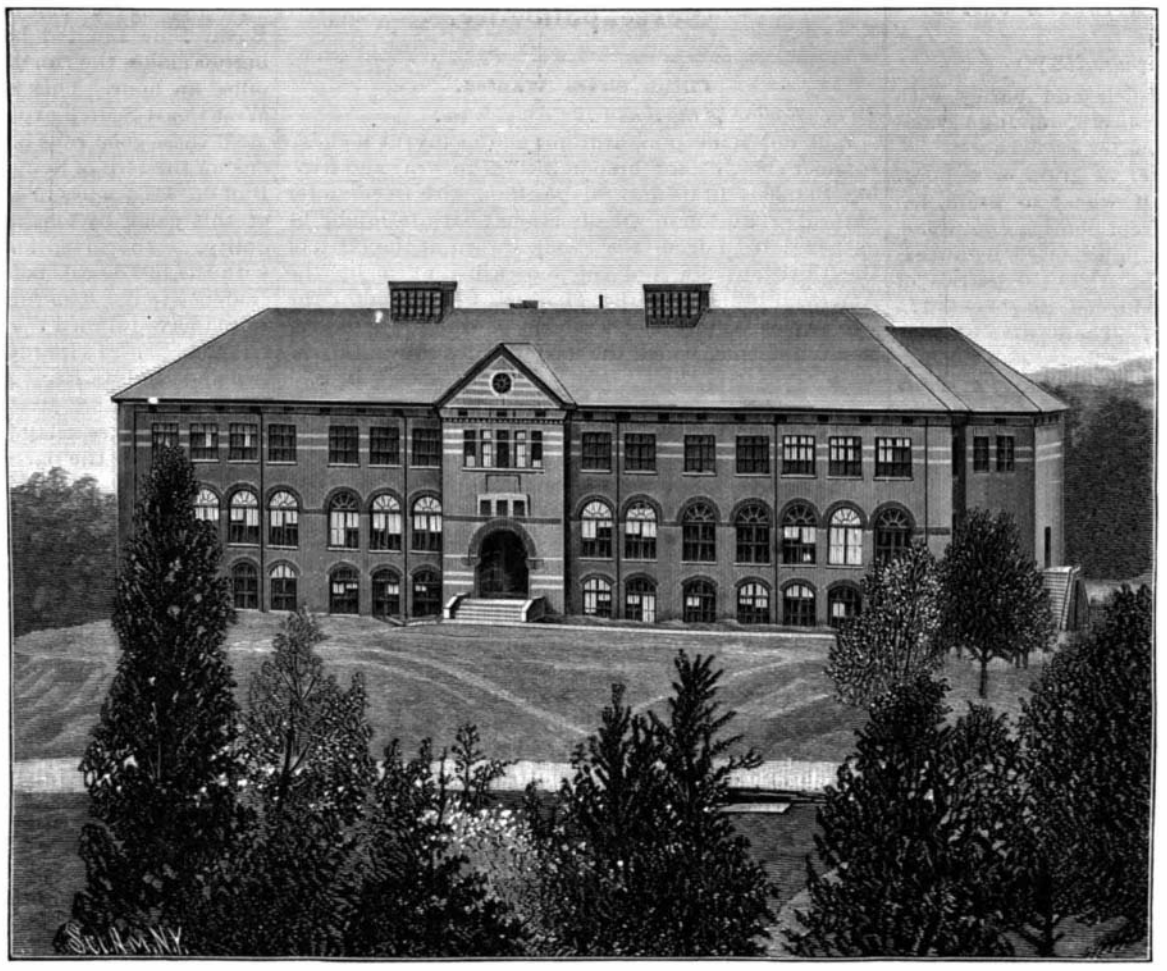
The Lacquer Tree in Germany.

