tinue his work of enlightenment (this is how Great Britain "encouraged" Lister!), who is to accept the high responsibility for increasing efficiency in the treatment of disease demanded by the suffering patients who will continue to crowd the hospitals? Will the "humane" societies, after making it a misdemeanor for a scientist to operate on an etherized dog without running to them for a permit, undertake to furnish us, in some other way than by experimentation, with the sorely needed facts about cancer and other unconquered plagues? Or should this work be entirely entrusted to those who have proved their fitness by their achievements in the study of syphilis?

It is high time that some protest was made against the cowardly charge that animal experimentation brutalizes men; and time, too, that those who launch it ceased to attain thereby a reputation for high moral sense in the community. The facts in the case are readily accessible; and if the charge is made in good faith, it ought to be backed by a notorious evidence of brutality in the profession which authorizes, and is in sympathy with, this "brutalizing" work. But whatever else physicians, as a class, are, brutal they most decidedly are not. Medicine can point to a group of heroes, not to be sur-

If, however, this charge—so far from being made in good faith and on the basis of actual instances of brutalization of character by experiment—represents, for all its odor of piety, merely an academic makeshift for the purposes of debate, then one can but marvel at the moral standard of those who, in their concern over animals, permit themselves to make against a profession, busy with intelligent philanthropy, a charge so grave and so unjust.

CONVENIENT TABLE IN THE USE OF TUBERCULINS

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The revival and wide use of tuberculin in the last few years has led a comparatively large number of makers of biologic products to place the different kinds of tuberculin in most common use on the market. As made by several of these firms, preparations like T. R. and B. E., presumably of the same strength, really contain a different amount of the tubercle solids in the concentrated solutions.

SYSTEM OF NUMBERING DILUTIONS OF TUBERCULIN*

No. of Dilutions	Strength Per Cent.	Compartment A		Compartment C		Compartment D		Compartment E		Compartment F	
		Fld. mg. in 1 c.c. conc. sol.	Fld. mg. in 0.1 c.c. conc. sol.	Solid mg. in 1 c.c. if 10 mg. to 1 c.c. conc. sol.	Solid mg. in 0.1 c.c. if 10 mg. to 1 c.c. conc. sol.	Solid mg. in 1 c.c. if 5 mg. to 1 c.c. conc. sol.	Solid mg. in 0.1 c.c. if 5 mg. to 1 c.c. conc. sol.	Solid mg. in 1 c.c. if 2 mg. to 1 c.c. conc. sol.	Solid mg. in 0.1 c.c. if 2 mg. to 1 c.c. conc. sol.	Solid mg. in 1 c.c. if 1 mg. to 1 c.c. conc. sol.	Solid mg. in 0.1 c.c. if 1 mg. to 1 c.c. conc. sol.
I (orig.)	100.	1000.	100.	10.	1.	5.	.5	2.	.2	1.	.1
II	10.	100.	10.	1.	.1	.5	.05	.2	.02	.1	.01
III	1.	10.	1.	.1	.01	.05	.005	.02	.002	.01	.001
IV	.1	1.	.1	.01	.001	.005	.0005	.002	.0002	.001	.0001
V	.01	.1	.01	.001	.0001	.0005	.00005	.0002	.00002	.0001	.00001
VI	.001	.01	.001	.0001	.00001	.00005	.000005	.00002	.000002	.00001	.000001
VII	.0001	.001	.0001	.00001	.000001	.000005	.0000005	.000002	.0000002	.000001	.0000001

* Old Tuberculin contains 1,000 mg. of Old Tuberculin to 1 c.c. Conc. O. T. (Compartment A, 1,000 mg.).

Von Ruck's T. R. contains 10 mg. of tubercle bacilli to 1 c.c. Conc. T. R. (Compartment C, 10 mg.).

Cutter's B. E. contains 5 mg. of dried tubercle bacilli to 1 c.c. Conc. B. E. (Compartment D, 5 mg.).

Cutter's and Mulford's T. R. contain 2 mg. of solid substance to 1 c.c. Conc. T. R. (Compartment E, 2 mg.).

Parke, Davis & Co.'s T. R. and B. E. each contain 1 mg. of tubercle bacilli to 1 c.c. of Conc. T. R. or B. E. (Compartment F, 1 mg.).

Von Ruck's Watery Extract contains 1 mg. of dry solids to 1 c.c. Conc. W. E. (Compartment F, 1 mg.).

passed in any profession, who have testified to the sincerity of their scientific zeal by offering their own bodies as material for experiment; and until the opponents of animal investigation can match this, charges of brutality come from them with very bad grace indeed. Moreover, it is a simple fact that the physicians of any community—devoting their lives to the relief of distress—maintain a reputation for interest in others to which the term "brutal" is simply not applicable; and that in communities where experimentation is going on it is to those interested in animal investigation that the profession looks for leadership in its far-sighted campaign for the health and happiness of this and future generations. The reputation of these leaders, so far as brutality is concerned, is above reproach. The high standard of Pasteur, most kind-hearted of men, most active of experimentalists—has been maintained by his successors; and those who, in their righteous indignation, echo the outcry against experimentation on the ground of its brutalizing effect, might better serve the cause of righteousness by an inquiry, among the scientists in their own community, into the truth of this serious accusation.

In reading reports concerning patients under treatment, therefore, the dosage mentioned may be actually quite different from that which the reader has in mind from the figures given. As a rule, these firms also use different systems of nomenclature in numbering their dilutions. As a consequence physicians in the West not infrequently have patients referred to them with letters concerning the dosage of tuberculin previously used, the exact meaning of which dosage it is not always easy to understand.

