

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.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

#### 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-

dation in the country. The furnaces consist of eighteen large muffles for scorification and cupellation and fourteen pot furnaces for crucible work. Each furnace has a separate flue. The students' desks are topped with an inch and a half slab of Alberene stone and each contains drawers for the accommodation of apparatus. The supporting legs are of iron. Water is supplied at the ends of the rows of desks, where are situated sinks of Alberene stone. The other furniture of the laboratory consists of anvil blocks, tables for bucking plates, ore-crushers and racks for cooling crucibles.

**Quantitative Laboratory (44 x 16 ft.).** This laboratory has accommodations for twenty students at a time in quantitative analysis. It is excellently lighted. The students' desks are topped with Alberene stone supported upon iron supports and containing four drawers for apparatus, with storage room below each desk for larger pieces. The large hood accommodation is provided with hot plates and water bath, the hoods being made of angle iron painted with aluminum paint and are glazed with corrugated glass. Water is supplied in sinks of solid porcelain. Gas, air blast and suction are also at hand. A special weighing room (7 x 16 ft.) opens off this laboratory, where the balances are supported on Alberene stone bracketed to a brick wall of especially heavy construction. Next to this balance room is a second balance room similarly fitted up and containing the assay balances for the students in the assay laboratory.

**Instructors' Room (19 x 13).** This room opens both into the assay laboratory and into the quantitative laboratory and is fitted with hood, water, blast, suction and the other requisites for a complete private laboratory for the instructor in that department. It is also arranged to accommodate the supplies of materials issued to students as examination topics in both the courses over which it has control.

The Stock Rooms are four in number (9 x 16, 12 x 26, 9 x 16, 5 x 16) and are fitted with appropriate shelving to accommodate the chemicals and apparatus required for general laboratory purposes.

The Sulphuretted Hydrogen Room (8 x 6) is ventilated by special device directly into the open air and contains the sulphuretted-hydrogen apparatus from which the gas is piped to the thirty-six outlets in the main qualitative laboratory on the floor above. The gas is delivered under a pressure of about ten inches of water.

Fuel Bins (11 x 8), for the coal and coke necessary for the assay laboratory, are arranged so as to permit the fuel to be shot through coal-holes in the roof, which is on the level of the roadway above.

**Second Floor.—Main Qualitative Laboratory (50 x 80 ft.).** This room is lighted by large windows on four sides and by a skylight extending over half its area. On each end are the hoods made of metal and glass, eight in number, and each 6 feet in length, making a total hood accommodation of nearly 100 linear feet. These hoods contain the hot plates and the steam baths for boiling and evaporation and they also contain the thirty-six outlets wherefrom students can secure sulphuretted-hydrogen gas for purposes of precipitation. The steam baths are two in number, with accommodations for fifty steam evaporations at once, the steam being admitted to chambers of Alberene stone directly from the steam pipes of the heating system. Each hood has its own individual outlet flue for fumes. The laboratory has accommodations for one hundred and thirty students at a time in qualitative analysis. Students' desks are topped with Alberene stone and are furnished with four drawers and two closets for apparatus. Water is supplied to each desk and the sinks are of solid porcelain. Each student is provided with forty reagents in glass bottles which are supported by shelves of plate glass resting upon metallic uprights. The heating of this laboratory, as of all other rooms in the building, is furnished from the steam plant in the department of electrical engineering. Radiators are everywhere placed under the windows, and in addition to the heat so supplied a further quantity is furnished by the ventilation system. Air is sucked in from the outside, passed over heated steam

coils, and is then blown by an electric fan through ducts opening in the side walls of the laboratory. Fumes pass out not only through the individual fume flues of the hoods, but also through numerous flues opening a little below the ceiling along all the walls. These flues have also openings near the floor, so that either opening may be used as occasion demands. Spectroscope accommodations are furnished in the four corners of this laboratory. One feature worthy of notice is the broad eight-foot aisles between the lines of desks. This gives abundant room to every student.

**Supply Room (6 x 16).** This room is of two stories and is intended to be used for the issuing of reagents and as a storage room for smaller glass apparatus.

**Instructor's Room (12 x 16).** Because of the great height of its ceiling this room has a gallery around two sides, thus greatly increasing the storage space for chemicals, because of the increased wall space for shelving. The distilled-water apparatus is here located and the supply of distilled water is here stored in a tin-lined copper tank, the water being tapped off therefrom to a spigot in the main laboratory. The room is equipped with complete apparatus suitable for a private laboratory.

**Ward Room (10 x 16).** Fitted with the usual accommodations for receiving hats and coats of the students.

**Organic Combustion Room (8 x 16).** This room is fitted with Alberene stone tables, gas, blast and suction and is arranged to receive the combustion train for the usual work in organic combustion.

**Third Floor.**—The Lecture Room (50 x 41 ft. 6 in.) has seating accommodations for two hundred men. It contains the large lecture table with pneumatic trough and the other essentials to fit it for lecture uses. It is lighted by three small and six very large windows. On the wall opposite the lecture table there projects a gallery intended to hold the electric lantern for illustration work. This gallery is entered from the floor above.

**Private Laboratory (16 x 24).** This room is

fitted as a private laboratory for the professor of chemistry and contains the usual complement of hoods, water baths and other appliances suitable to such use.

The Laboratory for Gas Analysis (11 x 16) contains Alberene-stone table, water, gas and blast accommodations, with suitable shelving to accommodate the apparatus for which the room is intended to be used.

The Special Laboratory (10 x 16) is fitted in the same manner as that of gas analysis and is intended to be used for such special work as the examination of food products, etc.

**Fourth Floor.**—**Water Laboratory (20 x 31).** This laboratory is fitted with Alberene-topped tables and with water appliances suitable to the very complete examination of questions dealing with the examination of potable, mineral and boiler waters. Appliances are here established for undertaking such examinations from both the chemical and the bacteriological sides. An especially devised table for the determination of free and albuminoid ammonia permits of the analysis of six waters at once. Suitable provision is made for the sterilizers, incubators and other apparatus peculiar to a water laboratory.

**Section Room (20 x 20).** This room is fitted with blackboards and is intended for use as a recitation room in chemistry. It has accommodations for a section of about twenty-five men at a time.

**The Halls.**—The halls throughout the building are eight feet in width.

**Lighting.**—The building is piped for gas, but it is as a precaution only, inasmuch as electricity is to be depended upon for lighting purposes.

W. P. MASON

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ALLAN MACFADYEN

At the early age of forty-six years Dr. Allan Macfadyen has been taken away from his work. By an accident in the laboratory in which he was working a preparation of the serum for Malta fever infected him—the infection seems to have been through the eyes—and death carried him away. Professor Macfadyen was educated in Edinburgh and grad-