

## Research Items.

WEAVING IN ANCIENT EGYPT.—Mr. Winlock's discovery of a model weaving shop in the XIth dynasty tomb of Mehenkwtetre at Thebes has caused a fresh revival of interest in the subject of ancient Egyptian looms. Two articles in *Ancient Egypt* (Part iii., 1922) are devoted to branches of this subject. Mr. Winlock deals with heddle-jacks and Mr. A. C. Mace with loom weights in Egypt. Some interesting pictures from other tombs dealing with processes of weaving render it easy to follow the lucid descriptions in the text.

BRASS-CASTING IN THE CENTRAL CAMEROON.—The methods of the artists who produced the remarkable series of brass-casting at Benin are illustrated in a paper by Mr. L. W. G. Malcolm, published in the January issue of *Man*. Mr. Malcolm found the art confined to the area in south-west Adamawa, the principal towns being Bamum and Bagam. As a rule the material now used is of European origin. In the north it appears that tin was formerly brought from northern Nigeria, and it has been suggested that copper may have come from the Katanga area of the Congo. In all cases the casting is done by the *circ perdue* process. The articles produced by the Eghāp tribe are generally pipe-bowls, personal ornaments, grotesque animal and bird forms, perfume flasks and bells. Several interesting examples of tobacco pipes used by the Eghāp head-men are illustrated by Mr. Malcolm.

TRIASSIC REPTILES AND STEGOCEPHALIANS FROM TEXAS.—Publication No. 321 of the Carnegie Institution of Washington is devoted to "New Reptiles and Stegocephalians from the Upper-Triassic of Western Texas," by E. C. Case. After sketching the geology of the borders of the Staked Plains in Texas and New Mexico, where these fossils occur, the author proceeds to the description of *Buettneria perfecta*, a new genus and species of Stegocephalia, that has its nearest relations in *Metoposaurus*. There follows a full description of *Desmotosuchus spurensis* and the sub-order Desmotosuchia, which were originally described by Case in 1920, accompanied by a restoration of *D. spurensis*. Of new parasuchians there are *Promystriusuchus ehlersi*, a fully mature phytosaur of the *Mystrisuchid* group, of small size and distinct in its characters from any previously described, and *Leptosuchus crosbiensis* and *L. imperfecta*. Descriptions of isolated bones of parasuchians and the remains of a small dinosaur, with notice of some coprolites and a small fragment of a jaw containing a singularly shaped tooth reminiscent of the teeth of *Diadectes*, terminate this important monograph, which is well got up, as all the publications of the Institution are, and most excellently and abundantly illustrated.

PHENOLOGICAL OBSERVATIONS ON PLANTS.—Dr. E. Vanderlinden has published (*Recueil de l'Institut botanique Léo Errera*, t. x.) further results of his observations on the relation between the time of flowering and various climatic conditions. He has now observed a series of woody plants during the years 1896-1920, and of herbaceous plants from 1910 to 1920. The results are tabulated and also plotted in relation to external factors, such as maximum and minimum temperature, soil temperature, and hours of sunlight. Dr. Vanderlinden finds that advancement or retardation of the flowering period in favourable or unfavourable seasons is much less in the case of herbaceous than in those of woody

plants. This difference he attributes to the fact that in the latter the reserve materials accumulated to supply the new flowers occur in the aerial parts of the plant and are more exposed to the influence of atmospheric variations. Both woody and herbaceous plants show a periodicity in the distance between the two extreme dates of flowering. These are considerable in April but decrease onwards, reaching a minimum towards the end of June, and then show a progressive increase. That is to say, the flowering periods of the last half of May and the whole of June are less affected by climatic variations. The chief factor in inducing this periodicity is the less prevalence of inhibiting temperatures during the summer months as compared with the spring. The observations were made at Uccle in Belgium.

