nite protoplasmic pressure fluctuations during the process of cell division.

A film portraying the life cycle of the oyster contains a stop motion scene illustrating the first stages of cell division. A minute perforation in the cell wall of the egg permitted some of the protoplasm to protrude. Ordinarily such a punctured egg would not attract attention, and this one would have been discarded had it been detected in time. The camera, however, went on recording the remarkable behavior of this indicator of what development of the print revealed to be unmistakable pressure pulsations.

The gradual change in form at the moment of cell division unnoticeable to the eye becomes in the accommodated time of the film a vigorous squirming of escaping protoplasm, indicating a marked internal pressure. A more astonishing effect immediately follows the completion of cell division, when as though by violent suction the protoplasm disappears again within the cell wall. The phenomenon is repeated at each succeeding active phase of cell division, though gradually weakening until obscured by the progressive disintegration.

A more detailed illustrated description is being prepared and arrangements are being made to show the film at the New York meeting of the American Association for the Advancement of Science.

WM. FIRTH WELLS

HAIRY MAMMOTH SKELETON IN UTAH

GRAVEL workers at the gravel pits two and one half miles east of Payson, Utah, on September 17, uncovered a partial skeleton of what appears to be an ancient hairy mammoth (*Elephas primigenius*). Excavations were immediately placed under the supervision of the author, and have resulted in the recovering of two well-preserved spirally curved tusks, two teeth, two legs with feet intact, a lower jaw bone and a number of rib bones.

The left tusk is six feet long, outside measurement, and three feet nine inches measured from tip to base, fourteen inches in circumference and ends with a sharp tip. The right tusk is five feet five inches long, outside measurement, and three feet four inches from base to tip, fourteen inches in circumference at base and six inches at tip.

The right tusk has been worn off farther than the left, perhaps because of its use in digging through life. Present-day African elephants almost invariably have their right tusk worn down shorter than the left by their industrious digging.

The teeth are moderate in size, one being found intact in the lower jaw, which is perfect in form, has fourteen well-developed dental plates, thin and fine in texture, placed at a moderate distance apart and firmly cemented together. The other tooth is an upper, reasonably well preserved but lacking in completeness.

A complete skeleton was not to be found, which of course is the usual case with finds of this sort where the individuals are entrapped in terrace gravels or delta deposits. The parts recovered were enclosed in a thin bed of fine clay fifteen feet below the surface of the terrace gravels of what is termed the Provo stage of the ancient Lake Bonneville. The parts of the skeleton that projected either into the almost blood-red gravels above or the coarse grain sands below the shale suffered complete oxidation and were not to be found.

Geologically this find is of late Pleistocene in age (estimated thirty thousand years), and locally dates back to a time when Lake Bonneville covered the greater part of western Utah to a depth of perhaps one thousand feet in places.

This represents the second find to be made near the town of Payson during the past few weeks. On September 7, the hind leg of another individual (measuring six and one half feet) was obtained at a gravel pit two miles to the west.

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QUOTATIONS

INTERNATIONAL CONGRESSES[1]

(ABSTRACT of a paper by Dr. J. E. Baron de Vos van Steenwijk, in the *Haagsch Maandblad,* translated for the announcement of the Fourth Pacific Science Congress to be held in Java in May, 1929.)

Opinions concerning the use of congresses are widely divided. The reason for this seems to be that their use is not general, but personal, *i.e.,* that not science itself reaps so much benefit, but rather the scientists themselves who attend the congress and come in personal contact with colleagues from afar. It is true that not every one is able to assimilate all the good that can accrue from such meetings; some people are quite at ease in the turmoil of a congress while others do not feel at home and remain unsatisfied. The latter are afterwards apt to criticize sharply.

In my opinion the success of a congress can not be judged by the apparent results; and certainly not by the motions and resolutions that have been passed by it but which never come into force. At a congress to be attended by several hundred persons, good work

[1] Copied with kind permission of the editorial staff of the *H. M.*

can only be done if a permanent committee has carefully prepared the program, and later on sees to it that the resolutions passed thereat are acted upon. The latter part is, however, it seems to me, not the task of a congress, but rather the work of associations and societies.