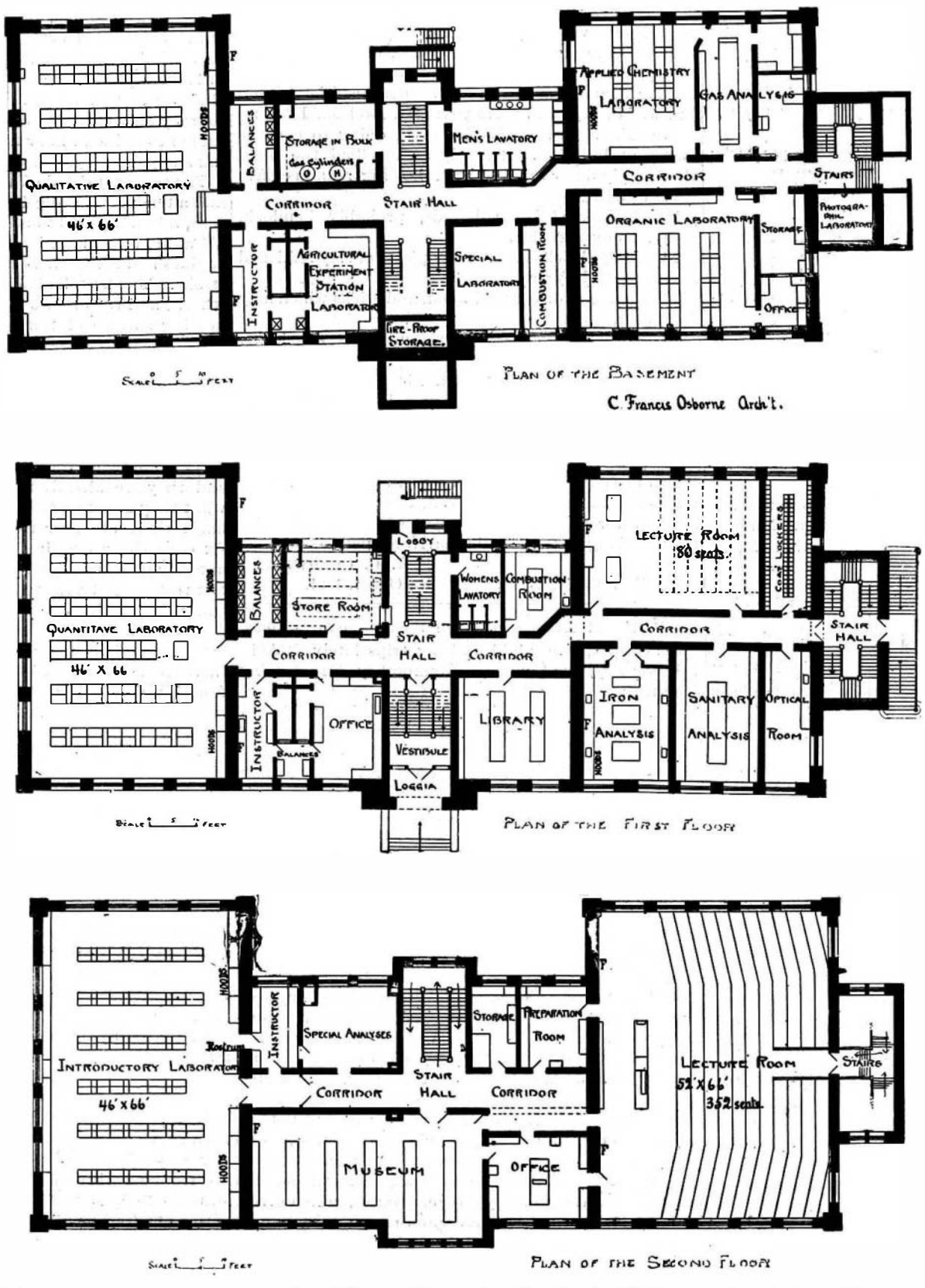
On his return from Japan, sixteen years ago, says *Nature*, Prof. Rein, the well known authority on Japanese art and industry, planted in the Botanical Garden at Frankfort some specimens of the lacquer tree (*Rhus vernicifera*), from which the Japanese obtain the juice employed in the production of their famous lacquer work. According to the *Times*, there are now at Frankfort thirty-four healthy specimens of the lacquer tree, 30 feet high and 2 feet in girth a yard from the ground; and the young trees, which have sprung from the original tree's seed, are in a flourishing condition. It seems to be proved, therefore, that the lacquer tree is capable of being cultivated in Europe, and it only remains to be seen whether the juice is affected by the changed conditions. The *Times* says that, to ascertain this, Professor Rein has tapped the Frankfort trees, and has sent some of the juice to Japan, where it will be used by Japanese artists in lacquer work, who will report on its fitness for lacquering. In the meantime, some of the most eminent German chemists are analyzing samples of the juice taken from the trees at Frankfort, and samples of the juice sent from Japan; and should their reports and the reports from Japan be favorable, it is probable that the tree will be largely planted in the public parks and other places in Germany. In course of time a skilled worker in lacquer will be brought over from Japan to teach a selected number of workmen the art of lacquering wood, and in this way it is hoped that a new art and craft may be introduced into Europe. Professor Rein has been conferring with the authorities at Kew as to the results of his experiment.

