pler effects," "Studies of quadrant electrometers," "Calibrations of electroscopes," "Ionization currents," "Properties of ionized gases," "Mobility of ions," "Formation of clouds by expansions," "Conductivity of flames," "Comparison of ionizing agents," "Thermionic currents," "Studies with three-electrode vacuum tubes," "Photo-electric currents," "Brownian movements," "X-ray tubes," "X-ray photography," "X-ray spectra," "Ionizing potentials;" and a group of experiments in the field of radio-activity such as "Range of Alpha particles and stopping power of aluminum by scintillation method," "Absorption of Beta particles," "Absorption of Gamma rays," "Rate of decay of thorium emanation," "Determination of e/m for Beta rays by magnetic deflection," and others similar to those suggested in Makower and Geiger's book or in Crowther's.

In some instances additional work is given along the line of glass-blowing and other physical manipulations and in rendering assistance to research students.

Considerable doubt seems to exist as to the advisability of offering, particularly to undergraduate students, laboratory work in courses along the lines here discussed; in fact, all recognize the inherent difficulties. Certainly, the laboratory work does not at present lend itself to the routine methods commonly employed in other courses nor to the supervision of student assistants. More than one laboratory period for a single experiment is usually required—partly on account of the special technique involved. The nature of the apparatus is such that duplicate sets are hardly to be expected in most cases, and a mistake by one group of students may upset the program of experiments and involve a replacement of expensive or difficultly made apparatus. To guard against such occurrences the instructor must personally give more time to supervision than his time may well permit. In view of all this one may easily understand the following quotations from the replies received:

We have tried them on our graduate students as laboratory experiments and find they require entirely too much time for the returns.

In my opinion the subjects are not suitable for elementary laboratory work.

My experience so far with the laboratory work has not been encouraging, I hope to arrive at a solution of the difficulty this term.

This laboratory work is very satisfactory but requires much time on the part of the student and the teacher, nevertheless it is a very helpful course.

However, most of the replies indicate great interest in the problem and, like the last quoted, favor the laboratory work where time and equipment permit in spite of the difficulties.

I think the course amply justifies the slight additional labor of looking after apparatus, because of the growing importance of a knowledge of . . . .

We find the laboratory work satisfactory as far as it goes, but our time is entirely too limited.

I am in favor of it . . . .

The writer of the latter statement strongly advocates permanent set-ups for some of the more important recent experimental contributions to modern physics.

The present writer firmly believes in giving due emphasis to the experimental phases of modern physics. Many of the problems lend themselves to student laboratory work, and the problem of offering such work will grow easier as apparatus companies develop new and simplified equipment and as manuals descriptive of experiments are published. Even where time and facilities do not permit individual laboratory work the need may be largely met by giving greater emphasis to the lecture demonstration. Too often it is assumed that after a student has finished a few general courses in physics he has no further need of experimental evidence, as he is then able to visualize clearly everything from the printed page. A common practice is to run through in a single day in a general course a "whole show" of electron phenomena and to imagine the student has followed the whole demonstration intelligently, and therefore needs little more of apparatus in later courses. May it be suggested, then, that the student in these special courses may find the field just as new to him and probably further removed from his experience as his general course was to him, and consequently demonstration and laboratory work, appropriately selected and abbreviated, may easily be just as important, from both the instructional and inspirational standpoints, and function in the same way as in his general courses. A more advanced student may be better equipped, but his mental processes are not greatly changed.

Basing his judgment on his own experience, first as a student and later as an instructor, the present writer is quite convinced that more attention to this question might contribute to even greater interest on the part of the student in the recently developed and fascinating fields of physics.

E. L. HARRINGTON

UNIVERSITY OF SASKATCHEWAN

ENDO AGAR AS AFFECTED BY PEPTONE

FOR several years considerable difficulty has been experienced in bacteriological laboratories in making Endo agar. The plates, after being poured with the sterile, decolorized medium and then inoculated with organisms of the colon group, would become, after incubation, a deep pink color which diffused over the entire plate and, at least partially, masks the characteristic reaction of the organisms being studied. This trouble has been attributed to various causes such as

unstable fuchsin, changes in reaction of the agar due to heating or impurity in the chemicals used, etc.

