THE program of papers to be read by international authorities at the World Poultry Congress in July is now being prepared. Papers in the British section will come under five heads—(*a*) breeding and incubation; (*b*) nutrition and rearing; (*c*) diseases and their control; (*d*) economics and marketing; (*e*) education and general—while in addition there will be several papers on rabbits. Professor R. C. Punnett will contribute an important paper dealing with experiments on the inheritance of fecundity in fowls, and Mr. Tom Barron, the pioneer breeder of pedigree laying stock, will explain the Lancashire Utility Poultry Society's breeding scheme, which for the first time introduces the principle of the stud book in poultry breeding. Dr. G. Scott Robertson, of the Ministry of Agriculture of Northern Ireland, will speak on nutrition of the chick and the effect on growth; Mr. Tom Newman will contribute a paper on food in relation to the hen; Professor Parkhurst, of the National Institute of Poultry Husbandry, will discuss the use of cod-liver oil in the ration of the laying hen, and Dr. J. B. Orr, principal of the Rowett Institute, will tell of the mineral and protein requirements of poultry. Dr. Ethel Cruikshank and Dr. F. C. Kelly will speak of the uses of iodine in the poultry yard, and papers on diseases stand in the names of Major Dalling, Captain Doyle and Mr. E. Lionel Taylor. Mr. A. W. Street, Professor A. W. Ashby and Captain Hunt are among the readers of papers on economics and marketing, and on the educational side the contributors will include Dr. Charles Crowther, of the Harper Adams Agricultural College, and Mr. P. A. Francis, director of the congress. Since the resumption of diplomatic relations the Soviet government has accepted an invitation to be represented at the congress, and arrangements are being made whereby a national exhibit will be staged showing phases of poultry practice in Russia.

THE proposal last July by the director of the British Museum for a new edition of the General Catalogue of Printed Books has resulted, according to the London *Times*, in a large number of advance applications for the work. Two hundred subscribers are already guaranteed from the United States, together with 130 from British librarians and librarians abroad, many of whom have received prospectuses through the Foreign Office. A second and more definite prospectus is accordingly being issued immediately by Sir Frederic Kenyon, the director of the museum, in which the full terms of subscription are announced. The volumes, consisting each of 500 pages, are to be issued to original subscribers at £3 each, while the published price will be £4 a volume. The trustees of the museum propose alternately to accept a sum of £400 in advance for the complete catalogue as issued. It will consist of about 165 volumes, but not more than 12 of these will be issued in any year. They will be delivered in batches at intervals of six months, while a monthly record of accessions is to be issued for a subscription of £3 a year. It is to be observed that the form sent out to would-be subscribers imposes certain safeguards upon the conditions of sale, and some discretion is allowed the trustees to refuse to accept the names of certain subscribers, to increase the price of volumes still to be issued should the cost of production increase, and to vary the terms of their performance owing to war, strikes, fire and other forms of *force majeure*. Should the price of any volumes be in fact increased subscribers will have the right to discontinue. Two announcements of changes in the plan of the catalogue also appear. The practice of regarding I and J as the same letter (and similarly of U and V) will be abandoned, and the heading "Academies," under which learned societies have hitherto been classified, will vanish in favor of a distribution of those societies beneath local headings, according to the town which is their headquarters. Work on the catalogue has already been set in progress under the retiring keeper of books, Mr. R. Farquharson Sharp. His successor, Mr. Marsden, has been compelled to refuse a number of applications for work on the catalogue from outside the museum. It should be made known that no unofficial help is at present required. The work is expected to take from 15 to 20 years.

DISCUSSION

THE FUTURE OF TAXONOMY

IN discussing the inadequacy of support given the *Zoological Record*[1] Professor T. D. A. Cockerell ascribes the situation to (1) the competition of *Biological Abstracts* and (2) the lack of interest in taxonomy. With regard to the first I will only call attention to the fact that the publishers of the *Zoological Record* were complaining of inadequate support long before *Biological Abstracts* came into being,[2] and that they even threatened to discontinue the publication of this valuable bibliographic work if

[1] SCIENCE, 71: 240–241, February 28, 1920.

