disabled, which each country can adapt to its own laws and customs; to group and centralize the data and the lessons learned from experience, and to apply them and aid in every way the mutilated and to extend this aid into the future after the war. By this coordination of efforts each one of the allied peoples will be able to profit by the improvements and achievements realized in any one of them.

The announcement was recently made in the British Parliament by the president of the Board of Agriculture that active steps have been taken with a view to the establishment at Cambridge of an Institute of Agricultural Botany, the primary function of which will be the breeding and distributing of improved varieties of agricultural crops. The plan in question was very fully described by Mr. Lawrence Weaver, of the Board of Agriculture, at a meeting of the Agricultural Seed Association held on July 15. It appears that the new institute will be modelled on the famous Swedish plant-breeding station at Svälof, and that its activities will be to follow two distinct lines, one of which will be purely scientific, while the other will have a commercial outlook. More precisely, the scientific wing will be concerned with the producing of pure cultures of new varieties on the field-plot scale; the economic wing will deal with the growing and distribution on a large scale of these varieties. Presumably, on the Svälof model, the scientific side will oversee the operations of the commercial to the extent of guaranteeing the purity of the stocks distributed by the latter. It is announced that subscriptions towards the establishment of the new institute amounting in the aggregate to upwards of £30,000 have already been received including a sum of £10,000 down and £2,000 a year for five years from a commercial firm and that the Board of Agriculture will provide the necessary buildings and equipment.

The Association of British Chemical Manufacturers has in preparation a directory of British chemical products, and the manufacturers from whom they can be procured. The directory, which will be printed in English, French, Italian, Japanese, Portuguese, Russian and Spanish, is expected to be published before the end of the year.

UNIVERSITY AND EDUCATIONAL NEWS

By the will of the late Andrew Dixon White, Cornell University will receive $160,000 on the death of Mrs. White. It receives many paintings and other objects. Dr. White had already given the university his general and architectural libraries, scientific apparatus, funds for extinguishment of debt, illustrative material and other items, and also his house which cost about $75,000. Yale University, Dr. White's alma mater, receives $5,000 for the endowment of the Andrew Dickson White prizes in history and composition, which were established and have since been maintained by Professor Guy Stanton Ford.

Dr. A. Hoyt Taylor, for nine years professor of physics and head of the department, University of North Dakota, having resigned after a year's leave of absence, to continue his war service as lieutenant commander of Naval Radio Communication, in charge of Atlantic Coast Service, Dr. B. J. Spence, associate professor of physics, has been promoted to a full professorship to be head of the department. Dr. Spence has been at North Dakota for the past eight years. Dr. John W. Cox, professor of pathology and director of the State Public Health Laboratory, University of North Dakota, having resigned to enter the United States Public Health Service, he is succeeded by Dr. Alfred G. Long, of Mankato, Minn., as acting director.

Professor C. L. Dake, of the Missouri School of Mines, has returned to his regular duties, after spending his year's leave of absence as a petroleum geologist.

Alfred E. Day, formerly of the Syrian Protestant College, has been appointed professor of biology in the University of Buffalo.

Dr. Charles Packard, recently instructor in zoology in Columbia University, has arrived in Peking, China, where he will have charge of the work in biology in the Union Medical Col-

lege, the maintenance of which is one of the lines of activity of the Rockefeller Foundation.

DISCUSSION AND CORRESPONDENCE

CONCERTED FLASHING OF FIREFLIES

ON a hot and dark evening in the summer of 1915, a camping party sought the rocks near the waters edge on the north shore of Sloop Bay, Valcour Island, Lake Champlain. An intermittent flashing of diffused light was soon noticed in the northwestern corner of the bay between 300 and 350 meters distant. This flashing was somewhat similar to that ordinarily called "heat-lightning," but as it appeared against the base of a cliff something over ten meters high an investigation of the phenomenon was decided upon.

On approaching in canoes, a scene of wondrous beauty presented itself. The light was due to the minature lamps of several thousands of fireflies which were holding festival over what appeared to be a breeding ground. The area involved was about 100 meters in length and extended from near the water's surface to a height of about seven meters. At this locality the bare rock faultscarp which formed a portion of the north wall of the bay was covered with a steep sloping bank of glacial and postglacial deposits and these were well supplied with water through seepage. Moving southwesterly one left the bare portions of the cliff and rapidly passed through various plant communities from lichens and mosses to a small grove of white pines. Above this locality there was also a forest clearing used as a meadow.

At no time over the limited area at the base of the bank could one notice an utter absence of illumination but the lighting of a small cluster of lamps seemed to awaken immediate response from a thousand others, and the illuminated area thus spread from one or more centers until the bank was brilliantly ablaze and suggestive of the myriad lights of some city of fairyland. It was these periods of intense illumination that had attracted the attention of the camping party at a distance so great that the lights from a few scattered lamps seemed to leave the bank in absolute darkness. The same phenomenon was also observed on the following evening.

After reading Dr. Edward S. Morse's "Fireflies Flashing in Unison"[1] the writer determined to make another visit to this locality and observe the phenomena more critically. On the evenings of July 11 and 12, 1916. the display was repeated and observed by several visitors. It was impossible to count the number of lamps which were aglow at one time, but the space involved was about 700 square meters in cross section and in some bush-covered places there must have been at least 50 fireflies to the square meter. We should judge that about 10,000 of these insects were present. During these visits we noted that the illumination was never due to a truly synchronous lighting of the lamps of those fireflies engaged in the display but was always of the nature of wave motion spreading out from one or more centers. This spreading moved swiftly from one end of the bank to the other and was particularly beautiful when the light from several centers became confluent, for at that instant the whole bank was very brilliantly illuminated. Strictly speaking there was no *measured* regularity in this concerted response and therefore no *true rhythm*, —such as one may note in the concerted music of certain orthoptera. The repititions were hardly more regular than the cloud illuminations of a distant thunderstorm. There was present the influence of suggestion on what may be called a "mob-psychology" but there was *no special leader*. Any small group could excite a discharge from thousands who were ready to respond. As recovery was rapid, the repititions of the wave-like responses were also rapid.

It is probable that the phenomenon is by no means a rare one and that, in this locality, it is repeated yearly—though the display of 1916 was not quite so brilliant as that of 1915. A display in any place would be compellingly attractive to a passing person only if the festival period occurred during very dark, cloudy or moonless nights. The observer

[1] SCIENCE, February 4, 1916.