It would not be a bad idea for our Department of Agriculture to introduce the lacquer tree.

A CORRESPONDENT sends us the following account of a kaolin deposit recently discovered in Marion Co., Ala., which is said to be very heavy, covered in most places by a layer of earth not exceeding 4 or 6 feet in thickness. It is in two mounds or high hills, on either side of the large branch of Bear Creek, which by proper damming will afford ready means for transportation to the nearest railway station, 12 miles northeast, namely, Bear Creek. The specimens of the mineral are said to be remarkable for their purity, lack of sandy or gritty particles, and absence of any veins or stains of iron, which would deteriorate the value and usefulness of the clay. The deposit seems to be of great depth.



CORNELL UNIVERSITY—THE NEW CHEMICAL LABORATORY.



CORNELL UNIVERSITY—PRINCIPAL FLOOR PLANS OF THE NEW CHEMICAL LABORATORY.

THE NEW CHEMICAL LABORATORY OF CORNELL UNIVERSITY.

The growth of Cornell University and the superior facilities which it offers for the instruction of students are exemplified in the new chemical laboratory lately completed, of which we now present a few illustrations, plans, and particulars.

The building was designed by C. Francis Osborne, assistant professor of architecture at the university. It is in the form of an irregular parallelogram, 186 feet in length, 50 feet wide in the main portion and 70 feet in the wings. The edifice is constructed of red brick, with trimmings of Medina sandstone; the roof is of gray slate. Slow-burning construction was employed throughout. Across the main part of the building, dividing each floor into three nearly equal parts, run two flue walls, 3 feet in thickness, marked F F in the plans. These contain a great number of separate air flues leading from the hoods.

The *Qualitative Laboratory* contains 88 work tables, arranged in six double rows. Each table is provided with three drawers and three cupboards below, so that by suitable arrangement of working hours three students may occupy one desk, making it possible to accommodate, in all, 264 students in this laboratory. There is a circular porcelain sink between every two adjoining tables; the waste pipes from these descend vertically through the floor and discharge into troughs on the ceiling of the sub-basement below.

Hoods or fume closets, with sliding glass sashes, extend nearly the whole length of the flue wall on the east side of the room. Several of these hoods are devoted exclusively to the use of hydrogen sulphide, the gas being conveyed by pipes from the sub-basement, where it is made in large, self-regulating generators.

There is a weighing room provided with balances for the use of certain students, who, during part of the year, carry on quantitative work in the qualitative laboratory. Beyond these rooms is situated the chemical laboratory of the United States Agricultural Experiment Station, completely equipped for the various kinds of analyses here performed, especially the estimation of fat, and of nitrogen by the Kjeldahl method.

