algal flora. In the ponds the aquatic Rhynchota are also the most conspicuous organisms, being represented by all the known families, especially the Gerridæ, Microveliadæ, Notonectidæ, (*Plea* and *Nychia* especially), Corixidæ (*Micronecta* only), and the smaller Belostomatidæ (*Sphærodema rusticum*); the Nepidæ are comparatively rare. Coleoptera, mostly Hydrophilidæ, are quite common, while dragon-fly and dipterous larvæ, chiefly those of the Culicidæ and Chironomidæ, and shrimps, are usually abundant. Molluscs are rare, though occasionally a dirty Chinese duck-pond may be found in which Ampulariidæ, Viviparidæ, Milaniidæ, Limnæidæ, and Planorbidæ occur in fairly large numbers. Nematodes and oligochætes are scarce, and the polyzoa, hydrozoa, and sponges are entirely absent. The microscopic fauna is abundant, though not very varied, the Entomostraca being particularly common. Rotifers occur in some numbers, and there is generally a rich Protozoon fauna, *Euglena* forming a thick scum on the surface of some ponds.

The algal flora is rich, especially in blue-green algæ and in desmids, but the higher plants are generally rare and are often absent. In some swampy ponds there is a dense growth of rushes, weeds, and grasses at the edges (Fig. 2), consisting of such species (kindly identified by Mr. R. E. Holttum) as *Enhydrias angustipetala* Ridley, *Limnophila erecta* Bentham, *Cyperus hespari* Linn., *Rhynchosphora aurea* Vah., *Tuviena umbellata* Rottb., *Scirpus mucronatus* Linn., *Mariscus microcephalus* Pusl., and *Eleocharis variegata* Kunth., while in others the water-hyacinth, *Eichornia crassipes*, is very common. *Pistia stratiotes* is also sometimes abundant, while below the water at the edges the bladderwort, *Utricularia* sp., and the peculiar star-shaped *Blyxa malayana* Ridley may often be found.

The specific paucity of the macroscopic pond biota may be accounted for by the fact that many of these ponds are situated in limestone, and are thus detrimental to the life of such organisms as molluscs or sponges, while the water is generally very impure and varies from extreme acidity to extreme alkalinity, owing usually to the proximity of Chinese dwelling-houses and piggeries.

Sponges are entirely absent, and so are Polyzoa, with the exception of *Plumatella emarginata* Allman, which I have taken in the Ampang Waterworks near Kuala Lumpur, where the conditions for Polyzoon life are ideal. But even *P. emarginata* is living on the edge of extinction, though it seems to have the inherent hardihood which enables an organism to stand a certain amount of what Grinnell, the American ornithologist, so aptly calls ecologic punishment.

Of other freshwater areas on the west coast of the Malay Peninsula there is little to say. There are no natural lakes, and the larger rivers, which are often fouled with the tailings from tin mines, have not been carefully investigated. It is well known, however, that they are infested with crocodiles, while the insect fauna is more or less similar to that of the hill streams. The fauna of the mouths of these rivers is essentially marine.

Ninth International Congress of Psychology.

THE ninth International Congress of Psychology met at Yale University, New Haven, on Sept. 1–7 under the presidency of Prof. J. McKeen Cattell. The attendance numbered 1089 professional psychologists, of which, however, only 122 came from countries outside the United States. But this is not surprising when it is remembered that more than one hundred institutions in the United States provide for psychology an annual budget of £1500 or more, and that for the larger universities this figure averages about £10,000, and reaches its maximum of £40,000 at Columbia.

The president, doyen of American psychologists, outlined the colossal development of the subject in the United States since the time, nearly fifty years ago, when he was a pupil of Wundt at Leipzig. Cattell's work on individual differences will always rank as an outstanding pioneer achievement in this field which is now so universally systematised. Tables were presented which showed the number of contributions by the psychologists of the various countries during particular periods, and, as might be expected from the foregoing remarks, they demonstrated the quantitative and financial superiority of the United States. More interesting would be tables showing what percentage of the total population in each country consisted of professional psychologists.

More than 470 papers were listed at the Congress, and they covered all the various cross-divisions of psychology: theoretical, experimental, comparative, social, educational, industrial, æsthetic, religious, legal, physiological, etc. Sessions were also devoted to special topics such as the effects of drugs, sleep, the psycho-galvanic reflex, the psychology of music, and the nature of *g*.

In addition to researches on traditional lines, there are at least two branches in the United States which at present are carrying on research at high pressure. The first is that of animal behaviour, which was represented by thirty papers at the Congress. Several of the chief universities, such as Chicago, Clark, Columbia, Harvard, Michigan, Minnesota, Stanford, and Yale possess well-equipped laboratories for comparative psychology, although it is yet too early to attempt an assessment of the importance of their numerous studies. One of the chief workers in this field is Prof. K. S. Lashley of Chicago, the present president of the American Psychological Association, whose address on "Basic Neural Mechanisms in Behaviour" was acknowledged as a masterpiece, and showed further that not all workers in this field can be classed as narrow-minded behaviourists.

The second branch which displays marked activity is that of child development, especially prominent being the child research centres of the Universities of Columbia, Iowa, Minnesota, and Yale. The mode of attack appears to be a co-operative study by psychiatrists, psychologists, physiologists, anatomists, bio-chemists, and statisticians armed with elaborate machinery. They work at a common centre, usually attached to a university. It may be true that many of the results obtained are already known in general terms to our clinical experts. Nevertheless, the careful tabulation by exact statistical methods may still be worth while and may well repay the labour and expense entailed and lead to results as important as they are unexpected. Certain it is that the American nation intends to leave no stone unturned in order to ensure that the rising generations and their successors will not lack any physical or mental benefit which modern science can supply.