Scientific addresses are the main point at a congress; and if certain delegates state, even if they only do so privately, that meeting their colleagues is the only important function, that the reading of papers is only of secondary importance, then I hold the opinion that there is "something rotten" in the world of congresses. An explanation of such a point of view is, however, easily found. The congress committee itself should prepare a list of the scientific subjects to be discussed, so that a whole is formed of which different parts are in harmony with each other; and moreover it should invite those scientists who have made a special study of such subjects to send in a contribution. Instead of this, owing to the casual acceptance of every speaker who comes forward, a succession of heterogeneous and indigestible dishes is at present generally served. It is a good thing that no statistics have been established showing the number of listeners who have understood, or better still, who have quite enjoyed a lecture; the figures obtained would, I fear, bring a blush of shame, not on the faces of the hearers, but on those of the speakers. He who speaks on any subject before his colleagues, although they may not have specialized in such a subject, and can not make his thesis perfectly clear to them all, be it that the subject lectured upon was unsuitable or that it was badly presented, then, I maintain that such a lecturer should not be allowed to address a congress.

An important object of a congress should be the promotion of synthesis, which is more and more a necessity in the world of science of our day, now that nearly every one must perforce confine himself to his own specialty. Series of papers on one and the same problem, seen from different points of view, are also very useful. The impression made on me by a series of papers on the structure of the atom, read at a recent congress, was much more powerful and lasting than that of any single paper which I have heard since; I attribute this to the multiplicity of the subjects treated, which clash in our memory and so lead to meager results. One sometimes gets the impression that a particular item of specialized research, which is of interest actually to only a small group of specialists, is nevertheless considered suitable for discussion at a congress. The wide scope of a congress is not, however, necessary to reach that small group. The subjects worthy of attention at such an important meeting as a congress are those, the results of which, although obtained by work in a special line, are a valuable asset to much wider ranges of thought and deserve to be brought to the attention of the many who might otherwise never have had access to them. Suitable subjects also are those on the border line of different branches of sciences, and finally reviews which present a summary of the present state of our knowledge on a special question.

Of particular interest are controversial subjects which should lead to interesting discussions. But generally, owing to the organization of the meetings, there is not sufficient time for the discussion and it is necessary to close it just when interest has reached its highest point. The most satisfactory method is to have the lecture printed and distributed before the meeting, so that every one may be supposed to know all about it; the arguments of the lecturer should be clear and concise and the discussion opened by some one previously invited to do so. The main point is the principle that only speakers are allowed who have been invited to do so, and who speak on subjects as arranged with the committee. This allows a restriction of the number of papers to be read, which otherwise would grow to such an alarming size that "Multum non multa" is lost sight of.

But looking after the scientific program should not be the only task of the officials of the congress; they should also facilitate so far as possible personal meetings between members. The first essential for this is that members should be able to find each other without having previously met. At many congresses, unfortunately not always, a list with the name of every member is available and every one is invited to display his number and badge. To have the name and address calligraphed on the badge is still better: it saves many painful moments of uncertainty to those unable to remember a face. It is the custom, at the first session of certain congresses, for every member to rise for a moment and to call his name and address. I have also seen a blackboard, placed in one of the principal halls, upon which each scientist could write the name of those whom he desired to meet, for instance, no. 15 will be pleased to meet no. 47, etc.

Receptions, excursions, etc., are also useful as occasions for private conversations from which much benefit may accrue. Such are impossible, however, when circulation is impeded, as during a concert or a long motor trip. This brings to my mind a remark about which there will be no disagreement, that the members of a congress should not be obliged to waste much of their costly time—costly in many ways, when having just made a long voyage—to listen to many compliments or participate in useless ceremonies. If, at the opening session, after the welcome by the Minister and by the City and County Councils, many other dele-

gates from associations rise to speak, one may well complain of the length of the road to be covered before attaining the Promised Land. Even at the inaugural meeting, when all protocol can not be avoided, the presidential address should not be buried under a mass of others. The way followed at a certain congress, where representatives of foreign countries, upon their names being called, simply came one by one to the podium to shake hands with the president, making thus "acte de présence," seems to me an easy and correct arrangement.