Oxygen and Hydrogen.—These gases are obtained by the electrolysis of water in twelve pairs of glass cells with electrodes of lead, placed in a trough of water. The current is brought into the building from the electric laboratory, where it is generated by a Siemens dynamo, driven by the water power of the falls in the gorge below the university. This

dynamo is one of those used at night to light the campus. The current employed for electrolysis is of 5 amperes at 75 volts, and is sufficient to yield about three cubic feet of hydrogen per hour. The tanks for storage of gas have a capacity of fifty cubic feet each. From these tanks pipes extend to all the laboratories and lecture rooms of the building, furnishing an abundant supply of pure gas for chemical work, combustion analysis, and the projection of lantern views on the screen for the illustration of lectures. A similar complete apparatus is in operation in the physical laboratory, and is connected by pipes with nearly all the lecture rooms of the university.

Organic and Applied Chemistry Laboratories.—These rooms have twenty-four slate-topped tables, provided with abundant hood space, pumps for vacuum distillation, and many other conveniences. Adjoining is a room for combustion analysis, a special laboratory for advanced work, a small photographic emulsion room, etc.

Quantitative Laboratory.—There are here 88 tables, some of which are so divided that two students can occupy the same place at different hours, while each has his own independent locker. The remaining tables are intended to be occupied by one student only; the room is thus capable of accommodating 106 students. The table in the middle of the room is provided with twelve inclosed cases, each containing a simple form of rheostat and the other arrangements necessary for carrying on two or three electrolytic determinations at once, with currents varying in strength, at the pleasure of the operator, from one-tenth up to ten c. c. of oxy-hydrogen gas per minute, as usually measured. Some of the other conveniences for quantitative work provided in this room are a steam drying closet of new construction, the temperature of which can be controlled at will up to 195° or above, a number of constant level water baths, kept constantly boiling, in a part of the hoods, heating places in the other hoods and at each student's table, and a suction pump for every student. Distilled water is prepared in a special condensing apparatus in the attic, and is stored in a large tank lined with block tin; from this tank the water is conveyed by block tin pipes to every working room. Air blast is abundantly provided in every room where it is needed from a large reservoir in the adjoining physical laboratory, kept full by an air pump constantly running.

The Balance Room of the quantitative laboratory contains ten balances. The reading room contains the chemical library of the university, numbering about 1,000 volumes, and including bound sets of all the important foreign chemical journals from their first issues. All these books are accessible to students during the working hours of the day.

East wing of the first floor is chiefly occupied by the laboratories of iron analysis, the sanitary laboratory, the optical room, and the smaller lecture room. The tables in the sanitary laboratory (and distilling room) are covered with lead. The optical room is equipped for spectroscopic and polariscopic work, the use of the microscope and micro-photography. The small lecture room contains eighty seats.

The Introductory Laboratory is 46 by 66 feet, and contains 88 working tables. Each table contains, however, three separate drawers with cupboards below, so that three students may work at different times at the same place, making the total capacity of the room 264. During the past year this number has been very closely approached. The room extends up into the gable of the roof, the heavy beams and trusses supporting which are wholly exposed. By this method of construction a pleasing architectural effect and greatly increased air space are secured.

