

ments that have been built from Philadelphia, Boston, Glace Bay, Newcastle (N. B.), New York, Norfolk, New Orleans, Panama, Key West, San Diego and Hanover, Germany. When atmospheric disturbances have been very pronounced on the large antenna at the West Laboratory, they have been very slight on the direction finder apparatus, which is entirely indoors, having no antenna or earth or other outside connection. This apparatus appears to be well adapted to use (a) on merchant and naval ships to obtain the direction from any lighthouses or lightships that may be equipped with radio fog signaling apparatus, (b) to obtain the direction of one ship from another at sea, (c) to communicate between ships or ship and shore stations irrespective of direction by reducing interference and atmospheric, (d) to use by the War Department in field service, as the receiving apparatus is portable and requires no ground or antenna, and can be carried readily in a light vehicle or even by a single observer, (e) to use by the Coast Guard Service to receive distress signals and locate the direction, (f) for use by the Bureau of Navigation to locate amateur or other stations that are not observing the radio regulations or are otherwise interfering with radio-transmission of the government or legitimate commercial business. The Bureau of Standards is prepared to demonstrate the apparatus to representatives of the War and Navy Departments or other interested departments at any time desired.

UNIVERSITY AND EDUCATIONAL NEWS

AN anonymous gift of \$10,000 for surgical research at Columbia University has been announced by the trustees.

MORSE HALL, erected in 1890 and containing Cornell University's valuable chemical laboratories and scientific equipment, was destroyed by fire on February 13. The loss is estimated at \$300,000, partly covered by insurance. The cause of the fire has not been determined.

THE board of trustees of the Ohio State University have ratified the proposal made by President W. O. Thompson for the establishment and maintenance of research professorships. The plan provides that men of recognized ability may be relieved from teaching to devote their entire time to scientific research.

DR. GORHAM BACON has tendered his resignation as professor of otology in the College of Physicians and Surgeons, Columbia University, to take effect at the close of the present academic year.

To fill the vacancy caused by the resignation of Dr. William J. Means, dean of the College of Medicine of the Ohio State University, Dr. Eugene F. McCampbell, secretary of the state board of health, has been appointed to the deanship.

DR. WALDEMAR SCHLEIPP, associate professor of zoology at Freiberg, has been called to the chair of comparative anatomy at Würzburg, vacant by the death of Th. Boveri.

DISCUSSION AND CORRESPONDENCE

SCHOOL AND THE LONG VACATION

THERE is a widespread belief shared by those working in the pedagogic field and those on the outside that something is radically wrong with our educational methods. The results achieved in schools and colleges are in no way proportionate to the native intelligence, the expenditure of effort in teaching and the stupendous outlay of money represented by material equipment and cost of maintenance. Employers of labor in stores, shops and factories complain of the lack of training and efficiency in the young men and women available for hire, and college teachers of sound judgment seem quite generally convinced that the average student at the end of his four-years' course has not enough to show in cultural attainments and useful knowledge. As I have intimated, this disappointing result is not due to lack of ability on the part of the American youth, who for quickness of perception and capacity of learning are not outclassed by the youth of any nation. The fault lies elsewhere. It would carry me too far from my present purpose were I to enter upon a discussion of all the defects of our system. I intend dealing with one only, a definite concrete condition easily comprehended and fully remediable if once educators are impressed with its significance.

The fault I have in mind has to do with the long summer vacation. In my opinion this is placed in an entirely false relation to the school year. Long-established custom has fixed it in elementary and secondary schools, in colleges and universities between two separate and independent school years. The student finishes a course and drops books and habits of study for a period varying from two to nearly four months. At the end of the vacation he returns to a new class, to new teachers, to new studies. It takes him a considerable time—in the professional schools of a university, as I know from my own classes, from a week to ten days—until he gets properly oriented, which still further increases the unused hiatus.

I am not criticizing the length of the vacation. In our climate it is almost a necessity for teacher and student to have surcease from school work during the long heated term; but I believe the vacation is wrongly placed. It ought to come within the school year, not at its close. In its present position there can be no work assigned, for, speaking generally, the teachers of the completed year have no control over the student in the year he will begin in the autumn. If a student is industrious he may carry on work in the continued branches, but will do and can do little or nothing as regards new studies—Greek, higher mathematics, physiology or what not—in the mysteries of which he has not yet been inducted. The loss in momentum and direction is tremendous, and if we add it up for all the vacations during school life from the first year to graduation from the university this potential loss becomes vast and staggering.

