived the author of an invaluable associate, and medical science of an able and inspired contributor.

1. Fraenkel: *Deutsch. med. Wchnschr.*, 1893, xix, 958.

2. Kraus: *Wien. klin. Wchnschr.*, 1914, xxvii, 1443.

3. Ichikawa: *Sei-I-Kwai Med. Jour.*, 1915, xxxiii, 73.

4. Ditthorn and Schultz: *Med. Klin.*, 1915, xi, 100.

5. Goldscheider and Aust: *Deutsch. med. Wchnschr.*, 1915, xli, 361.

6. Paltauf: *Wien. klin. Wchnschr.*, 1915, xxviii, 125.