

DR. ASA GRAY.

AN account of some of the persons who have contributed largely to increase our knowledge of *materia medica* would be incomplete without some mention of Dr. Asa Gray, the Fisher Professor of Natural History in Harvard University, whose portrait accompanies this notice.

Professor Gray was born on the 18th of November, 1810, at Paris, Oneida County, N. Y., and in 1831 received the degree of M.D. from the medical school at Fairfield, N. Y. He continued but a short time in the practice of medicine, preferring to devote himself exclusively to the study of botany. In 1831, Dr. Gray was appointed botanist to the U. S. Exploring Expedition, but resigned the position three years later, owing to the delay of the enterprise, and was subsequently elected Professor of Botany in the University of Michigan. Before this institution had completed its organization, he accepted the Fisher Professorship of Natural History in Harvard University, in which position he has continued since 1842.

In 1834-35, Dr. Gray published two volumes of the "North American Gramineæ and Cyperaceæ"—one of his earliest contributions to botanical literature. Each volume contained a hundred species, illustrated with dried specimens. The work was sold by subscription, and the number of copies published was necessarily limited. In it were described several new species, and the characters and synonyms of many of those already known were revised. The work, although now very rare, is still an authority upon the subjects to which it relates.

In December, 1834, Dr. Gray read before the New York Lyceum of Natural History a paper entitled "A Notice of some New, Rare, or Otherwise Interesting Plants from Northern and Western Portions of the State of New York," which at once gained for him much credit among scientific men. In 1838 appeared the first part of the "Flora of

most voluminous and, in many respects, his most important contribution to botanical literature.

As early as 1836 appeared the "Elements of Botany," which grew into the "Structural and Systematic Botany," and later became the "Botanical Text-Book" of the present day. This is acknowledged to be one of the best and most practical exponents of vegetable physiology in existence, and has rendered other works on this subject in this country almost superfluous. Another of his important works is the "Manual of the Botany of the Northern United States," which first appeared in 1848 and has already gone through several editions.

Not less valuable, in a broad sense, are writings adapted to popular use and even to the comprehension of children. In works of this class Professor Gray may almost be said to have been the pioneer, and his "First Lessons," "How Plants Grow," and "How Plants Behave," are widely known and well appreciated.

Numerous contributions have been made by him to the columns of the *American Journal of Science and Arts*, of which he has long been one of the editors; while others, on subjects not always connected with botany, have appeared in the *North American Review* and other magazines.

For many years Professor Gray held the office of President of the American Academy of Science and Arts, and in 1872 he was President of the American Association for the Advancement of Science.

After the foregoing account of important achievements, it is hardly needful to remark the persistent industry of their author. Being possessed of robust health and systematic habits of labor, much has been accomplished by him that would have been left undone by one less fortunate than he in these respects; nevertheless the works of Professor Gray are something more than industrious compilations, and evince a genius for the study of science that is rarely met with, and which, when employed as it has been in the present instance,



PROFESSOR ASA GRAY, OF CAMBRIDGE, MASS.

North America," which he edited conjointly with Dr. John Torrey, of New York. The work was, however, not completed, for by the time it had reached the end of "Compositæ" its authors were so overwhelmed with materials which rapidly accumulated, that their time was occupied in studying and classifying the specimens, and it was then evident that so many additions would be needed to the portion already gone over that an appendix would embrace more space than the original text itself. Instead, therefore, of continuing the "Flora of North America," its authors published from time to time, conjointly and separately, a series of memoirs, among which the following, by Professor Gray, are noticeable: "Plantæ Lindheimerianæ"—giving a description of the plants collected by F. Lindheimer in Western Texas; in which work Dr. Gray was aided by Dr. Geo. Engelmann; "Plantæ Fendlerianæ"—a description of plants collected by Aug. Fendler, in New Mexico; "Plantæ Wrightianæ Texano-Neo-Mexicanæ"—describing the extensive collection of Charles Wright, A. M.; "Plantæ Thurberianæ," etc. During the past year, however, the materials which had been collected and elaborated for so many years had approached such a state of completeness, that the author felt warranted to proceed with the work. Accordingly he published the first volume of a "Synoptical Flora of the U. S.," which begins where the former work left off, and which, when completed, will be followed by a revised edition of the preceding portion.

