halves, sprouts will appear on the basal half. Therefore, this half still contained sufficient growth material to produce sprouts. This proves that, although the basal buds would not grow out before their connection with the terminal end of the tuber was severed, they were not prevented from doing so because the terminal sprouts had automatically attracted the limited amount of material for growth.

If a tuber, before the end of the rest period, is cut into transverse slices the buds on the basal slices will grow out first. If the tuber is cut lengthwise into fractions the growth of basal buds is entirely suppressed. The terminal buds on these fractions do not produce sprouts until the end of the natural rest period for whole tubers, which in some cases is a month after the basal buds on the transverse slices have grown out. The basal buds seem to have a shorter rest period than the terminal ones but are unable to grow out until their connection with the terminal end of the tuber is severed. This experiment shows that the terminal end of the tuber, even before its buds have grown out, may inhibit the growth of buds more basally situated.

Potatoes are sometimes affected with a physiological disease called "Spindling Sprout," because the whole tubers produce long, slender, weak sprouts. In all probability the special growth-promoting substances are abnormally low in these tubers. In this connection, however, the most interesting symptom of the disease is a lack of any inhibiting effect of the terminal buds on the other buds, as the sprouts appear, as a rule, simultaneously over the entire tuber. The behavior of the *Bryophyllum* plants reported on by Braum[1] may have been due to a condition of the particular plants analogous to the "Spindling Sprout" of the potato. If this were true it would account for the instances of regeneration of *Bryophyllum* leaves seemingly at variance with the experiments described by Loeb.[2]

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[1] Braun, Lucy E., *Bot. Gaz.*, 65, 191–193, 1918.
[2] Loeb, J., *Bot. Gaz.*, 65, 150–174, 1918.

QUOTATIONS

THE MEDICAL PROFESSION IN GREAT BRITAIN AND THE WAR

The effect of the war upon the number of medical students in their different years of professional study has been described from time to time by the president of the General Medical Council. Between the years 1910 and 1914 the annual entry of first-year medical students averaged roughly 1,440. Since the war the number of these entries has increased by five or six hundred a year. Thus the whole number of students actually pursuing medical studies in the medical schools of the United Kingdom has shown a steady upward movement. In May, 1916, the total was 6,103, in January, 1917, it was 6,682, in October, 1917, it was 7,048, while the latest figure, for May, 1918, was 7,630. But for some time the larger withdrawals of male students from the medical schools for combatant service or for service as surgeon probationers in the navy, more than nullified the increased entries and bade fair to produce a serious deficiency of new practitioners in the years 1918 and 1919. Urgent representations upon this matter were made to the government. As a result something has been done to make good the threatened shortage by the return of third-year students from active service to complete their studies, by the retention in the medical schools of students on their way towards qualification who are liable to be called to the colors, and by limiting the period of service of surgeon probationers. The Minister of National Service has further undertaken to provide that, if possible, the supply of students in training shall be kept at a level sufficient to give an annual yield of at least 1,000 new practitioners. This is the official estimate, but it will be well to remember that though there has been heavy wastage among medical men through the hazards and hardships of war the declaration of peace will be followed by the release from military duty of the majority of the medical men now serving in the army and navy. Demobilization is a matter which effects the medical profession at least as much as other sections of the community. The method in

which the demobilization of medical men may best be carried out is being carefully studied by the British Medical Association. They will no doubt be released gradually as the other branches of the army are demobilized, but many will be eager to return to civil life, and in any estimate of the numbers of the medical profession in this generation regard must be had to the fact that during the last three years practically all newly qualified practitioners have been taken into the army. Within some not very long time after the conclusion of war many of them will be liberated to return to civil life, and will naturally and properly have the first claim upon the public and upon pubic authorities.

Another feature of the last four years has been the great increase in the number of women going in for the study of medicine. In May last there were 2,250 women medical students in the United Kingdom—a figure 23 per cent. greater than the total for January, 1917, and several times larger than in 1914. For this remarkable growth the war must be held mainly responsible. As for the professional instruction of these large numbers of students, men and women alike, there can be no doubt that the war by diverting the activities of many of their teachers into other channels or other spheres has considerably depleted the staffs of the medical schools as well as of other educational institutions in which the preliminary subjects and various branches of medical science are taught. Nevertheless, the teachers who continue at their posts are making every effort to maintain the standard of instruction, in spite of war-time difficulties.