Prominent amongst European leaders present at the Congress may be singled out Prof. I. P. Pavlov, whose public lecture, "A Brief Sketch of the Highest Nervous Activity", was lucidly interpreted by Dr. G. Anrep;

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Prof. C. E. Spearman, whose noegenetic theories are steadily gathering adherents, and Profs. W. Köhler and K. Koffka, who have gained many sympathisers for the *Gestalt* movement. Another German school which was in evidence at the last Congress at Groningen, namely, the *Erklärungs* group, was not represented at the Congress, although it is still a force in Germany.

A contribution which aroused lively discussion was Prof. W. McDougall's second report on a Lamarckian experiment, the first report having been presented at the Oxford meeting of the British Association in 1926. His experiments have been in progress for several years and are being continued. Definite problems were set to groups of white rats, that is, trained and control groups. While the average error for the control group was 165, this figure was reduced to 68 at the thirteenth generation of the trained rats and steadily diminished to 25 for the twenty-third generation. Prof. McDougall therefore concluded that the evidence in favour of the Lamarckian hypothesis was very strong.

The foreigners present were unanimous in their appreciation of the wonderful hospitality of the American people and of the gracious manner in which that hospitality was extended.

In conclusion, it may be pointed out as significant that President James R. Angell of Yale, Prof. Cattell, and Prof. F. Claparède of Geneva, the secretary of the international committee of the Congress, in their opening addresses, all emphasised the part which the Congress has already played in cementing goodwill and peace amongst the various nations. An official address of welcome on behalf of the United States Government was given by Mr. William J. Cooper, Commissioner of Education.

Annual Exhibition of the Royal Photographic Society.

THE seventy-fourth Annual Exhibition of the Royal Photographic Society is now open and may be seen until Oct. 12 at the Society's rooms at 35 Russell Square. The greater part of the work shown is pictorial. It would, however, be presumption on the part of the present writer to discuss the merits of artistic photography, and readers of NATURE may be supposed to take a deeper interest in the scientific and technical section of the Exhibition; it will therefore be sufficient here to direct attention to some of the more outstanding exhibits in the latter section.

To say that photography is a method of recording by means of light may be to utter a platitude, yet this exhibition pays a striking tribute to the amazing diversity of the applications of photographic recording in scientific and other work.

Archæology is well represented. The University of Chicago Epigraphic Exhibition from Luxor shows a fine photograph of a part of the wall of the Temple of Medmet, together with the result obtained by inking and bleaching such a print. The scene depicted is that of Rameses III. advancing in battle against hostile Libyans. No less interesting is a group of four church roof bosses photographed by Capt. Cave, who has developed a special technique for dealing with these dimly lighted, inaccessible subjects. These are, of course, special applications of ordinary still photography, and there are many examples of the same kind—map-making and aerial photography, cloud photography, police records, and so on through a very wide field. Photographic methods may also be used to record the appearance of bodies in rapid motion, and we have long been familiar with photographs of athletes in the very act of moving, and such like subjects. J. A. Speed has devised a method for extending this kind of work to the photography of animals. By synchronising the firing of specially prepared magnesium flashlight powder with the working of the camera shutter, he has been able to obtain excellent photographs of some of the shyest animals. His pictures of a honey bee in flight, a swallow in flight, and a leaping stoat are indeed excellent.

Capt. Quayle shows some very fine photographs of objects moving even more rapidly—bullets in flight. Three 'stories' are illustrated. In one we are shown successive photographs of a charge of shot impinging upon a clay pigeon. In another series a hollow-pointed bullet is shown at various stages of penetration through a slab of paraffin. In the third is shown a bullet fired from a worn and rusty rifle. Friction in the barrel of the rifle has punctured the metal casing of the bullet and melted the lead inside. The spinning bullet goes forward throwing out a spray of molten lead through the hole in its side, much in the manner of a catherine wheel moving perpendicularly to the plane of its rotation.

A. G. D. West and the Research Department of the Gramophone Company show photographic records of sound waves. Such records are now used very extensively in the study of the acoustic properties of buildings. One of these studies concerning the echoes in the Albert Hall is illustrated.

Some phases in the manufacture of photographic materials are illustrated by two exhibits sent in by British firms. Messrs. Ilford, Ltd., show some of the materials which are used in producing a photographic film; samples of a photographic emulsion at various stages of manufacture are also shown. Messrs. Illingworth and Co., Ltd., show a working model of a machine for coating paper with a sensitive emulsion. The way in which hundreds of feet of paper are automatically coated, set, looped, dried, and rolled up in a continuous process seems beautifully simple when we see this model in action.

There are many excellent samples of photomicrography. Dr. L. C. Martin and F. Lucas both show photomicrographs of biological subjects taken with ultra-violet light. It is stated that by this method magnifications so high as 5000 diameters result in crisp brilliant images with a degree of resolution surpassing by far that achieved with any other known optical system.

One more exhibit may be mentioned. The Mount Wilson Observatory sends a photographic map of the infra-red solar spectrum. By means of neocyanine, plates have been made sufficiently sensitive to record lines of wave-lengths down to about 11,400 A.

S. O. R.

University and Educational Intelligence.

THE list of University Extension Lectures and University Tutorial Classes issued by the University of London is of interest mainly to students of literary subjects. Science, however, is not unrepresented: courses are to be given by Mr. J. C. Hill on psychology and by Dr. W. J. Perry on the history of religions, at Morley College; by Mr. F. Addey on general astronomy, at the Royal Crystal Palace Hotel, Upper Norwood; by Mr. G. C. Robson on progress and decline in animate Nature, at West Ham Municipal College; by Dr. A. Wilmore and Mr. A. N. Wilmore on various aspects of

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