inspect four times a year. He thus receives four cents for each child, or one penny for a single examination.

Warning Against the Study of Medicine.—The organized profession in Germany has issued a circular warning youth against the medical career. It points out the over-crowding of the profession in comparison to the population, and depicts the material depression prevailing in its ranks from the lack of restrictive legislation against quacks and of regulation of the sickness insurance societies.

Ross and Weir Mitchell Elected to the Paris Academie de Medecine.—The candidates for the two vacant places of corresponding members in the medical section of the French National Academy of Medicine were Ronald Ross of Liverpool, our own Weir Mitchell, Mosso of Turin, Ehlers of Copenhagen, Unna of Hamburg and Pick of Prague. Ross and Weir Mitchell were elected by large majorities at the meeting on July 19.

König's Retirement.—Frank König of Berlin has just witnessed the completion of the model surgical clinic erected for him at the Charité, and now he retires, as he has passed the age of 72. His successor is already announced, A. von Eiselsberg of Vienna, Billroth's favorite pupil. He has already been connected with a German university, having been professor of surgery at Königsberg, 1895 to 1901, after having served a term at Utrecht.

Loss to Science of a Living Students' Manikin.—The death is announced of the Vienna woman, who supported her family by serving as a subject for the study of the upper air passages. She had followed this means of livelihood for twenty years, and had cultivated her vocal organs so that she had voluntary control over them and could hold them still, even when they were being touched, thus affording incomparable opportunities for study of the respiratory organs. She had also learned so that she could tell the investigator when his instrument was following a false route or any other mistake was being made. She always carried a number of "foreign bodies" in a black bag, and would introduce one at a time into the upper air passages and allow the student to search for and extract them.

Russian Tributes to their Japanese Opponents.—The *Russische med. Rundschau* quotes a Russian physician, who has lived long in Japan, to the effect that the most astonishing cleanliness and system reign in all the Japanese Red Cross hospitals and dispensaries. The beds are wide and remarkably neat. A letter from a Russian physician at the seat of war (Wafangou), published in the last *St. Petersburg. med. Wochft.*, describes the battles of June 13 and 14 as "frightfully bitter." "Nothing was to be seen and heard but smoke, dust, noise, thunder and tumultuous din. The Japanese came on with an altogether unexpected and all-compelling energy. Our troops behaved nobly, but no one could withstand the firing. The tops of the hills were literally swept bare of foliage, and after the battle looked like ploughed fields."

New Technic of Sex Determination.—Ducceschi and Tallarico of Florence, Italy, recently described researches which signalize a new, rational and ingenious mode of studying the problems of the determination of the sex of the embryo. Their communication was presented to a local scientific society and published in the *Archivio di Fisiologia* for July. It is based on the recently established fact that after injection into an animal of the elements constituting an organ in an animal of a different species, the serum of the first animal acquires a destructive action for the organ in question. They assumed, for instance, that injection into a gravid animal of substances known to have a specific, destructive action on the testicles, would entail the passage of these substances into the fetal organism, and have an inhibiting action on the development of the male sexual organs, while the female sexual organs would not be affected. Consequently, if the injection were made in the earliest stages of gestation, before the sex of the fetus was actually established, it would prove the determining factor in deciding the sex of the embryo. They have been experimenting with an orchitoxic serum on gravid guinea-pigs, and although their experiences are as yet very limited, they suggest a promising field for further research.

Discovery of the Micro-Organism Causing Pulmonary Phthisis.—Prof. Otto von Schrön of Naples is one of the most venerated masters of pathologic anatomy of the Italian school. He has recently announced that tuberculosis and phthisis of the lungs are two separate morbid entities, although very frequently they may occur together in the same individual. The causal agents differ in each, by their structure, morphogenesis and biologic characteristics. The accumulations of caseous material in the phthisic lung are not necrotic tissue as hitherto

