

A New Yorker's Impressions of the World's Fair.

(Continued from page 163.)

the admission gates) is the endless sidewalk railroad operated by electricity, which extends over the entire length of the pier. For five cents a person may ride upon it all day if desired. In approaching the buildings from the pier, the splendid group of statuary surmounting the Peristyle appears in strong relief against a blue sky, while the other single statues on either side and underneath form an appropriate setting or surrounding. Once the Peristyle is reached, the massiveness of its three rows of columns becomes apparent and the solid pavement underneath brings one to a realizing sense of Venice. A paved arched bridge is provided in the center of the Peristyle over a narrow waterway which connects the basin of the Court of Honor with the lake. Steam launches pass through this and under the bridge in going from the Court of Honor to the lake. The Peristyle fronts directly on the lake, making a pleasant place to sit on a hot afternoon, as the cool breezes from the lake draw through between the columns.

After crossing the floor of the Peristyle inward, the first unobstructed view of the various buildings in their majestic proportions is had. Close to the spectator at the lake end of the Court of Honor, isolated on a pedestal rising out of the water, is the mammoth gilded statue of the Republic, facing westward toward the Administration building, which causes the statue to be seen first from the back. The statue is 60 feet high and cost \$25,000. The two arms are raised upward parallel with each other, one hand holding a flag and the other a staff with a liberty cap on it. It is very imposing and can be seen from nearly every point of view. To the right of the Peristyle as one enters from the lake is the Palace of Music, decorated with statues of heroic size to correspond with those on the Peristyle. This palace is 130x250 feet in size and its interior construction is so perfect that it is said to possess the finest acoustic properties for orchestral purposes of any hall in the United States; 2,500 persons can be seated in it. It is here that Theodore Thomas held his daily concerts, which were so little appreciated by the general public. At the other end of the Peristyle, opposite and symmetrical with the Palace of Music, is the Casino, in which a restaurant is located equal in every respect to those of New York. On the south side of the Casino, secured to the wharf, is the famous Santa Maria, a complete copy of the Columbus ship, and it is usually crowded with visitors.

There is another direct connection here with the lake. The huge Palace of Agriculture stands west of the Casino, and the waterway between the two is bridged over. Right near the Santa Maria, secured to the dock adjoining the Agricultural Palace, are the other caravels of Columbus, the Nina and Pinta, admittance to which is refused. On the other side of the water, opposite these vessels, standing apparently on an island, is the reproduction of the La Rabida monastery, containing many interesting relics of Columbus. This building contrasts strongly in its simplicity with the grand architecture of the adjacent buildings. Passing westward along the south side of the basin, directly in front of the long facade of the Agricultural Palace, an excellent view of the Palace of Liberal Arts, bounding the opposite side, is obtained, and also glimpses of the Palaces of Electricity and Mining, while at the extreme western end the stately gilded dome of the Administration building looms up as a fitting background and center for so many buildings. The bright greenward between the walk in front of the buildings and the pier line, relieved at boat landings by massive white statues, forms a pleasing contrast with the white of the buildings.

Walking still westward until the west end of the Agricultural Palace is reached, another waterway is seen at right angles to the length of the basin, and parallel with the lake front. Looking south, the Columbus monument and colonnade, imitating somewhat the Peristyle, is seen, and north is observed in the distance the Wooded Island and the dome of the Illinois State building, while the long western facade of the Palace of Liberal Arts shows its size to advantage.

Standing in the open plaza directly in front of the Administration building, at the western end of the basin, the expensive and grand MacMonnies fountain (called the Columbian fountain) is the most conspicuous object; its odd shape and curious combination of picturesque statuary mark it truly as one of the chief works of art in the Exposition. The color is white like the buildings. On each side of this fountain are two large electric fountains whose basins are sixty feet in diameter.

