gantown. It is hoped by this plan so to reduce the costs of administration of the extension program that a larger portion of the funds may be devoted to the work in the counties, while the work of the college will become more closely knit with the research and on the extension program of the university. Reorganization in the field of biology has also been undertaken. Where formerly the various branches of this subject were distributed among several colleges of the university, most phases are now being coordinated under a single directing head and combined into one division of the College of Agriculture. Dr. C. R. Orton, formerly head of the department of plant pathology, has been given charge of the new department, which embraces all basic sciences related to biology, including botany, zoology, bacteriology, plant diseases and forestry extension.

A COLLECTION of invertebrate fossils, ranging from the Cambrian period to the Cretaceous has been received at Field Museum of Natural History as a result of a field trip recently completed in Pennsylvania, New Jersey and New York by Sharat K. Roy, assistant curator of invertebrate paleontology.

DISCUSSION

LIGHTNING PROTECTION FOR TREES

THERE is a wide difference of opinion as to the value of the lightning rod as a protective device. In my own experience I have been called on a number of times for advice as to the probable value of lightning protection for buildings of various types. My recommendations have not always been the same, and in each case have been based largely on common sense as related to the following principles and observations, upon which I believe that scientists are generally agreed:

(1) The protective value of a lightning rod is in its ability to discharge continuously and so prevent an abnormal rise of potential gradient as related to an overhead cloud.

(2) Preeminent height of a structure results in a high potential gradient at its top.

(3) The points of a lightning rod should be relatively sharp to permit steady leak and suppression of the high potential gradient.

(4) Congested areas, with many buildings of approximately the same height as in cities, have been observed to be relatively free from direct lightning strokes.

The lightning rod is not a certain preventive of a direct stroke. The protective value is directly related to the rate at which the rod points discharge. If the rate of discharge is not sufficiently rapid to suppress the building up of the potential gradient, the rod will often receive the direct stroke. If the structure bearing the rod is sufficiently high, it may even seriously influence the over-all potential gradient due to the cloud, and so receive a direct stroke, thereby actually "attracting" lightning. It is my understanding that during thunder storms there is always copious evidence, both at the Washington Monument and the Empire State Building, of steady discharges from the lightning rods, and frequently there are direct strokes.

The problem in connection with the protection of trees is even more obscure. This question was presented to me a number of years ago by Mr. H. Stevenson Clopper, a well-known arborist in Maryland. Maryland has a large number of very fine trees, some of them having historic interest and association. Mr. Clopper has a wide knowledge of them. I suggested to him the simple type of installation described in the following paragraphs. This note is to give the results of its usage over a period of seventeen years.

A 5/16 inch seven-strand bare copper conductor is attached to the tree trunk by galvanized or copper nails and is extended as nearly as possible in a straight line from the ground to the highest point of the principal leader of the tree which may be safely reached by the climber. At this point it is clamped to a 4 inch limb by means of a through bolt. Some 15 inches of the conductor above the clamp are untwisted with the strands pointing diagonally upward in all directions. In cases of large trees with several leaders, the conductor is carried to the extremity of each, the several conductors being joined in good electrical connection where the leaders converge. At the ground the conductor passes into a 3/4 inch iron pipe 11 feet long and this pipe is driven 11 feet into the ground. The conductor is rigidly attached to the pipe mechanically at the bottom and is soldered to the top at the ground level. In certain cases, owing to the size and number of tree roots, the ground pipe has been placed 11 feet away from the base of the trunk. In these cases the horizontal run of the conductor is also enclosed in iron pipe and buried a few inches below the ground level. The essential elements of the plan are simply those of providing an electrical conductor with pointed ends as near as possible to the top of the tree and running in as nearly as possible a straight line to a good connection with the earth.

The first installation was in 1916 on four large

tulip poplars. Since then the rods have been installed on Norway spruce, red oak, white oak, black hemlock, linden, elm and other types of trees. In all 61 trees have been protected. Nine of these trees had been struck one or more times before the installation of the rods. Since the installation of the rods no one of the 61 trees has been struck. Two cases have been reported in which a tree in the neighborhood of the protected trees has been struck, the protected tree remaining immune; in one case, at a distance of 280 feet, and in another at a distance of 150 feet.

The vagaries of lightning discharges and strokes are well known. The only certain and permanent protection would be some approach to the Faraday cage. The experience described above, however, would seem to indicate that the simple protective measures described afford a high degree of protection to trees.

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INDUSTRIAL JOBS FOR PSYCHOLOGISTS

AT the present time the number of academic posts is being curtailed, while in industry a drive to create jobs for the unemployed is in effect. It is logical, therefore, to expect that a certain percentage of the younger psychologists may find places for themselves in positions outside the colleges and universities.

Industrial executives do not telephone or write to college placement bureaus for a psychologist to fill a vacancy. Because of various popular misconceptions that have grown up around the name, psychology may mean anything to the uninitiated. In the average employment office it would not be an asset to announce that one is a psychologist. Since business men are not going to ferret out the academic psychologist and lure him into industry, the unemployed psychologist must apply for work in person.

For the employment interview it is a mistake to go armed with a thesis and to discuss in detail a problem that may be out of the range of interest or understanding of the man who is doing the interviewing. It is a mistake to emphasize a narrow field of training, or to stress that one is looking for an opportunity to continue a particular line of investigation. The chances are that the business man is not interested in that special problem.

The psychologist who is looking for a position in industry should not emphasize the fact that he wants to work on so-called psychological problems. He should apply for work as a college graduate and should not stress his psychological training any more than he would emphasize the fact that he had had several courses in English, history or mathematics. Throughout the depression young college graduates who have made favorable impressions when interviewed have found places for themselves on industrial payrolls. They have been willing to accept every conceivable type of employment in order to gain an industrial foothold. The psychologist should not scorn a job as clerk, salesman, truck driver, laboratory helper or machine tender if it is offered to him. As an employed individual, he is in a better position to get a job more to his liking at some later date than if he has no work at all. Many employers believe that the man who is working is a better man than the one who is unemployed. The moral, therefore, is: Get on somebody's payroll, regardless of the kind of work you have to do.

No matter what the job happens to be, the psychologically trained person should find situations of interest to him. Whether he is an introspectionist or a behaviorist he can observe himself in the rôle of a worker. If he is a believer in the principles of Gestalt he will find food for thought. As a social psychologist he will be in the midst of a dynamic situation where adjustments to his supervisor and to his fellow workers must be made. As an educational psychologist he will have a chance to study his own learning difficulties and the difficulties of others. Boredom, monotony and fatigue will be brought forcibly to his attention. Problems of motivation and individual differences are present in every work situation. The competent psychologist will see the psychological problems.

After he is employed, then whatever ability and training he may have should enable the psychologist to make the necessary adjustments to insure his own advancement and promotion. He will find that many of the problems of his employer are of a psychological nature, although they may not be recognized under that classification by the management. By analyzing his employer's needs and wants, and then suggesting common-sense solutions (without using the word "psychology" at all), many psychologists should be able to create industrial places for themselves during the coming decade.

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A NEW INTERMEDIATE HOST FOR FASCIOLOIDES MAGNA (BASSI, 1873) WARD, 1917

IN a recent paper, presented before the Helminthological Society of Washington (District of Columbia), the writer reported that the snails *Fossaria modicella rustica* and *Pseudosuccinea columella* had been demonstrated experimentally to be new intermediate hosts for *Fascioloides magna*, an important trematode parasite of cattle. Since this report, another snail, *Fos-*