THE CONDITION OF THE EARTH'S INTERIOR.—The criticism by Mr. W. F. Jones of Prof. T. C. Chamberlin's views as to the planetesimal origin of the earth has been mentioned in a letter published in *NATURE* (August 19, 1922, p. 249), and it is only fair to state that Prof. Chamberlin has published a reasoned reply to Mr. Jones in the *American Journal of Science*, vol. 204, p. 253, October 1922). He maintains that the evidence as to the propagation of earthquake-waves, which originate "within the shell not very far below the surface," is entirely opposed to any theory of the existence of a molten interior in the earth at the present day, while the conception that such an interior might have arisen by condensation of solid particles in the past is incompatible with the planetesimal hypothesis. He has probably not yet had time to consider J. Joly's startling suggestion that changes within the earth may give rise to bursts of radioactivity, and that these may bring about the complete melting of a previously solid earth. Chamberlin remarks that the proofs given by Coleman and others of the batholithic nature of the granite that invades the outer and ancient sedimentary crust are destructive of the idea of an underlying crust of light material, such as might have gathered round a molten globe. To many this argument will not appear entirely sound. The occurrence of batholites forming intrusive gneisses over very wide and separated areas seems to imply the existence of a crustal layer of granitic composition from which they have ascended as remelted representatives.

WEATHER IN THE PHILIPPINES.—Hourly meteorological observations made at the Central Observatory of Manila during the calendar year 1919, prepared under the supervision of Rev. José Algué, S.J., Director of the Weather Bureau, have recently been received. Hourly readings are given of barometer, temperature, humidity, and wind velocity. During the year nine typhoons visited the Philippine Islands, and in all there were twenty-five depressions or typhoons throughout the Far East. These were all observed from June to December, no typhoons occurring from January to May. The Manila rainfall broke all records since the formation of the Observatory in 1865, both as to the monthly and annual amount. In August the total fall was 78.09 in.; the previous maximum fall in any month was 57.88 in. in September 1867. In the whole year the total rainfall at Manila was 154.39 in., almost double the normal annual fall; the greatest previous record in any year was 117.27 in. in 1867. The lower parts of the city of Manila and of several provinces of the western part of central Luzon were flooded from the

end of July until about the middle of September. During the first part of the year the weather had been rather dry throughout the Archipelago. Extraordinary seismic activity occurred during the year. There were 151 earthquakes felt within the limits of the Archipelago; only two shocks, on April 28 and August 14, were of destructive character. In the Central Observatory, Manila, the seismographs recorded 420 disturbances due to insular and distant earthquakes. At Butuan the seismic disturbances numbered 1076.

#### ULTRA-VIOLET PHOTOGRAPHY OF OLD MANUSCRIPTS.

—In a paper by Prof. The Svedberg and Hugo Andersson, which has just been published in the *Photographic Journal* (No. 63, 1923, pp. 30-32); a very instructive example is given of the use of ultra-violet light in photographing old manuscripts. When a palimpsest is illuminated with intense ultra-violet light it is found that those parts of the parchment where the old, and subsequently erased, writing was, have lost the power of strong fluorescence which is

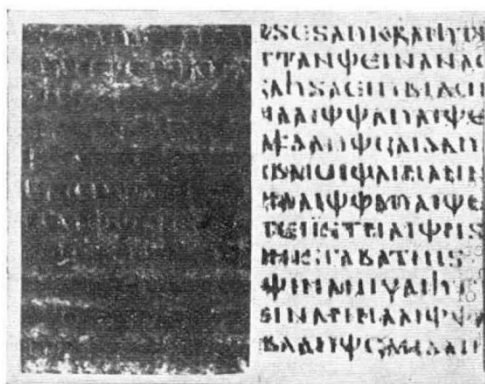


FIG. 1.

still exhibited by the untouched parts of the parchment. Kögel, in 1915, worked out this method for deciphering such parchments, and Svedberg and Nordlund used it later for deciphering the famous "Codex Argenteus" in the University Library of Upsala, and for other similar purposes. The difficulties attaching to this method lie in the very long exposures necessary to obtain a negative by means of the comparatively feeble fluorescence, several hours' exposure being necessary through the filters used to cut off the visible light from a quartz mercury lamp. The Wratten department of the Kodak Company has recently put a new U.V. filter on the market, and by means of this filter, Prof. Svedberg and Mr. Andersson have succeeded in cutting down the exposure to 15 minutes, with the results illustrated in Fig. 1, which shows the comparison between an ordinary photograph and the fluorescence photograph. The Wratten filter is superior to the Zeiss U.V. filter hitherto used for such purposes, in that it is much more transparent (about 10 times) in the long-wave part of the ultra-violet (391-344  $\mu\mu$ ).