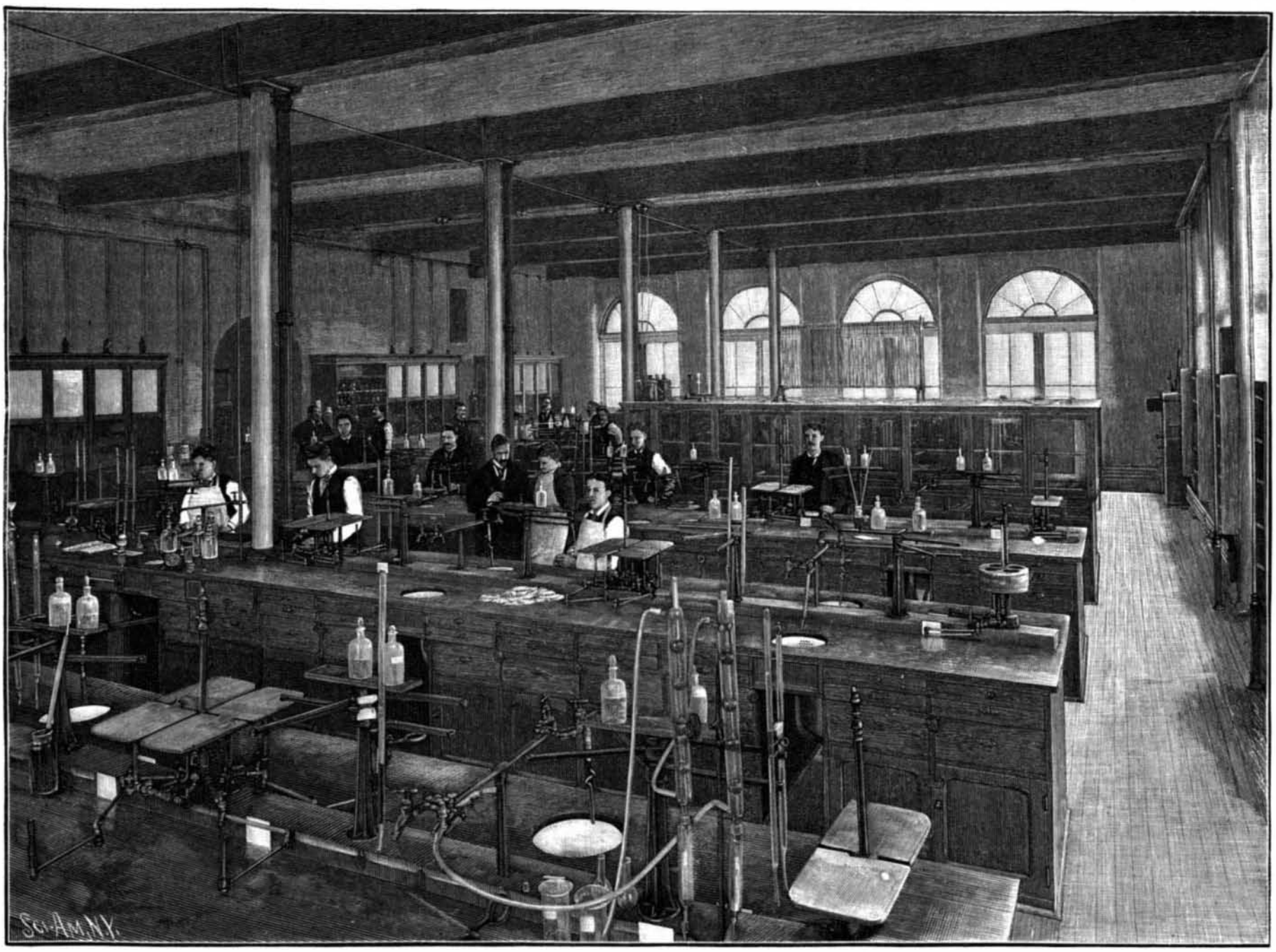
There is a "rostrum" or raised platform, with a completely equipped demonstration table and blackboard, from which the instructor gives announcements or explanations to the students, and which is so placed as to be plainly visible from all parts of the room. A slate slab for special experiments extends along the west side of the laboratory. In the corners are cases of drawers containing the various chemicals needed by the students.

The Museum, fifty feet in length, contains the collection of general and applied chemistry, consisting of several thousand specimens, displayed in glass cases, consisting chiefly of the materials and products of chemical industry. Many of the most interesting of these were collected at the Paris Exposition of 1889. The sulphuric acid and alkali industry, the manufacture of glass, porcelain, cement, illuminating gas, and gunpowder, the refining of petroleum, and the processes of photography, are illustrated with especial fullness. The organic collection contains specimens of all the typical compounds of carbon, a large part of which were prepared by students in the organic laboratory.