In 1848 appeared the first volume of "Genera Floræ Americæ Boreali-Orientalis Illustrata," more commonly known as "Gray's Genera." The object of this work was to give one or more species of each genus of North American plants, with accurate analyses. Only two volumes, however, were issued, owing to reasons similar to those which arrested the publication of the "Flora."

Dr. Gray is the author of two volumes containing descriptions of all the plants collected during the years 1838 to 1842 by the Expedition of Commodore Charles Wilkes, excepting the specimens gathered on our Pacific coast. This is the

not only renders its possessor respected of all men, but reflects honor upon the country which affords a field for his labor.—*New Remedies*.

THE BUD LOUSE.

In his paper before the American Association on "bud-blight" insects, Dr. W. S. Barnard, of Cornell University, said that his attention had been called to the subject last June, by the pear trees in the neighborhood of Ithaca. The ends of the twigs were enlarged and the buds fell off. In Saratoga he had seen the same ruin worked. In all pear-blights there appears a fungus arising from some injury, as excessive freezing or beetle boring. If the leaves alone blight with brown or black blotches, the cause is the presence of mites burrowing in the pulp. The death of buds alone cannot be ascribed to any of these adverse influences. The absence of fresh surfaces in the present case showed that the evil was not the work of cut-worms or caterpillars. He found it due to a very inconspicuous insect well known in Europe as an old offender, under the name of the pear-psylla (*Psylla pyri*). As this insect had never been described or figured in this country, Dr. Barnard supplied the deficiency and showed drawings. He also described the various methods of discovering their presence.

The writer thought "bud louse" an appropriate name, since it is closely allied to the common plant lice (*Aphidæ*). It is diminutive and has a gradual and complete metamorphosis. It is provided with wings for flight, and has legs so strong that it can leap like a flea. It lays its pollen-like, almost invisible eggs on the petioles or along the veins of the leaves (where the adults also are commonly seen), each anchored to its place by a filament. During the early life of the louse there exudes from the body a waxy secretion which forms a fibrous mesh on the plant probably to protect

* The basis for the above sketch was found in the *Popular Science Monthly* for August, 1872. The portrait is from a recent photograph.

the young against the beating winter storms. To manufacture this secretion and the "honey-dew" which they squirt upon the leaf, as well as to nourish themselves, an immense quantity of the sap of the tree is consumed. The ants attend and milk these lice affectionately, as they do the aphides.

Honey-dew is yielded by both young and old. In Europe this louse, in all its stages, attacks the leaves, blossoms, and young shoots, gradually killing the tree. The main injury here is done by the larvæ, which destroy the buds by sucking the sap about their bases. Dr. Barnard thought the damage which this insect was doing to the pear orchards was very large and liable to be spread widely. It appears to have been imported into the United States 46 years ago, has done great harm, and is being widely disseminated, through nursery sales. It therefore deserves close attention and Dr. Barnard would be glad of additional observations to aid him in devising some means of successful warfare against it.

THE KANSAS GAS AND COAL WELLS.

By J. THORNE, M.D.

OVER a year since the Kansas Rolling Mill Company began drilling for gas at Rosedale (4 miles S. W. of Kansas City). The work, having been abandoned by the company, was continued by private enterprise until four wells have been sunk with the results tabulated below.

The wells are all near the town of Rosedale, within the radius of a mile of each other; all are in the valley of Turkey Creek. No. 1 is at the mill, No. 2 is over $\frac{1}{2}$ a mile nearer Kansas City, No. 3 is $\frac{1}{4}$ of a mile above the mill (S. W.), and No. 4 $\frac{1}{4}$ of a mile north of the mill.