In an experiment in which testing of various stains was the object, the writer used two different lots of Endo agar; one of which was made up with an American peptone, the other with Witte peptone. In all other respects the two lots were identically the same. The formula used in making up the Endo agar was as follows:

5 grams of Liebig's beef extract.
10 grams of peptone.
30 grams of dehydrated agar.
1000 cc of distilled water.

This medium was adjusted to pH 7.0 by Clark's colorimetric method, divided into 100 cc portions and autoclaved at 15 lbs. pressure for 15 minutes. When ready for use the following materials were added to 100 cc of agar: 15 cc of water in which 1 gram of lactose had been dissolved and 10 cc of a 2.5 per cent. sodium sulphite solution in which .5 cc of a 1 to 10 alcoholic solution of basic fuchsin had been decolorized. Plates were poured with this medium and incubated for 24 hours before inoculating to test their sterility.

When these uninoculated plates were examined after incubation a surprising difference in appearance was noted. The sterile plates made from the Witte peptone were colorless while those made from the American peptone were a deep rose pink completely and uniformly diffused over the entire plate. Upon inoculation of duplicate plates of the different media with *Escherichia coli* and *Aerobacter aerogenes* the results were still more striking. After 24 hours' incubation at 37 degrees C. the plates of Witte peptone agar showed a characteristic growth of these organisms. The medium was colorless, except around area of growth where the usual reaction appeared. Those made from the American peptone were a deep, dark red diffused over the entire plate with a darker area in the region of growth. The characteristic coloring of the two organisms was masked by the deep color of the agar.

This work was immediately checked by a duplicate experiment. Two new lots of Endo agar were again made up using the same formula and the two different peptones. Each lot was divided and adjusted to two different reactions, one a distinctly alkaline, and the other neutral. Clark's colorimetric method was used. The same fuchsin was used in both experiments. The results were the same. No difference could be seen in the plates due to difference in reaction.

Sterile plates of each lot were left exposed to the light and air several days. In case of the American peptone plates the color diffused over the plates in 48 hours, while at the end of four days only a faint pink was noted in the Witte peptone plates.

These results indicate that the diffusion of color in Endo agar plates may be influenced by the kind of peptone used. Further experiments are in progress which involve the use of various different kinds of peptone as well as different kinds of fuchsin. These will be reported as soon as they are completed.

ELIZABETH F. GENUNG
SMITH COLLEGE

THE AMERICAN PHYSIOLOGICAL SOCIETY

THE thirty-eighth annual meeting of the American Physiological Society was held December 27 and 28, at the Washington University School of Medicine, and December 29, 1923, at the St. Louis University School of Medicine. The meeting was unusually well attended from the central territory and had a fair attendance from the eastern seaboard.

At the annual business meeting the following were the chief events voted by the society:

Announcement was made of the continuation of the Wm. T. Porter Fellowship for physiological research, administered under the auspices of the American Physiological Society. Dr. Florence B. Seibert, Ph.D, of Yale, was appointed research fellow for the second time. Dr. Seibert elected to pursue her research work in the laboratories of Dr. H. Gideon Wells of the University of Chicago.

Report by President A. J. Carlson, the representative of the society on the National Research Council, covered the matter of medical fellowships and called attention to the fact that a number of these fellows had elected to further their training and research in the physiological group.

The representatives of the society on the Council of the Union of American Biological Societies, President A. J. Carlson and C. W. Greene, reported the movement perfecting the plan for publication of a comprehensive Biological Abstracts. Under the chairmanship of Dr. J. R. Schramm, of Cornell University, the details for this publication are now approaching the point where the undertaking will be launched. The union is also fostering the establishment of a tropical biological station, and is assisting in the formation and work of an international committee on nomenclature.

The invitation extended to the International Physiological Congress for the meeting in America in 1925 was placed with the International Committee by the president of the society at the Edinburgh meeting last July. The final decisions, however, have not been made.

Dr. D. R. Hooker was elected managing editor of the *American Journal of Physiology* for the year 1924. The council nominated as the editorial board of