supposed; they are formed by a highly organized germ, which grows in threads and branches, an arborescent microbe, with distinct fructification, taking stains readily, in all the phases of its morphogenetic evolution. It can be obtained in pure cultures by the drop method or in symbiosis with the bacillus of tuberculosis in cultures *in vitro*. The phthiseogenic microbe substitutes the lung tissue, and does not cause necrosis like the toxins of the tubercle bacillus. Each phthisic cavity presents three layers, the outer one formed by the evolving forms of the microbe, while the inner layers are the dead and decaying forms, sometimes with and sometimes without the presence of tubercle bacilli. It has a certain superficial resemblance to hyphomycetes, but differs in essential points. The arborescent ramifications can be seen with a Zeiss oil immersion 1/18, but Schrön has devised a technic for investigation by which the ramifications can be seen with the naked eye. We find life in the caseous material where we supposed there was nothing but death and decay. He calls it the filiform microbe, as the thread formation is its most striking characteristic, possibly compelling its classification among the fungi. It passes through a phase of thread and capsule formation, with a racemose and lichenoid growth, and finally into mucous metamorphosis, which is the stage in which it appears usually in the sputa. It does not take the same stains as the tubercle bacillus, but stains readily with certain others. The products of its secretions are prisms with a hexagonal base, polarizing light, while the products of the tubercle bacillus are non-polarizing rhombi. Both forms of crystals are generally found in the sputa of phthisic subjects.

Correspondence.

Co-ordination Between Clinical and Didactic Work.

PHILADELPHIA, Aug. 2, 1904.

To the Editor:—May I avail myself of the opportunity, which your Educational Number will give, of expressing some views on medical education arrived at after a number of years' service as a teacher of clinical medicine? The remarks I shall have to make relate to the practical branches only; the teaching of the purely scientific subjects is quite another matter. I wish further to add that my remarks have reference to the senior year of study. Physical diagnosis, clinical pathology and history taken properly belong to the pre-senior years.

It would be impossible to draw up an ideal scheme for the teaching of medicine and surgery without taking into consideration available material, its distribution and other local conditions, the number of students, etc. Whatever the conditions, there must be a co-ordination of different methods of teaching and a suitable apportionment of the student's time. When laboratory and clinical teaching were introduced into the curriculum of medical schools many were led to the conclusion that the didactic lecture was doomed to suppression, a conclusion which seems to me unwise and unwarranted by experience. It may be freely granted that the amount of time devoted to such lectures in some schools is still excessive, but, on the other hand, it is too exalted appreciation of practical work that would supplant the lecture entirely. The presence of the teacher, the *vox viva*, and the resulting impression made on the average student's mind give the didactic lecture an advantage over text-book study that is real and appreciable. Practical work must not be compared with the lecture, for no amount of clinical material and no reasonable lengthening of the medical course would make it possible for the student to gain the desired acquaintance with disease in its many variations through practical work done in the medical school. The comparison properly lies between didactic work and text-book study, and here certain advantages are undoubtedly on the side of the lecture. Reading must, of course, form a supplemental part of the student's training, and I am not disposed to deny that there may be a student now and then who could with advantage omit the lecture in favor of study, but such individuals are exceptional.

The subdivisions in the practical teaching of medicine and surgery now commonly recognized are: The clinical lecture, clinical conference, ward class, work in the wards of the hospital and dispensary, and laboratory classes. Each of these

has a separate sort of usefulness and must be given a share of the total available time in accordance with local facilities. Nowhere, however, can the best results be achieved unless the advantages of these different methods of instruction are secured.

The ward class is valuable according to the way in which it is conducted. My experience with students at the University of Pennsylvania has been that they learned more of that which it is most important to learn, in ward classes than in clinics, clinical conferences or work in the wards. The ward classes are composed of not more than ten men, and each group is taken to the bedside by an instructor, who usually demonstrates but one case during the hour. The instructor reviews this case thoroughly, taking up the history, the symptoms and the physical examination systematically. The classes are small enough to allow each student to percuss, auscultate, etc. The important advantage of such a class is that it teaches *method*, and it is method more than a mere collection of facts that should be taught in practical courses. Compare such a class with the large "ward classes" of the English schools and the advantage of the former becomes obvious. The English ward class, as I have seen it conducted, is a class of from 20 to 30 men, who walk through the ward, stopping at one bed after another, to be shown some interesting feature in this or that case. The result of such a plan must be to teach superficiality and unmethodical work. In reality this is not a ward class at all; the same instruction could be given equally well as a large clinic.

An institution committed to the small ward class method must be prepared to supply a large number of instructors for the subdivision of the class in several fold as great as when the larger classes are given. At the same time the number of teaching hours given to each student will necessarily be less than could be given to larger groups, but the advantage of the method more than compensates for the reduction in hours, whatever appearances may seem to indicate.