**THE FADING OF COLOURS.**—An interesting problem, the fading of colours of objects in museums when exposed to light, was dealt with in a paper read by Sir Sidney Harmer, Director of the Natural History Departments of the British Museum, before the Royal Society of Arts on December 13. It is common knowledge that many colours fade when exposed to strong sunlight, but the relative injuriousness of diffused daylight and artificial illuminants is less

known. Experiments by Dr. Russell and Sir William Abney led to the following main conclusions: (1) fading is due to the action of light and not to moderate heat; (2) it does not take place *in vacuo*, i.e. in the absence of oxygen and moisture; and (3) the rays of the violet end of the spectrum produce the greatest amount of fading. Experiments with various glasses devised to check the transmission of ultra-violet rays have been made. Some of these have a useful effect, but it appears that in general the use of tinted glasses merely delays fading and does not prevent it, in the case of fugitive colours. The best glass for the purpose had a distinct yellow coloration, rendering its use for cases scarcely practicable. As examples of the length of continuous exposure necessary to cause fading it is mentioned that the wings of certain moths showed appreciable fading in 10-21 days; on the other hand, the fur of the tiger required 175 days, and of a brown horse and antelope 1485 days, before there was perceptible change of colour. According to these experiments direct sunlight was about from 20 to 70 times as injurious as electric light, and diffused daylight about six times as injurious. While too much importance should not be attached to such figures, there seems little doubt that illumination by electric light is less liable to cause fading than natural light, and the question arises whether very valuable specimens, or those with highly fugitive colours, might not be lighted entirely by artificial means. Most artificial illuminants contain less ultra-violet energy than daylight. But apart from this it is possible that a much lower intensity of illumination might suffice to enable specimens to be seen.

#### STANDARDISATION OF EXPERIMENTAL TANK DATA.

In view of the fact that nearly all the important maritime nations of the world have experimental tanks, the introduction of international systems for the presentation of results would be extremely helpful to experimenters and designers. Mr. Telfer, in a paper, "The Presentation of Ship Model Experiment Data," read before the North-East Coast Institution of Engineers and Shipbuilders, on December 8, discusses the existing systems of presentation and their relative usefulness. He points out that the basis of any system should be dimensionless, and that the units forming this basis should be international, besides giving results finally that can be readily interpreted by practical men without any arithmetical unravelling. Experimental work up to the present has been presented in widely different forms. Froude used expressions  $\text{Speed}/(\text{Vol.})^{\frac{1}{3}}$  and  $\text{Power}/(\text{Vol.})^{\frac{2}{3}}(\text{Speed})^{\frac{1}{3}}$ , giving results for a one cubic foot model. Taylor, on the other hand, expresses his results per ton of displacement. Mr. Telfer suggests that results could be made international by adoption of the metric system and presenting results for models of one metric ton displacement, adopting  $\text{Power}/(\text{Volume})^{\frac{2}{3}}$  and  $\text{Speed}/(\text{Volume})^{\frac{1}{3}}$  as the basis of the presentation. He also suggests the adoption of definite symbols, these being selected "from international philological considerations, all related symbols being mnemonically appropriate and above all typographically simple rather than typographically unique." Such an international code is greatly needed. There is at present an awkward disregard for standardisation of symbols even among experimenters of the same nation. It is to be hoped that this present paper will help forward in ship model data what has already been adopted in aeronautical work. Before setting up an international system such as is suggested, it would be best for a representative committee to inquire into the basis to be adopted, and also to undertake the transfer into this system of all existing data.