	Well No. 1.	Well No. 2.	Well No. 3.	Well No. 4.
Surface dirt (loam, gravel, and clay).....	23	14	0	13
Limestone.....	40	5	0	20
Soapstone.....	180	2	0	0
Black shale.....	0	0	2	0
Limestone.....	8	10	0	5
Soapstone.....	0	118	0	8
Limestone.....	0	3	6	10
Soapstone.....	0	59	0	127
Limestone.....	0	5	0	5
Coal.....	3	0	0	0
Black shale (gas).....	0	2	6	0
Soap and limestone.....	0	15	0	15
Green shale.....	20	0	0	0
Soapstone.....	0	40	0	8
Black slate.....	6	0	0	0
Sand shale.....	0	1	6	0
Soapstone.....	20	9	0	0
Black slate.....	8	0	0	0
Limestone.....	0	2	6	4
Soapstone.....	0	19	0	7
Green shale.....	20	0	0	0
Limestone.....	1	2	4	10
Soapstone.....	0	4	0	0
Black slate (gas 50 lb.).....	0	1	8	2
Coal.....	5	0	10	4
Soapstone.....	11	0	2	0
Fire clay.....	0	1	6	0
Limestone.....	0	4	5	3
Sand shale (large stream of salt water).....	0	0	11	0
Black slate.....	0	0	9	8
Limestone.....	0	0	0	7
Soapstone.....	0	0	6	0
Black shale (80 lb. gas).....	0	0	15	10
Soapstone.....	0	0	10	5
Limestone.....	0	0	1	5
Soapstone.....	0	0	82	0
Black slate.....	0	0	0	5
Limestone.....	0	0	0	10
Black shale.....	0	0	0	5
Limestone.....	0	0	18	2
Black slate.....	0	0	0	4
Soapstone.....	0	0	4	6
Limestone.....	0	0	2	3
Slate (strongest gas).....	0	0	4	2
Limestone.....	0	0	0	2
Gray shale.....	0	0	0	3
Black slate.....	0	0	0	2
Coal.....	0	0	0	2
Soapstone.....	0	0	2	0
Sand shale.....	0	6	16	10

Total depth of each well. 345 320 9 430 4 330 6

The surface at Nos. 1 and 3 is about 50 feet above the Kansas City Water Works; No. 2 is about 20 feet less, while No. 4 is about 10 feet higher than No. 2.

The first thing which will be noticed in the above table is the great diversity in the earth's crust, and this diversity constitutes the chief interest of the record. Thus the first limestone in No. 1 is 40 feet, while in No. 2, about $\frac{1}{2}$ a mile N. E., it is only 5 feet; at No. 3, $\frac{1}{4}$ of a mile in the opposite direction, it is 21 feet, and at No. 4, between Nos. 1 and 2, it is 20 feet. Under the limestone comes soapstone. In No. 1 it is 180 feet, in No. 2 only 2 feet, while none is found in either three or four for some time. To a geologist the table will be full of such anomalies.

It is the object of this paper to present the facts only, leaving their analysis to others. The gas features of the wells are important in the relation they will sustain to economic questions. In No. 1 we find gas which burns strong from a 1 inch pipe at 274 feet, while 50 feet lower we have a pressure which could not be measured by the instruments at hand. In No. 2 we find it at 216 feet, and 92 feet lower we find it of 50 pounds pressure (this pressure became much greater after a few days). In No. 3 we have a volcano. The flame, from a 3 inch pipe, is thrown over 20 feet horizontally, while from a 5 inch pipe it roars in a mass of flame 20 feet or more in the air. No. 4 is much the same as No. 3. The escape of gas is continuous, and seems to increase after two months' time. It will be noticed that the gas always comes from the slate or shale formations.

The readers of the *Review* may be interested in knowing how specimens are obtained from so deep a hole. The old method was by small particles brought up by the sand pump, but Mr. Charles Swan, the man in charge of the drilling, invented, for this occasion, a method whereby large pieces could be brought to the surface. First, a 3 inch hole is put down with a sharp drill, then a blunt instrument 5 inches in diameter, called a reamer, is put to work, carrying before it (in the 3 inch hole) a long cylinder or bucket, the rock as detached falls into the bucket, and when drawn up shows the exact strata. This invention is of great value in determining the character of the earth's crust.—*Kansas City Rev.*