[2] SCIENCE, 54: 663, 1921.

more adequate financial support was not forthcoming.[3]

It is probably true, in the entomological field at least, that there is a relatively small percentage of the total number of workers engaged in taxonomic research, but I do not believe this to be due to a lack of interest. On the contrary, the evidence that is available seems to indicate that there has been a steadily increasing interest in taxonomy during the last seventy years, not only in the United States but throughout the world. The number of papers published in any particular field is, I believe, some indication of the interest taken in that field. In a recent paper, as yet unpublished, the writer has pointed out that there has been a steady increase in the number of papers published in the field of entomological taxonomy from 1864 up to the present time. This is true both for the United States and for the world as a whole. The only noticeable slump in the output of such papers was during the world war years.

Professor Cockerell goes further, however, and attributes this alleged lack of interest in taxonomy to our graduate schools. The reasons that are given to justify this indictment of the graduate school system are (1) lack of equipment, that is, library facilities and museum material, and (2) the inherent inadaptability of taxonomy as a thesis subject for graduate training. In these days when every reputable institution has at its command the convenience of interlibrary loans, lack of library facilities is not the reason that students are not preparing themselves as taxonomists. With respect to museum material, I believe it is true that those institutions which have most developed graduate training in entomology have the largest and best insect collections outside of the established museums. The material in those collections and the insect material in many of the museums are available to first-class graduate students for purposes of research, so that lack of material is not the reason taxonomy is not more generally chosen as a thesis subject. The charge that the subject of taxonomy is not suitable for a thesis problem because of the inherent difficulties involved is one that can be made regarding any field of science. Not all the problems in taxonomy are adapted to the needs of graduate school training; neither are all the problems in experimental zoology, genetics, ecology or any other branch of science so adapted, but no one contends that any of these fields as a subject is unsuitable for graduate training. Taxonomy is no different from these other fields in this respect, and it will be found that there are many problems of a taxonomic nature that can be easily adapted for the needs of graduate school training.

[3] SCIENCE, 57: 577, 720, 1923.

While there may be no lack of interest in taxonomy there seems to me to be no question that entomological taxonomy in competition with other fields of entomology is not attracting the number of capable young men that are needed in this field. The cause of this situation is very obvious. Entomological taxonomy is not receiving financial support in the same proportion as other lines of entomological work. Not only is the number of positions available in this field ridiculously low, but the salaries allotted to those positions are much lower than those for similar ones in other fields of entomology. Taxonomy, then, is competing with these other fields in attracting capable men, with a handicap of few positions and low salaries. Naturally there is a "lack of interest" in taxonomy. The result of this competition is that at present there are hundreds of full-time workers in the research field of economic entomology compared with a mere handful in entomological taxonomy. This proportion is reflected in the staff of the Bureau of Entomology which on July 1, 1929, had 257 workers of the rank of junior entomologist and above, engaged in economic work, and sixteen workers of similar rank in taxonomy. The latter are flooded with specimens of insects sent in from all parts of the country for identification so that the amount of time that can be spent in actual research is exceedingly small. The young man of to-day, then, who considers preparing himself as a taxonomist in entomology faces the prospect of few available positions, a distinctly lower salary than that paid to other entomologists and, if fortunate enough to obtain a position, very little time for actual research. Professor Cockerell asks why it is "that the Bureau of Entomology with its really enormous appropriation and abundance of technicians of all sorts has never given us a monograph on the Coccidae." The answer is that there is only one man in the Bureau of Entomology with the training and experience necessary for producing such a monograph, and he is so loaded down with routine identification work and administrative duties that he has practically no time for research. The same statement is applicable to practically all other taxonomic workers in entomology throughout the country. If taxonomy is to progress and perform its function adequately with relation to other entomological activities it must receive greatly increased financial recognition. Salaries should be increased and the number of workers considerably augmented to take care of the increasing demands made by workers in related fields. When these conditions come about, and they must come about if entomologists in general are to be adequately served by the taxonomists, there will be no "lack of interest" in taxonomy. Capable men will be attracted to the field and graduate schools will perform their func-

tion of providing them with the scientific training necessary for research in taxonomy.

