said, but is not likely to have the diabolical ingenuity that sometimes is put into the political 'fake.' The corroborative detail which could give verisimilitude to, say, the story that man is in danger of being ousted by birds from the primacy of the animal kingdom, could only be supplied by the trained scientist, and the trained scientist is above doing such a thing.

A dozen of the colleges are attempting to disarm the unscrupulous journalist by sending out with their own *imprimatur* accounts of the discoveries made by members of their faculties. If this does not drive out the mendacious reporter, the fault can perhaps be justly laid at the door of science herself. Man continues to ask questions about his environment, and to want them answered. Yet it is growing increasingly hard to make real science intelligible. We may instance the perennially interesting sea-urchin eggs of Professor Jacques Loeb. His experiments in developing them covered a long period. Every now and then he established a new point. To the initiated these steps were as distinct as the several equations in an algebraical demonstration; yet to the layman the official accounts of these experiments read so much alike that headline writers hardly attempted to distinguish them, and many undoubtedly thought that the same news was being sent out over and over again. If really epochal discoveries are of such character that they can no longer be described in plain language, the temptation arises to invent discoveries which, though they never really occurred, are perfectly easy to talk about.

Nor, in spite of the scientists' insistence that plain reporters ought not to write about things they do not understand, is the confirmation of a recognized authority a perfect safeguard against the charge of inaccuracy. The *Evening Post* has printed accounts of scientific matters taken down verbatim from the lips of the leaders in particular branches of science, and had them disputed vehemently by other scientists. As the scientific tortoises creep on slowly from point to point, they do not always agree who is ahead; but that, we admit, does not make any less reprehensible the conduct of the irresponsible cottontail who occasionally jumps a few rods ahead of the whole lot.—*The New York Evening Post.*

BOTANICAL NOTES

STUDIES OF TEXAN VEGETATION

FROM time to time it has been a pleasant task of the editor of these notes to call attention to the work of Dr. Bray, of the University of Texas, on the vegetation of his state. The vastness of the territory covered, and the exceedingly varied character of soil, temperature, rainfall and other factors make the task of the botanist one of unusual difficulty. When it is remembered that Texas covers an area nearly as large as the northeastern states from Maine to, and including, Ohio and Virginia, and that north and south its length is about that from Boston to Charleston, and its width east and west about that from Boston to Chicago, one may begin to appreciate the amount of labor involved in what Dr. Bray has already accomplished. He has now added to his previous publications a paper entitled 'Distribution and Adaptation of the Vegetation of Texas,' and published as Bulletin No. 82 of the University of Texas. He tells us that it "was begun under the stimulus of desiring to present to the teachers in the public schools of Texas a point of view from which to study the vegetation of the state." He hastens, however, to say that "the aim is not to supplant other phases of botanical study, but to supplement them," which indicates that the author is not one of those who think that a general observation of the plants of a region, without their particular study, should constitute the content of a course in elementary botany.

The pamphlet, which includes 108 pages (and 14 plates), first takes up the 'Factors of Plant Environment and how they affect Plants,' to which about one half of the space is given, and this is followed by a discussion of the 'Plant Societies of the Texas Region.' In the first the rôles of water, temperature, light, the atmosphere, soils and biological factors are discussed clearly and helpfully. For it must be borne in mind that the purpose of the publication is to help teachers and

others who need help, and this is the key to the treatment throughout its pages. The second general topic includes woodland vegetation, grassland vegetation, desert vegetation, water vegetation, salt-water vegetation, the vegetation of alkaline soils, and sand vegetation. Here again the author has made a very clear statement of the subjects taken up, and no teacher will find much difficulty in following and applying his discussion. The pamphlet should prove of great value to the teachers and pupils in the schools and colleges of Texas.

GARDNER'S STUDIES OF THE CYANOPHYCEAE

In the November number of the University of California Publications Nathaniel L. Gardner publishes an interesting paper on the blue-green algae under the title 'Cytological Studies in Cyanophyceae,' in which he reviews the work of previous investigators, and adds many observations of his own. He refers to his good fortune in being located where there is an abundance and variety of material at all seasons of the year, yielding him over one hundred species which he has collected and studied. In his investigations he has been very ingenious, as when he separates Oscillatorias and related forms from sand by making use of their motility, the threads 'crawling' out of the débris and this giving him pure cultures with little difficulty. He devised also an ingenious method of getting end views of *Oscillatoria* cells without having to make microtome sections. This is done by killing the plants in a strong solution of iodine in potassium iodide (ten to thirty minutes) and then washing in 95 per cent. alcohol (ten to thirty minutes). If now the filaments are mounted in water and subjected to a slight rolling pressure under a cover glass the cells will separate and fall over, giving excellent end views. Ten pages are given to a comparison of the conclusions reached by different investigators, notably Schmitz (1879), Kohl (1903), Phillips (1904) and Olive (1904), and this is followed by a discussion of cell contents, including the nucleus (for these plants have a nucleus of a simple kind), the granules and the cytoplasm. Some studies were made of the products of assimilation, resulting in finding glycogen, but not starch. Finally he finds much similarity between the *Cyanophyceae* and certain bacteria. A helpful bibliography, and six beautiful plates, mostly colored, close this important contribution.