What is the remedy? There are two; one is the all-year-round school such as is in vogue in the University of Chicago, with its four trimesters. In the South and the mid-Atlantic region, a summer trimester is almost out of question. It would, for example, be well-nigh impossible to keep all the departments of a university in full swing during July, August and September. There is another remedy, and that I want now to propose. I would not do away with the long vacation, but I would place

it in the mid-period of the school term, by making the scholastic year begin in February or March instead of in September. The school year would end in February with promotions and graduations and a new year would begin after a brief recess of not more than ten days or a fortnight. The student would remain in the new class for at least three months before the summer holiday, more than enough for a good start. The long vacation might then be utilized for valuable and purposive study, partly assigned, partly optional.

I am aware of the existence of a certain pedagogic prejudice against burdening children with school work during the long vacation. What I am advocating is not the projection of the school year with its tasks and mental circumscription into the vacation, for I myself believe that one of the advantages of our long recess is that it gives the child's individuality a chance to develop. I maintain, however, that the assigning of a small amount of work does not interfere with the child's freedom. In the lower grades a very small amount suffices to keep up an interest and to preserve a continuity of thought, which is all that we need strive for. In the case of older pupils and certainly of college students we could well ask not merely the preservation of the mental *status quo* but enough work, proportionate to the length of the vacation, to carry the student a little beyond where he left off—and this again without materially infringing on our youth's traditional claim to a care-free holiday. When student and teacher meet in the fall, work could commence at once with the accumulated energy resulting from a sane combination of work and play during the summer. There would be no loss, but instead a great gain in momentum. Consider the totality of gain in the period from the first grade until the close of the four years' college course, a matter of fourteen or sixteen years.

The change I have suggested is applicable to all schools, elementary, high school, college and university, and can be brought about without doing any violence to the fundamental principles of our educational system. I know of no other reform comparable to this in prac-

tical feasibility that promises such great results.

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A PLAN FOR COOPERATION AMONG THE SMALLER BIOLOGICAL LABORATORIES

SECOND thought is hardly necessary for a realization of the fact that the scientific laboratories of the smaller colleges throughout the country suffer greatly from their isolation, from the overworked condition of the instructor, and from the indifferent quality of the materials for daily use in the ordinary courses in zoology, botany or general biology. Such conditions, furthermore, have a habit of continuing thus unchanged throughout the years, much to the vexation of the instructor as well as to the detriment of the many students, in the aggregate, who take the various courses.

Although the complexity and expense of thorough laboratory equipment are both unlimited, it is yet evident that the prime desiderata for the giving of the ordinary courses to undergraduates are fairly simple matters—a good culture showing large *Amoeba proteus* in abundance, prepared slides stained so as to show mitosis plainly under a dry objective, and other similar items of equipment are matters simple to mention but far from being satisfactorily provided even in some of the better laboratories.

Some further conditions confronting the biologist in the smaller laboratory may be summarized as follows: The task of providing a set of slides satisfactory for illustrating the organology and histology of the earthworm is not so difficult a matter in itself but, when taken in connection with the preparation of many other needed series, it is obviously out of the question that the work be done thoroughly well. The result is either equipment good in quality but scanty in amount or, if the supply be adequate, the quality is low. At this point it is perhaps worthy of remark that the provision of class and demonstration materials for the use of elementary students requires a special talent of the preparator. The lack of special scientific insight characteristic

of the average student makes necessary preparations as plain as to detail as they are lacking in special bias.

As a possible method for providing some of this equipment satisfactorily and from the scientist's, rather than from the dealer's, point of view it has many times occurred to us that a system of mutual aid among a league of the smaller laboratories might be established which would not only furnish a system of exchanges of material valuable for teaching and research purposes but which might also be conducive to scientific and educational benefits as well. The writer feels certain that many of the difficulties outlined above would be relieved by the method to be proposed, which, briefly stated, is as follows: For each of a number of laboratories to specialize upon the preparation of a different element of equipment as, for example, the culturing of protozoa or algæ, the collection and proper preservation of certain other available materials and, in particular, the preparation of histological or cytological slides high in value for the demonstration of general principles. A division of labor thus affected, special pains might be taken for the collection, fixation and staining of material of a definite sort in order that the very best results might be secured and in a field for which the special training of the biologist or the special development of his laboratory might reasonably be expected to add value to the product. The method once mastered the mechanical details of indefinitely repeating the process and so providing a supply for others at work upon other tasks might be carried on by almost any undergraduate assistant.

Concentration of effort upon a task of this sort might easily result in a surprisingly high quality of a certain preparation even from a laboratory of small size and very modest equipment, and conversely the returns from the establishment of the system in benefits from other institutions might safely be depended upon to steadily affect a marked improvement in the quality of the courses offered.

Geographical advantages might also be de-