The Large Lecture Hall is 52 by 66 feet, and occupies the whole of the second floor of the east wing. The ceiling of the room is formed by the roof of the building, the beams and trusses being exposed; the hall is therefore about forty feet in height in the center. It contains 352 seats, with arm rests. The plan of the room is such that no student is placed at a greater distance than forty feet from the lecture table, and the experiments performed are plainly visible to all. The acoustic properties of the hall are exceptionally good, probably owing to its shape, and the effect of the roof trusses in breaking up the sound waves.

Back of the lecture table are blackboards, hung with weights in such a manner that they can be easily raised and lowered, and behind these is a fume closet, or hood, which opens also into the adjoining preparation room. The building is heated throughout by steam. The cost of the building, furniture and fixtures was about eighty thousand dollars.

Instruction in the laboratory is given by Dr. G. C. Caldwell, Professor of Analytical and Agricultural Chemistry; Dr. Spencer P. Newbury, Acting Professor of General, Organic, and Applied Chemistry; Louis M. Dennis, Assistant Professor of Analytical Chemistry; and Dr. W. R. Orndorff, Assistant Professor of Organic Chemistry. The instructing force also includes six instructors and assistants in the various laboratories.



THE NEW CHEMICAL LABORATORY, CORNELL UNIVERSITY—VIEW IN THE QUALITATIVE LABORATORY.

Paraffine in Diphtheria.

Mr. A. M. Sydney-Turner, Surgeon to the Gloucester County Infirmary, informs the *Lancet*, in reply to inquiries, that he has treated thirty cases of diphtheria (children and adults) with paraffine, and has had the satisfaction of seeing every one recover. His plan is to ask for the ordinary paraffine used in lamps, and, having scraped off the diphtheritic patch, to apply the paraffine every hour to the throat (internally) with a large camel's hair brush. As a rule, the throat gets well in from twenty-four to forty-eight hours, and with improvement in the throat the paraffine is applied less frequently, but he continues its use for two or three days after the complete disappearance of the patches. He speaks definitely as to the therapeutic effects, but is unable to state what the chemical action of paraffine on the diphtheritic membrane is; probably the hydrocarbons in the liquid exert some powerful influence on the membrane.

THERE are sixty miles of snow sheds on the Central Pacific Railroad.

"Bish" on Birds.

"Bish" says that "birds having long legs have to have a long neck."

"How's that, Bish?"

"Why, you see, if they didn't have a long neck, they couldn't drink without sitting down."

"Well, Bish, some birds have long necks and short legs. How is that?"

"You'll find these things are all calculated out. These birds having long necks have use for them. You are thinking about the swan. Well, he likes a bit now and then from the bottom of the water, and his long neck is to enable him to satisfy this taste; besides, long necked birds feed on food of a poor quality, so that to get any enjoyment out of eating, they have to have a long neck to enable them to taste it long enough to make it enjoyable."

"How about snipes?"

"Snipes! well, some of them haven't a very long neck, to be sure, but they have what amounts to the same thing—a long bill—and they are rigged so that they can tip up to make up for the rest. Now," said Bish, full of the long neck idea, "the ostrich has the longest legs of any bird I know. Look at his neck! It easily reaches to the ground. Doesn't this prove my position? And his legs are strong enough to hold up an elephant. Speaking of the elephant," continued Bish, "he isn't a long necked bird, I mean animal. He hasn't any neck at all, and he is so heavy that he can't sit down every time he wants a drink or a mouthful of hay. See how these things are calculated out for him. Could anything be handier than his trunk?"

"How about snakes, Bish?"

"All neck. They can reach anywhere for food or drink. Returning to birds," said Bish, "did it ever occur to you that birds that roost can't fall over backward?"