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MARCH 6, 1930

PRESSURE POTENTIAL IN A FLUID

THE above title is intended to designate a concept in connection with a fluid pressure field similar to the concept of electric and gravitational potential. It is presented with the expectation of adverse criticism. However, to the author's mind, there are several points in favor of the concept.

First. According to the defining equation, $p = F/A$, pressure is a vector quantity, which is inconsistent with the equation, $pV = \text{work}$, in which p is apparently a scalar quantity. Now if we define absolute pressure potential at a point in the fluid as the work per unit volume required to produce a displacement, the inconsistency is removed, provided p, in the second equation, designates this pressure potential. The difference in potential between two points is defined as it is for the electric field. Such a potential might be thought of as a condition of stress existing in the fluid, whereby a pressure (vector quantity) is caused to act on a surface in contact with the fluid if there is a difference in pressure potential between the two sides of this surface. The symbol P is suggested.

Second. The water analogue used in teaching current electricity is made more complete and can be used in teaching static electricity if this scalar quantity, pressure potential, is used instead of the vector quantity, p. The analogue can even be carried through the equations.

Third. The treatment of sound is materially aided by such a concept. The pressure potential gradient in a sound field gives a pressure field intensity and an acceleration similar to the gravitational field intensity and acceleration in connection with the gravitational potential gradient. The analogue might also be carried over to electromagnetic waves.

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CONGLOMERITE, A NEW ROCK TERM

GEOLOGISTS make careful distinction among sand, sandstone and quartzite, basing the separation upon the relative degree of cementation of the grains of each type of deposit. Thus, sand is simply a mass of uncemented grains, usually predominantly of the mineral quartz. Sandstone goes a step farther in that the grains are cemented together in varying degrees of firmness. In quartzite the cementing is still firmer, amounting usually to a welding together of grains with matrix. The distinction is usually not difficult to make. Sandstones themselves vary in degree of cementation from such friable examples as crumble between the fingers to those which break only with difficulty under the blows of the hammer. However, in every true sandstone the cement yields more easily than the grains so that fracture takes place in the matrix *around* rather than *through* the individual particles of sand. When a quartzite is broken, however, it is noted that the fracture passes, usually with equal ease, through both grains and matrix. So much for the nomenclature of relatively fine-grained types; what of the coarser sediments?

When we attempt to distinguish pebbles as gravel from conglomerate, the separation is simple, exactly like that by which sand and sandstone are differentiated. That is, the individual pebbles in a gravel bank are not cemented one to another, but the fragments of rock, "phenoclasts," in a conglomerate are cemented together. However, there appears to be no term in general use for distinguishing among conglomerates those in which fracture is through the matrix, from those types in which fracture is through matrix and pebble with equal ease. These conditions are of course analogous to those encountered in sandstone and quartzite respectively. Examples of indurated conglomerates in which there has been a welding together of matrix and pebbles are not rare. They are particularly well illustrated in the partially metamorphosed or "stretched" Carboniferous conglomerates of Rhode Island, especially those east of the City of Newport and at Natick. In these it is rarer to have the pebbles break out under the hammer than for the rock to fracture cleanly through irrespective of pebble and cementing material. Not only is this true, but joints, faults and other fractures pass in surprisingly smooth surfaces impartially through pebble and matrix.

It is suggested, therefore, that the term conglomerate be restricted to those pebbly rocks which break through the matrix and around the pebbles after the manner of sandstones. For the type in which fracture is through the pebbles and matrix, analogous to the conditions observed in quartzite, the term *conglomerite* is proposed. This term is suggested because its similar ending to quartzite should make its usage the more ready. Adopting such a term, we would then recognize the three grades of coarse sediments, gravel, conglomerate and conglomerite corresponding to sand, sandstone and quartzite in the next finer series.

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BANANA STOWAWAYS AGAIN

THE discovery of individuals of the genus Marmosa on stems of imported bananas has resulted in several