In the daytime these fountains do not present any attractiveness, but at night the multi-colored illumined fountain is particularly beautiful. On the eastern porch of the Administration building, facing the basin and lake, is St. Gaudens' beautiful statue of Columbus in heroic size. The view from the balcony of the eastern porch of this building is particularly pleasing, bringing in, as it does, the fountains, the basin, lined on each side with beautiful green lawns, and the artistic facade of the Agricultural Palace,

while in the distance can be seen the statue of the Republic and the lake through the columns of the Peristyle. South of the Administration building stands the immense Palace of Machinery, with its long row of Corinthian columns, and on the north are the Mining and Electrical Palaces, simple but harmonious in shape and idea with the other larger buildings. In the porch of the Electrical Palace is a beautiful statue of Franklin drawing electricity from the clouds. West of the Administration building is a large open space, bounded by the Central Railroad depot, an imposing building and very large. In the gallery of this building is a spacious writing room, equipped with every facility for correspondence. The building seemed to be too large for the purpose, and there was much waste room. Just west of this are the train sheds for thirty-five tracks, having accommodations for thousands of visitors. Not more than one-third of the tracks were in active use. Coming to the Fair in this way, *via* the Illinois Railroad, the visitor is landed close to the Administration building, and has for a first view the delightful vista of the basin and lake from the eastern porch of that building.

The aluminum bronze dome of this building, shining like gold, looming up 275 feet above the ground, can be seen from a great distance, and is particularly conspicuous at night when covered with rows of hundreds of incandescent lights. The designers have allowed ample space between the buildings properly to show them off, and while apparently near together, as observed by the eye, they are in reality separated some distance apart, as can be proved by attempting to walk from one to the other.

One noticeable difference from the Centennial Exposition in 1876 is the absence of cheap and rapid communication between these large buildings.

Electricity is used so successfully in propelling boats about the lagoons and canals that it is surprising electric carriages were not introduced to take visitors about the grounds for a small sum. The need of such simple, direct transportation should have been thought of. The only method adopted is the use of rolling chairs, to be hired at 50 cents per hour, or electric launches at 50 cents a round trip. The rolling chair privilege has proved to be somewhat of a failure, thousands preferring to walk rather than pay the high figures. At Philadelphia one could reach any building for five cents by frequent trains. In my next some of the notable exhibits will be described.

MEETING OF THE AMERICAN ASSOCIATION AT MADISON.*

The concluding portion of Dr. Hovey's report is as follows:

BILOXI INDIANS, OF LOUISIANA.

Prof. J. O. Dorsey, chairman of the Anthropological Section, described a peculiar tribe of aborigines that he visited in 1892 and 1893 for ethnological study. He said that the name "Biloxi" was a corruption of the name they gave themselves, and which simply meant the First People. They were known to have lived in 1669 at Biloxi Bay, Mississippi; but in 1763 they removed to Louisiana, and of the entire tribe only seventeen individuals remain alive. They formerly existed in three divisions, named for the deer, the grizzly bear, and the alligator, and each of these branches refused to eat the meat of the animal whose name they bore.

Among social peculiarities may be mentioned the fact that a Biloxi cannot marry his wife's aunt or niece, but might marry her sister, differing in this from the Sioux and other tribes. They hold to a form of transmigration. For instance, the spirit of a deer revived and took the body of another deer. Thunder stories should only be told on a fair day. Hummingbirds always tell the truth, and signs from them are regarded as sacred. Various superstitions were described. The Biloxi language appears to be the oldest of the Siouan family. There are linguistic proofs that the Biloxi, Hidasta, Tutelo, and Winnebago dialects were offshoots from a parent stock, or at least that those speaking them dwelt near each other. But by careful investigation it appears that 1,500 years must have elapsed since their separation, and that it took place in Virginia. In this connection, the fact may be mentioned that Dr. Washington Matthews entertained the section by rendering speeches, war songs, and sacred songs of different Indian tribes, by the aid of the phonograph. He had his own cylinders. His account of the difficulties of inducing the Indians to speak or sing into the instrument were amusing.

BEAR AND WOLF STORIES.

