placed in Westminster Abbey. The tablet has been executed by Mr. Charles L. Hartwell, A.R.A., and was exhibited at the Royal Academy this summer.

DR. HORATIO R. STORER died at his home in Newport on September 18, at the age of ninety-two years. Dr. Storer was a distinguished gynecologist, who, after an infection from an operation, retired from active practise in 1872. He continued to be active in many scientific movements, having been the founder and life-president of the Newport Natural History Society.

UNIVERSITY AND EDUCATIONAL NOTES

BY the will of Dr. William S. Halsted, lately professor of surgery in the Johns Hopkins University, the residue of his estate, valued at approximately $100,000, is left to the university, subject to the payment annually to his widow of five per cent. of the value of the legacy. The bequest is to be devoted to research in medicine, preferably in surgery.

ON September 6, the old chemical laboratory of the Massachusetts Agricultural College was destroyed by fire. The building was one of the oldest on the campus, having been built in 1867, and occupied more or less completely by the department of chemistry since that time. About four thousand dollars' worth of apparatus, including all the platinum, was recovered. A new laboratory was provided for during the last legislature by an appropriation of $300,000. This building is now being erected and will be ready for occupancy in August, 1923.

BY action of the board of trustees of the Ohio State University on June 19, supplemented by further action on July 11, the College of Homeopathic Medicine, which had been a part of the university since 1914, was abolished.

DEAN D. W. MOREHOUSE, for twenty-two years professor of physics and astronomy at Drake University, Des Moines, Iowa, has been elected dean of the liberal arts college and acting president. President Arthur Holmes is on leave of absence, his resignation taking effect on June 1, 1923. Dr. Morehouse was awarded the Donahue Comet Medal in 1908 for discovery of the Morehouse comet.

DR. W. N. STEIL, of the University of Wisconsin, has been appointed professor of botany in Marquette University, the former department of biology having been divided into the separate departments of botany and zoology. Dr. Edward J. Menge, former director of the department, automatically becomes director of the department of zoology.

DR. MARTIN C. E. HANKE has been appointed instructor in physiological chemistry at the University of Chicago.

W. J. KOSTIR, who during the past year has been instructor in zoology at Columbia University, returns this fall to Ohio State University as assistant professor of zoology and entomology.

DR. L. E. MILES, of the Mississippi Plant Board, has become associate professor of plant pathology and associate plant pathologist in the Alabama Polytechnic Institute and Experiment Station.

PROFESSOR H. R. DEAN, of the University of Manchester, has been appointed professor of pathology at the University of Cambridge in succession to the late Sir German Sims Woodhead.

CAPTAIN GEORGE PAGET THOMSON, lecturer in mathematics at Corpus Christi College, Cambridge, has been appointed to the chair of natural philosophy in the University of Aberdeen, in succession to Professor C. Niven, recently retired. Mr. Thomson, who was unanimously elected by the court out of seventeen applicants, is the only son of Professor Sir J. J. Thomson, master of Trinity, Cambridge. He has had a distinguished academical career, and is only thirty years of age.

DISCUSSION AND CORRESPONDENCE

GROWTH OF PLANTS IN ARTIFICIAL LIGHT FROM SEED TO SEED

DURING the past winter the author has succeeded in producing good seed from plants

grown in artificial light entirely. Since no reference to the growth of plants from seed to seed without sunlight has been found in the literature this preliminary report of the first successful attempt may be of use to plant breeders and agronomists in northern regions.

A great variety of plants including several varieties of wheat, oats, barley, rye and potatoes, buckwheat, lettuce, beans, peas, clovers, radishes, flax and a number of common weeds were grown from seed to seed entirely in artificial light. The seed produced was of good quality, full of starch, and germinated well.

Light for the experiment was obtained from tungsten filament nitrogen filled lamps which were burned for twenty-four hours each day. The lamps are rated to burn 1,000 hours but they averaged 3,000-4,000 hours under continuous use. One set of lamps was found to be more than sufficient to produce an ordinary crop such as the cereals, since the time to head is much decreased by continuous illumination. Spring wheats produced ripe seed in about 90 days. At this rate it ought to be possible now to grow three generations from a cross within one year. The growth of valuable plants in artificial light should be of considerable advantage in northern regions where the light in winter is of short duration and low intensity.

All of the plants tested, except cabbage, have bloomed and each variety does not seem to require any particular period of illumination to cause blooming as found by Garner and Allard.[1]

Four ranges of light intensity were used and a number of plants bloomed in all of them, although the illumination was continuous. The tests were performed in three unheated basement rooms. It was unnecessary to supply any heat other than that produced by the lamps even in the coldest winter weather. For cereals the temperature was controlled automatically at 14° C. by blowing in cold outside air. The energy used in heating the ordinary greenhouse in Minnesota during the winter would be ample for both light and heat in such experiments as these since nearly all the energy of the light finally goes to heat and thus is made to serve a double purpose.

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[1] Garner, W. W., and Allard, H. A.: *Jr. Agr. Res.*, 18: 553-606: 1920.

THE PREPARATION OF CLEAR BEEF AGAR

A CLEAR beef agar with a p_H reading from 6.6 to 7.0 being desired and the usual method for the preparation of such media proving unsatisfactory, inasmuch as a cloudiness often developed in the cleared agar on sterilization, the following procedure has been adopted and has proved uniformly reliable.

The formula is as follows:

Beef extract (Liebig's)	3 grams
Peptone ("Bacto")	10 grams
Sodium chloride	5 grams
Agar Agar	15 grams

These ingredients are dissolved in one liter of distilled water by flowing steam. As suggested by the directions for the preparation of beef bouillon, given by James McIntosh, M.D., and William A. M. Smart, B.Sc.Land.,[1] the resultant nutrient agar is adjusted to a p_H of about 8.2 with an approximately normal solution of sodium hydroxide. After cooling to 45°-50° C., the beaten whites of two fresh eggs are added. Soluble egg albumin powder may be substituted for the fresh eggs, 5 grams beaten up in 50 cc. of distilled water proving satisfactory. If more than one liter is being made, the beaten white of one egg or a proportional quantity of egg albumin powder should be used for each additional liter. After mixing thoroughly by pouring from one container into another, the agar and egg are autoclaved for 15 minutes at 15 pounds pressure, filtered through paper or, preferably, through absorbent cotton by suction, and the filtrate adjusted to the desired p_H with an approximately normal solution of hydrochloric acid. It is then autoclaved for 5 minutes at 15 pounds pressure to insure the complete precipitation of any fine particles remaining in suspension and filtered through paper. After tubing, it is finally sterilized for 20 minutes at 15 pounds pressure. This beef agar remains

[1] James McIntosh and William A. M. Smart: "The Adjustment of the Reaction of Bacteriological Media," *Lancet*, Vol. CXCVII, No. 5017.