SCIENTIFIC BOOKS

Destructive and Useful Insects; Their Habits and Control. By C. L. METCALF, M.A., D.Sc., and W. P. FLINT, B.S. McGraw-Hill Book Co., Inc., New York (1928). xii + 918 pp., 561 text illus.

IT is impossible to do justice to this big book in a short review. I marvel at the confidence of the authors in starting such a comprehensive work almost as much as I marvel at their achievement in completing it. It contains in its nine hundred pages enough material for several books; and the student who uses it in his introductory courses will find it a standby in later life in helping to solve his insect problems. It takes the place, in a way, of a small entomological library. Of course, no one man could have done it so well. Dr. Metcalf, a sound research man with fifteen years of teaching experience, and Mr. Flint, with his record of twenty-five years of successful work in agricultural entomology, make a strong combination. And how they must have worked!

The first eight of the twenty-three chapters are concerned with insects as organisms, aside from the general consideration, in Chapters I and II, of these creatures as enemies of man and as of value to man. "External Morphology," "Internal Anatomy and Physiology," "Mouth Parts," "Development and Metamorphosis," "The Place of Insects in the Animal Kingdom" and "Orders of Insects" are the headings of comprehensive chapters. Insect control is given general consideration; a chapter is devoted to apparatus for applying insecticides, and the remaining chapters consider insects in relation to the different crops, the final ones treating of insects attacking shade trees and shrubs, greenhouse insects, household insects and stored product insects, species injurious to domestic animals and insects that attack and annoy man and affect his health.

That seems pretty well to cover the whole field, does it not? Of course, the forester will notice that forest insects are omitted; but the authors evidently had the choice of omitting them or of giving them scanty consideration. And it seems to me that their decision was wise.

A laudable feature of the book is the introduction of frequent "tables, synopses, and outlines" which are great aids; and under the different crops or cultures the field keys for the identification of the insect pests of each particular crop are very convenient. In fact, with the aid of these field keys, a farmer or fruit-grower will be able to identify any of the more important crop pests that occur in this country.

When we think of the very great number of topics considered in this big book, its balance is remarkable. The especial interests of the reader will undoubtedly cause him to regret that more extended treatment is not given to one or another topic, but when he considers the work as a whole he can not but admire the good judgment of the authors in this matter of balance. It is in this way that I console myself for the very brief consideration of the insect parasites of injurious insects. Perhaps, on account of my especial interest, I may overestimate the value of this element of natural control; but even so it seems that a little more space should have been given to it.

The book seems to be absolutely up to date. The authors are very familiar with the enormous literature, and have made admirable use of this knowledge. They have printed no separate bibliography, but a mere bibliographical list would obviously have filled so many pages as to make its publication impracticable. There are publication references here and there, usually in a few lines of small type after each of the more important topics, and I am not sure that this is not the best way.

The illustrations as a whole are admirable. They have been well selected, and some of them are original. In the crediting of the sources of some of these illustrations mistakes have been made, but that sort of thing has gone so far now in entomological books (as well as in other books) that it seems impossible to correct it; and at all events it means little except to the man who prepared the original illustration.

In preparing a review of a big book one feels that he should write a big review. But a brief one suffices when practically everything that is to be said is of a laudatory character, and this is the case with this review of a remarkably fine book.

It is most appropriate that the authors should have dedicated their work to Professor S. A. Forbes, "Dean of American Economic Entomologists," and to Professor Herbert Osborn, "Master Teacher of Entomologists."

Both authors and publishers are to be congratulated on the "get-up" of the volume.

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