For forty years Prof. W. H. Brewer, of Yale College, has been a steady attendant on the meetings of the A. A. S., and always has something bright and original to say. This time his theme was the instinctive interest children take in stories about bears and wolves. Nothing can be told them about lions, tigers, leopards, or cats that so fascinates them as the class of stories named above. He has repeatedly experimented on this matter with very young children, even as young

as five years, and has never found their interest to flag as long as he was willing to talk about bears. He told a child five years old a story about a grizzly bear that fed on the carcass of a whale near his camp on the Pacific coast, and when he saw that boy a year later he climbed on his knee and demanded the same story over again. Bear stories never grow old. Children may forget about Samson and the lion, but never about the she bears that revenged the bald-headed Elisha. To some extent the same interest is manifested in wolf stories, *e. g.*, the fascinating tale of "Little Red Riding Hood." Now, why is so much interest taken in these animals? Two explanations may be offered. One is that it is entirely a matter of education, due to the consecutive traditions of the nursery, and the place they have in juvenile literature. The other is that this interest is instinctive. The latter is the true explanation. The origin of instinct is a mooted question among naturalists. Most evolutionists have held it to be due to the inheritance of acquired experience, memory, habits, and ~~instincts~~. This is now denied by naturalists of certain schools, but held to by others. Our own belief is that the matter now considered belongs to inherited memory. Bears and wolves have been the most destructive of all wild beasts known in our latitude and climate. The destruction of children by these animals in parts of Europe is still more remarkable. Formerly it must have been very great, and must have made a permanent impression on the mind. We know that several of our finest breeds of dogs were originally evolved as wolf dogs. The fear inspired by bears and wolves in the childhood of our civilization, and the education of successive generations in this fear, descends to us as an inherited memory, or instinct, of sufficient force to impart a fascination to all stories about them.

Among papers read in other sections the following may be named as attracting special attention: "Natural Gas from New Lisbon, O.," by W. A. Noyes. "A Tempered Steel Meteorite," by E. Goldsmith. "Negative Lightning," by W. LeConte Stevens. "The Rotating Disk in Photometry," by E. S. Ferry. "The Latitude Variation Tide," by A. S. Christie. "Automatic Fire Sprinklers," by D. S. Jacobus. "Use of the Name 'Catskill' in Geology," by Prof. J. J. Stevenson. "The Fossil Sharks of Ohio," by E. W. Claypole. "Photography as Applied to Recording Micro-organisms in Artificial Cultures," by G. F. Atkinson. "Lichens of the Black Hills," by T. A. Williams. "The Roots of Orchids," by Prof. M. B. Thomas. "Relations of Production and Price of Silver and Gold," by Henry Farquhar.

The total number of lectures, addresses and papers read this year was 179, many of which were doubtless as interesting as those that happened to arrest the writer's attention. All the more important ones will appear in the published proceedings of the society. Nothing more is now attempted than to give a kind of bird's eye view of the great annual gathering of men of science, and some idea of what they talked about. The entire number in attendance as registered was 290, a less number than has usually been enrolled. It had been hoped that the proximity to Chicago and the World's Fair would attract a larger number; but the reverse has proved to be the case. So many congresses of one kind or other, and such diversified objects of interest at the Fair as may there be seen, served to draw away from the meeting at Madison.

Grateful mention should be made of the charming hospitality shown by the citizens, the faculty of the University, and the State officials. Never on any previous occasion has the Association had such ample facilities of every kind at its disposal, and such quiet yet spacious quarters for its sessions. The illumination of the lake shore on Monday evening was as grand as could well be imagined. The various excursions to localities of interest were well planned and admirably managed. Among the points thus visited were the Effigy Mounds, along the shores of Lake Mendota; the Driftless Area of Wisconsin; the singular walled lake known as "The Devil's Lake;" the various kames, eskers, and drumlins telling of the ice age and its results; and most wonderful of all, the picturesque and instructive Dalles of the Wisconsin.

The principal officers chosen for the next meeting are: As president, Prof. Daniel G. Brinton, of Media, Pa.; vice presidents, Section A, G. C. Comstock; Section B, W. A. Rogers; Section C, T. H. Norton; Section D, Mansfield Merriman; Section E, Samuel Calvin; Section F, S. H. Scudder; Section G, L. M. Underwood; Section H, Franz Boas; Section I, Harry Farquhar. The office of permanent secretary is held by Prof. F. W. Putnam; Prof. H. L. Fairchild, of Rochester, N. Y., is general secretary; and Prof. J. L. Howe, of Louisville, Ky., is secretary of the council. The treasurer of the association is Prof. William Lilly, of Mauch Chunk, Pa. The next meeting will be held in some Eastern city, probably in Brooklyn, N. Y., although it is not yet determined.

