

Historic Scientific Instruments in the Old Ashmolean Museum, Oxford.

ON Tuesday, May 5, the Old Ashmolean Museum at Oxford was reopened as a home for old scientific instruments, especially the magnificent collection presented to the University by Mr. Lewis Evans, on whom the honorary degree of D.Litt. was first fittingly conferred. After this, a large and brilliant gathering assembled in the Divinity School under the chairmanship of the Vice-Chancellor to hear an account of the collection from Mr. R. W. T. Gunther, fellow of Magdalen, who has been appointed curator; and an address from the Earl of Crawford and Balcarres, president of the Society of Antiquaries, who performed the opening ceremony.

The Old Ashmolean Building, which embodies many of the features of Wren's design for a College of Science, was originally opened on May 21, 1683, by the Duke of York, afterwards James II.; and it was pleasant to have at this second opening, nearly 250 years later, a cordial message from the present Duke of York, transmitted through a specially appointed representative, the president of Magdalen. Lord Crawford, in some inspiring words, welcomed the dispelling of the mischievous fallacy that there is a necessary antagonism between science and art; for in the present exhibition the two are practically combined. Instruments that have become scientifically obsolete survive as beautiful works of art.

The company had ample opportunity to verify this statement; for many of the exhibits have indeed great beauty of workmanship. A little crucifix, the arms and sides of which constitute a vertical sundial, while the interior is filled with drawing instruments, came in for special admiration. Its instruments were spread out beside it, and their number almost suggested that it might be difficult to get back the "genie into the bottle." Dr. Evans has told us that his collection began (when he was only eleven!) with sundials; and though it expanded later to include astrolabes and other instruments of precision, it took him twenty years to find his first astrolabe. He was really trying all that time to get one, and prepared to spend money on it, but there were none to be had. In view of the number he has now accumulated, this is very surprising. An interesting development of his collecting tastes is represented by a very fine set of gunnery levels, specially admired by another collector of these treasures.

Besides the Lewis Evans collection itself, there are

many other loans and gifts, attracted partly by the new and splendid opportunities for presentation, and partly no doubt by Mr. Gunther's persuasiveness. Miss Willmott has lent a remarkable astronomical clock, with an astrolabe as dial, two hands to show the positions of the sun and moon, and a mean time clock at the back—all beautifully ornamented. Christ Church and Oriel have both lent important collections—the former a collection of orreries. Doubtless other gifts and loans will come. Mr. Gunther was specially gratified to receive a note from Mr. E. B. Knobel after his visit: "I see from your catalogue you want a Davis's Backstaff: I'll send you one." There are copies of two Galilean telescopes and a Hooke microscope which come from special funds. Perhaps the best example of the advantages brought by the new opportunities is the conjunction of (a) the first circular slide rule (1632), invented by Oughtred, (b) portraits of Oughtred and of Elias Allen, the maker, (c) two books on the subject by Oughtred and Allen. Now (a) is a loan from St. John's College, (b) from the Hope collection of portraits in Oxford, while (c) are from the Evans collection. Thus we see the value of Oxford as a collecting and combining medium; but again, we must not undervalue the knowledge which Mr. Gunther had gradually acquired of the (formerly) hidden resources of Oxford.

We may regard Tuesday's ceremony as the very satisfactory ending of a period of doubt and difficulty with regard to the Lewis Evans collection. The joys of collecting are great; but there comes a time when some anxiety as to the ultimate fate of the collection must temper those joys. Such anxieties must now have been dissipated; and for this happy result we have in great measure to thank the Vice-Chancellor, without whose sympathy and liberal views of the functions of a University even Mr. Gunther's energy might have failed to clear the path from difficulties.

Two points of detail may be mentioned. The little catalogue of the instruments is on sale in the Old Ashmolean Building, *not* in the Ashmolean Museum as (erroneously) printed on the cover. The danger of this confusion is well-nigh unavoidable. Secondly, those interested will find some really excellent pictures of building and exhibits in *Country Life* for May 9.

H. H. T.

Growth Stages of a Crustacean.

EVERY student of zoology has some acquaintance with the larval stages of those Crustacea that undergo metamorphosis, but there has hitherto been no detailed account of the changes during growth in any of the species in which development is direct. In the course of researches on the genetics of *Gammarus chevreuxi* carried out at Plymouth, Mrs. E. W. Sexton found it necessary to have fuller information as to the characters of the successive stages from hatching to maturity. She therefore set herself to the laborious task of studying and depicting, with her well-known artistic skill, complete series of the moulted skins of isolated individuals. The results are now recorded in a paper (Journ. Marine Biol. Ass., vol. 13, No. 2, pp. 340-396, 21 pls., 1924) which is of unusual interest and importance from several points of view.

Apart from certain changes in the proportions of the body, the differences between the various stages are slight and concern mainly the form, number and position of the hairs and spines on the body and limbs. These trivial differences, however, are remarkably

constant, and by means of them the successive stages can be as sharply defined and as surely recognised as can the larval stages of those Crustacea in which the changes of form are more striking. It is especially noteworthy that this constancy is undisturbed even by considerable changes in the environment. *Gammarus chevreuxi* will live and breed equally well in fresh, brackish or sea-water; it breeds all the year round, and the winter broods take more than twice as long to reach maturity as do those hatched in the summer; yet "the stages of growth were found to be identical, even to the number and position of the hairs." As these statements are based on the study of more than 3000 moults obtained during a period of twelve years, we may confidently take Mrs. Sexton's word for it.

Sexual maturity is reached by both sexes after the seventh moult. The females continue to grow and to moult without further change of form. The males, however, do not attain their definitive characters until the ninth moult. There are, therefore, three

forms of breeding male which might well be taken to belong to different species. It is suggested that this fact, hitherto unknown, may have caused much confusion in the taxonomy of these Amphipoda.