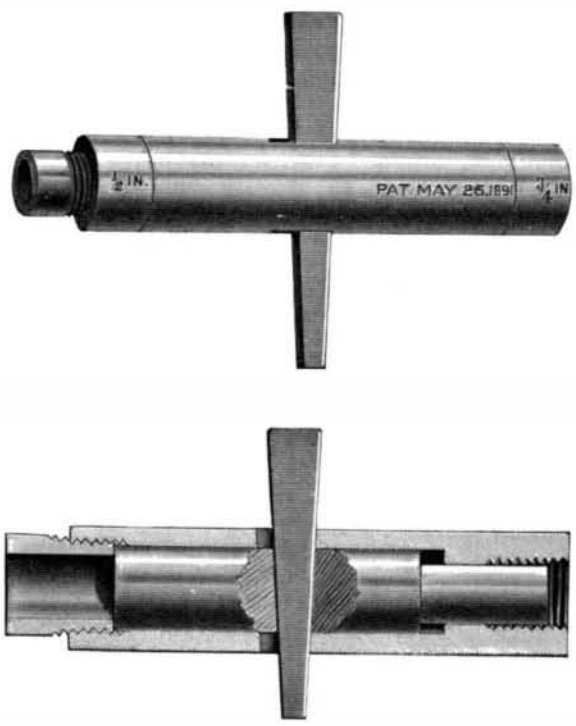
"No, indeed. How do you explain that?"

"Well, you see, their claws reach around the perch, so that when they begin to lean over backward, their claws tighten like a pair of pipe tongs. I tell you," said Bish, "these things are all calculated out."

PAINTED PAPER.—Unsized paper is coated with an aqueous solution of dextrin. When this coat is dry a layer of siccative oil paint is applied; and the sheet so obtained may be used for packing purposes, to render fabrics impermeable to water, etc.

NIPPLE HOLDER.

As shown in the accompanying cut, this holder is double ended and holds two sizes of nipples ½ inch and ¾ inch. They are made in various sizes running from ⅜ inch to 4 inches, and can be used in a machine or a vise. These holders are so arranged that when the thread is cut, the nipple can be removed by simply starting back the wedge. This loosens the inner part



NIPPLE HOLDER.

of the holder and allows the nipple to be easily taken out with the fingers. The sectional view shown in lower cut clearly shows the operation of the wedge. Formerly the nipple was driven in so firmly that after the thread was cut, wrench or tongs had to be used, which often broke or damaged the nipple. These holders are made by the Armstrong Manufacturing Company, of Bridgeport, Conn.

Chicago Fair Items.