The value of ward work depends on the system and to a large extent on the student. Our method is to assign the members of the fourth-year class to duty in the wards, each student being placed in charge of certain beds. During one hour each day he is required to examine his patients, make blood counts, urine examinations, etc., under direction of the resident physician; the following hour one of the physicians or assistant physicians makes the "rounds" accompanied by all the students working in that ward. At each bed he questions the student in charge and discusses the case briefly with all. Valuable as this method is when combined with the ward class (or, better still, when preceded by the ward class), the ward visit taken by itself would be inadequate. It gives the student a certain responsibility and independence which brings out his best work under proper guidance, but unless the supervision is immediate and constant (which is almost impossible) it fails, unless provision is elsewhere made to teach the required method.

The clinical conference is properly compared with the larger ward classes alluded to before. Our method is to assign two students to a case in the ward and to discuss this case with a group of from 25 to 50 students before whom the two, specially selected to study the case, make their report a week after the assignment. A number of the students may be called to the bedside to confirm or correct assertions of those reporting the case, thus increasing the interest of the class and at the same time utilizing the material for the benefit of the greatest number possible. The advantage of the clinical conference is that it gives the student the greatest independence in case study, with the subsequent advantage of criticism by his fellows and the instructor. It can not, however, supplant the ward class or ward work.

The general clinic or clinical lecture has somewhat the same advantages as the didactic lecture in so far as the spoken words of an experienced teacher impress themselves on the student's mind more indelibly than the best text-book descriptions, and the practical demonstration of the method of obtaining a history, of conducting a physical examination and

of forming deductions is of incalculable advantage. It may be said that but few of the students in a large clinic are near enough to the operations or even the visible signs in medical cases. This is undoubtedly a defect of the general clinic, but its other advantages make it indispensable in a properly rounded medical course. As long as judgment based on experience and deduction are a necessity to medical diagnosis, the practical exposition of a master's method will be a useful part of teaching. Physical examination, the procedures of microscopic and chemical investigations and the systematic consideration of symptoms may be better taught in the ward class, laboratory, didactic lecture or library, but diagnosis in its broadest sense and refinements of treatment are best imparted in the clinic.

Work in the hospital dispensary or out-patient department and laboratory classes are properly a part of the pre-senior year of study, as they are in most respects preparatory to the finished work of the last year and necessary to the student's proper utilization of the advantages of his final year of study.

Whatever proportion of time is properly allotted to each of the methods of practical teaching, it is always important that the peculiar advantages of the methods be recognized to the end that their individual merits may be realized. Clinics are sometimes conducted as didactic lectures, while ward classes or conferences are converted into clinics. Such changes detract from the system as a whole and defeat its proper purpose. Above all else, the most essential requisite to successful teaching is a well conceived system conscientiously carried out.

ALFRED STENGEL.

The Failure of the Laboratory Worker as a Practitioner.

GALESBURG, ILL., Aug. 1, 1904.

To the Editor:—I was one of those who enjoyed the hospitality of the University of Pennsylvania during the dedication of its new medical laboratories at the close of the Atlantic City session. I was greatly impressed, as every one of the Association members must have been, with the evident completeness of the great building for the purposes for which it was designed. I was also interested in viewing the exhibit of the work which had been done in recent years by the students in the medical department, the exhibit from the course in surgical pathology being especially fine. From Philadelphia I went to one of the coast cities in the East, where a large number gather each year for medical instruction. There I learned personally of some of the methods of instructing medical students, both graduate and undergraduate.

It has been my privilege and pleasure within a few years to have associated with me some of the younger men who were the products of the present educational methods in medicine. I regret to say that what they brought to me, practically, was not an unalloyed advantage. In three instances they had been sent out from as many recognized schools. One graduate, indeed, was thrice the recipient of a gold medal for proficient and accurate work during his medical course. But in the small laboratory of a fairly successful practitioner, and away from the apron strings of their instructors, the accurate and therefore usable knowledge which these young men possessed, was a minus quantity. To one who had been trained in a large eastern school at a time in the long ago, when twenty lessons comprised the course in histology, pathology and bacteriology, it was felt that these young men were needed. They came, and they all went the same road. For pathology they brought guesswork; for bacteriology, guesswork; for blood and urinary examinations, guesswork.

Now, some one in defense of these young men, may say that the above statements can not be literally true, if the young men were of average ability. But their average ability was, and is, unquestioned; and they were given every facility for scientific work. True it is, that they possessed knowledge of these subjects, but it was rudimentary to the degree that it did not rise above the rule in any well-regulated physician's office making no pretensions to special knowledge. With an experience such as this, educational methods in medicine had an added interest.