The occurrence of "intersexes" in this species has already been recorded in earlier papers by Mrs. Sexton. These were "female intersexes," and the study of their life-history now shows that they begin as females and develop more and more of the male characters as they grow. "Male intersexes" are also mentioned, but these might be better described, perhaps, as incomplete males, since their effeminate appearance is due rather to the persistence of immature characters than to the assumption of those that are peculiarly female.

Brief accounts are given of the life-history of three other species of Gammarus found at Plymouth. Although the structural characters which distinguish them might be thought trivial by any one but a specialist, the differences in their breeding habits are very marked and "probably form an insuperable bar to cross-breeding" even when the species occur together.

A small detail of interest to the morphologist was observed in the antennules. On the upper surface of the first segment is a narrow longitudinal groove planted with a row of plumose sensory hairs. This is, no doubt, a vestige of the so-called "auditory sac" or statocyst, found in many decapods and also in the Syncarida but not hitherto recognised in any other Crustacea.

In passing, Mrs. Sexton deals with "a picturesque legend" which has been widely quoted from Spence Bate, who gives it on the authority of Dr. James Salter. It is to the effect that the young gammarids, on quitting the brood-pouch of the mother, keep close to her as she swims about and, on the approach of danger, rush back to the pouch for shelter. Spence Bate not only expends some rhetoric on this "interesting instance of maternal solicitude," but also gives us a pretty picture of the mother Gammarus accompanied by her brood. Mrs. Sexton tells us that there is not a word of truth in the whole story. The young could not possibly re-enter the pouch if they tried, and in *G. locusta*, the species to which Spence Bate refers, hatching is followed immediately by emergence of the young, moulting of the mother and deposition of a fresh batch of eggs. W. T. C.

University and Educational Intelligence.

CAMBRIDGE.—The Museum of Archaeology and Ethnology has received from the Earl of Denbigh the Pennant Collection consisting of a very important series of ethnological objects collected by Captain Cook himself in the Pacific, a series of archaeological specimens which is of great interest and value.

Dr. Scott, Trinity College, has been reappointed curator in entomology; Mr. P. M. S. Blackett, King's College, has been appointed assistant demonstrator of experimental physics; J. Barker, Trinity College, has been reappointed to the Frank Smart studentship in botany; A. B. Deacon, Trinity College, has been elected to the Anthony Wilkin studentship in ethnology and archaeology; G. E. Hutchinson, Emmanuel College, has been nominated to use the University table at the Zoological station at Naples.

Prof. Niels Bohr is lecturing on "Problems of the Quantum Theory" at the Cavendish laboratory, on Friday, May 15.

The annual report of the Board of Research Studies provides interesting reading. The number continues to rise and there are now 248 students registered and working under the administration of the Board. The chief increase in any subject is in physics, where there are now 40 research students. The number of

Cambridge graduates who have registered as research students continues to increase and has now reached 80. The number of American students shows a marked increase. The distribution in colleges still remains very unequal, the numbers ranging from 46 at Trinity College, 38 at Emmanuel College, and 34 at Gonville and Caius College to 2 at Pembroke College, 1 at Jesus College, and 0 at Selwyn College.

LONDON.—A free public lecture (in English) on "Modern Conceptions of Light Stimuli in Plants" will be given by Prof. F. A. F. C. Went, of the University of Utrecht, at the Imperial College, Royal School of Mines, on Monday, May 25, at 5.15. No tickets will be required.

The University Studentship in Physiology, value 50*l.*, will be awarded to a student qualified to undertake research in physiology. Applications should reach the Academic Registrar by, at latest, June 1.

Applications are invited for grants from the Thomas Smythe Hughes Medical Research Fund for assisting medical research. They should be sent, accompanied by the names and addresses of two references, to the Academic Registrar, University of London, South Kensington, S.W.7, not later than June 15.

MANCHESTER.—In connexion with the Municipal College of Technology the Edmund Mills Harwood Memorial Scholarship, value 50*l.* a year, and tenable for three years in one of the University engineering courses, is offered for competition. Forms of nomination and further information are obtainable until June 15 from the Registrar of the College.

PROF. B. HELFERICH, of Frankfort-on-Main, has been invited to occupy the chair of chemistry at Greifswald in succession to Prof. R. Pummerer, who has been transferred to Erlangen.

THE Society for the Advancement of the Training of Mechanics, Leyden, has arranged for the holding in August of vacation courses for mechanics and glass-blowers in the workshops of the Physical (Cryogenic) Laboratory of the University of Leyden. Information respecting the courses can be had from the Secretary, Dr. C. A. Crommelin, at the laboratory.

THE University of Birmingham has evolved a system of research economy which deserves to be commended to the notice of other institutions. Four years ago, the University established a Joint Standing Committee for Research with the object of making a general policy and recording from session to session as completely as possible all the research work conducted by members of the University staff. The committee's main work is now to grant financial assistance from its own resources, to support, at its discretion, applications by heads of departments to outside bodies, to keep in close touch with all work properly described as research work going on in University Departments or in Departments working under the University, and to record and publish work completed and in progress. With the third annual report (1923-24) particulars were published of 170 researches in progress in the faculties of science, art, medicine, and commerce, and of 150 publications embodying completed researches, and, in addition, accounts of archaeological excavations and of work carried out under the City and University Joint Board of Research for Mental Disease. The resources of universities are so diverse that a common policy in regard to the promotion and organisation of research may not be called for, but in regard to systems of recording and classifying particulars of research, the advantages of uniformity are very