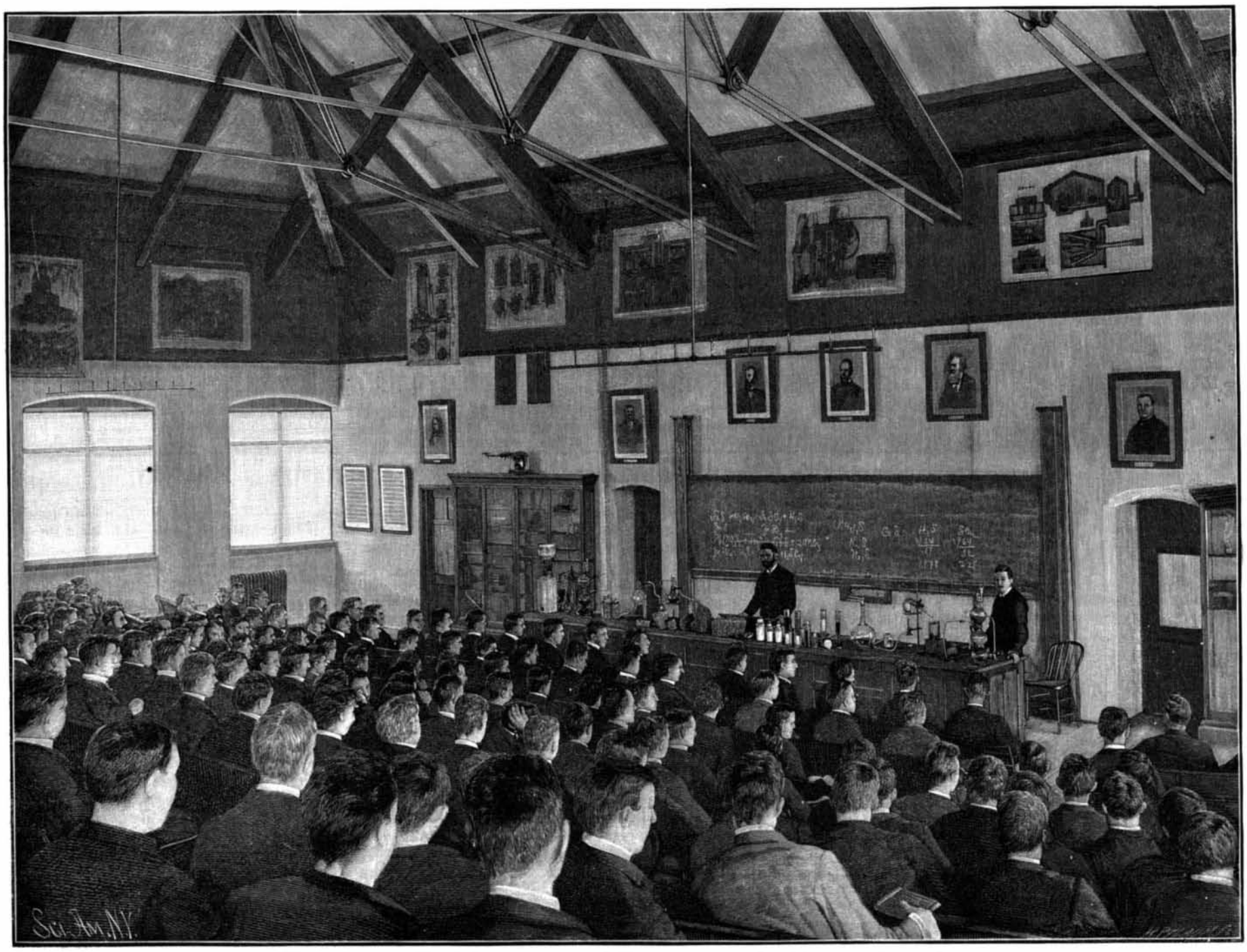
Mr. James Dredge, editor of *Engineering*, London, and Sir Henry Trueman Wood, the Royal Commissioners for Great Britain and Ireland to Chicago's World's Fair, passed through New York last week homeward bound.

They had been to Chicago and selected a site for a building suitable for the British exhibits. The commissioners express their belief that our exposition will be the grandest that any nation has had and that their manufacturers will be well represented, notwithstanding their aversion to our tariff.

Mr. Steppani, of Berlin, wants to build a Moorish castle on the World's Fair grounds, and proposes to spend $500,000 on it. He exhibited a structure of this kind at Paris, but its cost was much less. The plans have been submitted to the Committee on Ways and Means, and if they are adopted visitors will certainly be dazzled by the Oriental magnificence of Mr. Steppani's palace. The building, it is proposed, shall be 200 × 200 feet, one story high, and constructed of brick in the Moorish style. Mirrors will make of the interior a place of brilliant and many times multiplied reflections. Indeed, one will be likely to lose himself in the maze of beveled and prismatic glass, for it is intended that a feature of the castle shall be a labyrinth where the illusions are to be so perfect that on entering one will think he is advancing to an endless series of colonnades.

Good Eyesight of Indians.

Dr. L. Webster Fox is of opinion that savage races possess the perception of color to a greater degree than do civilized races. In a lecture lately delivered before the Franklin Institute, Philadelphia, he stated that he had just concluded an examination of 250 Indian children, of whom 100 were boys. Had he selected 100 white boys from various parts of the United States, he would have found at least five of them color blind; among the Indian boys he did not discover a single case of color blindness. Some years ago he examined 250 Indian boys, and found two color blind, a very low percentage when compared with the whites. Among the Indian girls he did not find any. Considering that only two females in every 1,000 among whites are color blind, he does not think it surprising that he did not find any examples among the Indian girls.



THE NEW CHEMICAL LABORATORY CORNELL UNIVERSITY—THE LARGE LECTURE ROOM.