What will be the prospects of the medical profession when the war is over? The medical services have acquitted themselves extremely well in the war, and medical science will come out of it with an enhanced reputation. Military medicine and surgery have advanced, and not a few of the results of practise and research in the war zones will remain as permanent additions to knowledge. The treatment of wounds has steadily improved, orthopedic treatment for the crippled and maimed is more successful than ever; preventive medicine in camp and trenches has scored great triumphs; the work of the pathological laboratory and of the bacteriologist has proved to be of the utmost value. In civil life the spirit of the times is all in favor of extension and coordination of the public health services. This is reflected in the widely-supported proposal for the setting up of a Ministry of Health, which has received fresh impetus during the past few months. The Minister of Reconstruction, according to rumor, has had a draft bill in his pocket since the beginning of the year, but it does not appear to have won the approval of the Committee of the Cabinet on Home Affairs. The possibilities of the future are large, but as yet ill defined. More medical care has been provided for expectant mothers, for infants, for children, and for the victims of venereal diseases; a great increase in the public work of pathological laboratories all over the kingdom may be confidently expected. All this means an increase in the official medical services. What ultimate fate is in store for the private practitioner we will not venture to foretell. Before the war, as we have pointed out above, his position had been profoundly affected by the Insurance scheme which converted the majority of general practitioners into part-time civil servants and subjected them to the discipline of Insurance Commissioners. Pecuniarily it has benefited some and impoverished others. One thing at least can be said: the immediate future is full of uncertainty, especially for the general practitioner. Forces which had long been at work beneath the surface have gained strength through the circumstances of war and many believe that the state will gradually tighten its grip on the medical profession.

Every doctor should possess a strong sense of *esprit de corps*. Medicine is a profession which, when it comes to business dealings of any sort, the general public—as also public authorities—persistently regard as being of a semi-philanthropic character. Furthermore, it is a profession whose aims and requirements are very ill understood by persons who have not undergone a medical education. Hence the interests of the medical profession, both on its financial and scientific sides, are continu-

ally being attacked, sometimes openly, sometimes insidiously. It is all-important, therefore, that medical men and women should band themselves together for the common protection of themselves and the profession to which they belong, and to this end join the British Medical Association. For the objects of this body are to promote the progress of medical science and the interests of the medical profession, and its past history shows that it has well fulfilled them.—*The British Medical Journal.*

SCIENTIFIC BOOKS

The Wings of Insects. By J. H. Comstock. Ithaca, N. Y., The Comstock Publication Company. Pp. xviii + 423, 9 plates and 427 figs.

In these days of distraction from pure science it is a pleasure to note the appearance of Professor Comstock's book on the wings of insects. The whole book is devoted to an exposition of the uniform terminology of the wing veins of insects, a field of scientific research in which Professor Comstock has long been preeminent. The book is founded upon the now well-known theory that the wing veins of insects can only be homologized by a study of the tracheæ which precede them. The historical phases of this theory are discussed together with the general features and development of the wings of insects. A general chapter that ought to be appreciated is the one on paleontological data. Professor Comstock's conclusion after reviewing the various fossil forms is: "A study of the paleontological data confirms to a remarkable degree the conclusions drawn from the study of the ontogeny of living insects as to the probable primitive type of wing venation."

Following the general chapters are special chapters devoted to the wings of the various orders of insects. In these chapters the author has not only used the results of his original investigations but has also used the results of various workers who have given special attention to the different groups. These two sources of information have been welded into a concrete whole that taken together with the illustrations both of wing tracheation and venation can not help but convince entomologists not only of the desirability of a uniform terminology but also of the firmness of the foundation upon which the Comstock system is based.

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THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

The fourth number of Volume of the *Proceedings of the National Academy of Sciences* contains the following articles:

Dynamical aspects of photosynthesis: W. J. V. Osterhout and A. R. C. Haas, Laboratory of Plant Physiology, Harvard University. *Ulva,* which has been kept in the dark begins photosynthesis as soon as it is exposed to sunlight. The rate of photosynthesis steadily increases until a constant speed is attained. This may be explained by assuming that sunlight decomposes a substance whose products catalyze photosynthesis or enter directly into the reaction. Quantitative theories are developed to account for the facts.

Mobilities of ions in air, hydrogen and nitrogen: Kia-Lok Yen, Ryerson Physical Laboratory, University of Chicago. Extensive experiments, the rusults of which are in perfect accord with the "small-ion" hypothesis, as contrasted with the "cluster" hypothesis.

Thermo-electric action with dual conduction of electricity: Edwin H. Hall, Jefferson Physical Laboratory, Harvard University. A continuation of previous papers. The hypothesis of progressive motion by the "free" electrons only has been extended to the case of dual electric conduction.

Terrestrial temperature and atmospheric absorption: C. G. Abbot, Astrophysical Observatory, Smithsonian Institution. The earth's surface sends out 0.50 calorie per cm^2 per minute on the average, and of this only a small part escapes to space. Hence, the atmosphere is the main radiating source, furnishing three fourths of the output of radiation of the earth as a planet.