The table above, which I use in dispensary and hospital work, may be worth printing because, if desired, they allow notations of the dose to be made in small space on the history cards and allow one at any time to estimate at a glance the exact amount of tubercle solids in milligrams which is contained in the dose of any dilution injected.

Starting with the original or concentrated solution, which in this system of numbering always receives the Roman digit I, the dilutions, made as is the custom, according to the metric system, are carried to as great a degree as is desired, each dilution being ten times

stronger than the dilution below it, so that 10/10 of a c.c. of any dilution is equal to 1/10 c.c. of the dilution just above.

When these tables are used, the bottles containing the dilutions are labeled with the Roman numerals I, II, III, IV, etc., and in making notations of dosage on the history cards, this number is used as the denominator. The numerator is an Arabic numeral 1, 2, 3, 4, 5, 6, 7, etc., to represent 1/10, 2/10, 3/10, 4/10, etc., of a c.c. of that particular dilution.

Thus, 3/IV O. T. would mean 3/10 c.c. of dilution IV of old tuberculin, which, as may be readily seen by reference to Compartment A of the table below, implies a content of 3/10 milligrams of old tuberculin. Likewise 3/IV T. R., if made by Parke, Davis and Company (see Compartment F), would mean 3/10,000 mg.; while 3/IV T. R. of Cutter's make (see Compartment E) would mean 3/5,000 mg.; and of Von Ruck's T. R. (see Compartment C) would mean 3/1,000 mg. The name of the maker of the tuberculin is, of course, always mentioned on the history card.

The use of some such system of numbering as this can effect, therefore, a considerable saving of time when tuberculins are used with any frequency, and may also be of convenience to those who have need from time to time to calculate the exact dosage of some tuberculin only occasionally used, or in the more accurate interpretation of dosage figures given by colleagues elsewhere.

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THE FORMATION AND FUNCTIONS OF HYGIENE COMMITTEES FOR UNIVERSITIES

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The position of a university or any other large educational institution in regard to its students is a peculiar one, involving grave responsibilities of many kinds. Boys and girls are brought from their homes from greater or lesser distances, and perhaps for the first time in their lives are freed from the restraining influences of home life. These students collect in various dormitories or lodging houses and mix together on the campus, in class rooms, and in various assemblages incident to university life. The responsibility of the institution is, therefore, an exceedingly grave one. It takes the place of the parent or guardian to this mass of students. The danger of epidemic diseases, which is always present when numbers of people are brought together, is constantly present. That institution which looks only to the education of the mind through the completion of a fixed course of study falls very far short of its true functions. Those of us who are interested in the teaching of hygienic life see in every educational institution a golden opportunity to spread the doctrine of good living. Education, after all, is designed to fit one for a useful career in life and such a career demands first and foremost a vigorous and healthy body.

Most of our institutions, like Topsy, have "just growed." The old buildings which are objects of reverence and affection to many were built at a time when

our youth perhaps possessed more vigorous constitutions than those which the present-day fast living has brought about, and when the principles of lighting and ventilation were not as well understood as now. Partly through reverence and partly through the necessities of the case, almost all institutions are still utilizing many of these old buildings, and large classes are held in rooms absolutely unfit to furnish suitable accommodations.

HISTORY OF THE HYGIENIC MOVEMENT AT THE UNIVERSITY OF WISCONSIN

A history of the movement for better things in health matters at the University of Wisconsin will serve to elucidate many of the considerations which we wish to bring before you. Although the university is still comparatively in its youth, having recently celebrated its fiftieth anniversary, many of the buildings are antiquated as regards hygiene. A few years ago, several of the professors, recognizing that there was no one connected with the university whose special duty it was to look after the sanitation of the buildings and the health of the students, asked the president to appoint a committee on university hygiene. The first committee was composed of representatives from the departments of bacteriology and hygiene, physiology, physical training and home economics. The work was developed along several lines.

Ventilation.—First, an attempt was made to secure better conditions in the class-rooms and offices. Where artificial means of ventilation were not provided the windows were fitted with window-boards which permitted the raising of the lower sash without producing direct draughts on the occupants of the rooms. In most of the buildings a combined system of ventilation and heating had been installed. Direct radiation from the steam radiators was supplemented by passing air over steam coils by means of fans and blowing this into the rooms through galvanized iron channels. This apparatus was used for the most part only in extremely cold weather. When the weather was not cold enough to require the use of both systems no artificial ventilation was given at all. The committee insisted that the fans should be used for ventilation and not merely to supplement the heating of the rooms. This improved matters considerably, but still many complaints came in to the committee from professors and students alike that the rooms were stuffy and close, causing headache and sleepiness.

Humidity.—A study of the humidity of the air in a number of these rooms was next undertaken, and it was found that the moisture was frequently as low as 20 per cent. and some times as low as 14. The moistening of the air was brought about by the introduction of steam jets into the ventilating flues at or near the fan, so that the moisture would be thoroughly mixed with the air passing into the rooms. Examination of these rooms after this showed that the air was fairly well moistened and the comfort of the occupants of the room was greatly increased. Several of the professors who had used these rooms for ten or more years stated that never in their experience had they lectured with so little fatigue and discomfort. The committee has several times asked for funds to make more complete studies of the air of class rooms, but it has not been able to procure them up to the present time.

It is not believed that conditions at Wisconsin were worse than those at many other institutions, and yet the actual state of affairs was represented by the following incident. The matron of the woman's dormitory went