SHORT NOTES

With the January number the *Plant World* enters upon the tenth year of its existence. The business management is changed, the place of publication being Denver, Colorado, and there have been some changes in the editorial management and policy. On the title-page the subtitle has been changed to read 'A Magazine of General Botany' instead of 'Popular Botany.' The purpose of the journal remains unchanged, namely to present botany in a non-technical form, for general readers, students and teachers. Professor Lloyd, now of Tucson, Arizona, continues as managing editor, and Miss Bracket, assistant editor. The other members of the editorial staff are members of the staff of the Desert Botanical Laboratory, and the Arizona Experiment Station. It is likely, therefore, to have a distinctly western flavor, and may thus appeal to a much larger constituency. There is a place for a journal of this kind which will be helpful to the beginner and the young teacher, and which at the same time will be full of information as to botanical matters. It must be suggestive and helpful in regard to the many details in the work of student and teacher, yet in order to be a mere day-by-day guide, it must do more for its readers, by leading them into broader and higher fields of thought and activity.

The twenty-fifth Heft of Engler's 'Pflanzenreich' is devoted to a monograph by Fr. Buchenan, of the Family *Juncaceae,* and makes a volume of nearly three hundred pages. The first thirty pages are given to an introduction in which structure is especially emphasized, with paragraphs on geographical distribution, relationship, uses, etc. Eight genera are recognized, viz.: (1) *Distichia* (3 South American species), (2) *Patosia* (1 Chilian species), (3) *Oxychloe* (2 South

American species), (4) *Marsippospermum* (3 South Pacific species), (5) *Rostkovia* (1 Antarctic species), (6) *Prionium* (1 South African species), (7) *Luzula* (61 species, widely distributed), (8) *Juncus* (209 species, widely distributed). The monograph is illustrated by 121 cuts in the text, including approximately four hundred individual figures.

Professor Doctor B. L. Robinson's address on 'The Problems of Ecology,' given at the Congress of Arts and Science, during the Exposition at St. Louis, 1904, has been reprinted as a twelve-page pamphlet. In speaking of Ecology he closes with these significant sentences: "Dealing as it does with the vital relations of plants to their surroundings, it yields information of the highest importance to the farmer, nurseryman and landscape gardener. Indeed it bridges just that all too wide gap between theoretical and applied botany, connecting the abstruse fields of plant anatomy, plant physiology and classification with the concrete applications of botany in agriculture, horticulture and forestry. The ecologist will never lack that wonderful stimulus which comes to the investigator who is conscious that his work is important to the welfare of his fellow beings, and intimately bound up with human progress."

THE NORTH AMERICAN FLORA

LAST October Part 1 of Volume 7 of the 'North American Flora' was received by subscribers for this work. It was devoted to the *Ustilaginales* (smuts) and was from the hand of Dr. G. P. Clinton, a specialist in this group of plants. Two families (*Ustilaginaceae* and *Tilletiaceae*) were monographed, the first containing 11 genera and 133 species, and the second 8 genera and 78 species. We have now another part (part 2) of the same volume, continuing the paging from 83 to 160, and devoted to the *Uredinales*. This part is by Dr. J. C. Arthur, who is well known as the foremost American student of the rusts, and whose contributions have often been noticed in these columns. He divides the order into three families (*Coleosporiaceae, Uredinaceae* and *Aecidiaceae*), the first and second of which are completed, the third (and much the largest) being broken off near the end of the fourteenth of its thirty-seven genera. The author follows the general outline given by him in a paper presented at the International Botanical Congress at Vienna last year, with some modification, however. A fuller notice is reserved until the completion of the monograph.

The four parts now published enable subscribers and others to get some idea of the bigness of the undertaking on the part of Dr. Britton and his colleagues to bring out a complete flora of North America. These parts average 88 pages each, and they have appeared at intervals which average about seven months in length. At this rate none of us would live to see the completion of the great work, but it is to be supposed that the parts will soon begin appearing at much shorter intervals. In the meantime it is evident that every working botanist, and every department of botany in every college and university, will have to become a subscriber to this greatest systematic work ever projected for any country.

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THE NEW CHEMICAL LABORATORY OF THE RENSSELAER POLYTECHNIC INSTITUTE

THE building is of four stories, and built of Indiana limestone and Harvard brick with roof of copper. It is entirely fire-proof, the partitions being of hollow brick, plastered, and the floors of concrete with a terrazzo finish. The woodwork trimmings of doors, windows and cases are of oak. The framework of the building is of steel construction. The staircases are of iron with treads of Tennessee marble. The hallways are tiled up to seven feet from the floor with 3 x 6 white tile, the baseboard being of Tennessee marble. The windows are very large and the glazing is of plate glass.

First Floor.—Assay Laboratory (54 x 52 ft.). This laboratory furnishes desk accommodation and furnace room for seventy-four students at once, which is the largest fire-room accommo-