*The total cost of the Suez Canal exceeded £20,000,000.

*Continued from the SCIENTIFIC AMERICAN of September 2, page 147.

The Great Depression in Manufacturing Industries.

The effect of the prevailing monetary stringency or general depression in trade on manufacturing industries throughout the country becomes a matter of interest at this time, in view of the numerous reports of the closing of manufacturing establishments.

The earlier stage of the squeeze in credits, as is usually the case, was seen in the extreme liquidation in Wall Street, and the second phase, in logical order, has been and is being observed in its effect on manufacturing industries.

Returns have been received concerning nearly 800 establishments, nearly all of which are of more or less prominence, and all of which have closed their doors for one cause or another since June 1. The report likewise includes the best available information concerning the discharge of the number of employes of silver mining companies in the far West, as well as of employes rendered idle by the shutdown of iron ore mines. So far as changes of the character referred to at a few of the larger business centers are concerned, many reports by trade unions or statistical bodies having access to such data have been employed.

A summary of the results of the investigation shows that no fewer than 463,000 industrial, building trades and mining employes have been thrown out of work within the period specified, due to the absolute closing of the establishments at which they were engaged or the shutting down of work at the mines.

Of this large aggregate no fewer than 80,000, or 17 per cent, were engaged in the production or the manufacture of iron and steel; 55,000, or 12 per cent, in woolen, silk and cotton mills or in the manufacture of clothing; 50,000, or 11 per cent, in leading lines in building trades at a few of the larger cities; 44,000, or 9.5 per cent, in silver mining and allied industries, and 41,000, or 9 per cent, in coal mining and coke producing. Of the aggregate of these five classes, 270,000, it is possible that as high a proportion as 30 per cent are customarily idle for a short time at this season of the year.

It is noteworthy that out of the approximate aggregate of 800 establishments reported shut down about 79 per cent declared this action is taken because of the prevailing "depression in general trade," a "lack of orders," "stringency in the money market," or "inability to make usual discounts due to tight money," while only 6 per cent state that the shutdowns are due to usual vacations at this season of the year, or owing to the necessity for making repairs or for taking inventories. Strikes or wages disputes are given in explanation of the closing down of only 2 per cent of the establishments reported, while failures in business or other embarrassments, fires or other disasters, account for the shutdown of about 3 per cent of the concerns reported. Less than 1 per cent state in so many words that shutdowns are owing to "impending tariff changes."

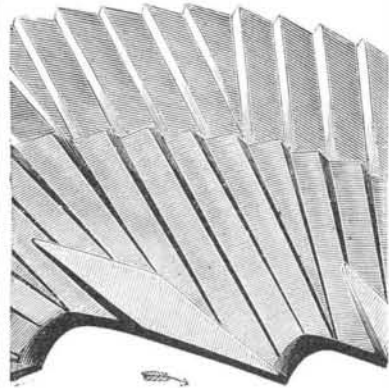
When it is realized that this report, complete as it may be, is quite incomplete so far as the country at large is concerned, even with respect to manufacturing establishments which have wholly closed down for one reason or another, and that it takes no account of the thousands of reductions of working forces in other manufacturing establishments, in commercial houses, or by transportation organizations, large and small, it becomes plain to the casual observer that there are in all probability no fewer than 800,000 or 900,000 idle employes of manufacturing, commercial and other enterprises at this time who were nearly if not all actively employed three or four months ago, and that not more than from one-sixth to one-fifth of this aggregate may fairly be said to have been out of work during the past two months owing to the "customary mid-summer shutdowns," or to the necessity for repairs or to taking of inventories, even though the not infrequent mid-summer wages dispute in the iron and steel industries be taken into account.—*Bradstreet's.*

Promethium.

This is an alloy containing 60 per cent of copper, 38 per cent of zinc, and 2 per cent of aluminum. These metals are melted together and sodium or other metallic flux capable of oxidation at the temperature of the mixture is stirred in. The quantity used should be sufficient to flood the surface of the mixed metals. The sodium increases the tenacity of the alloy and prevents deterioration by exposure to air or sea water. The degree of hardness may be varied by varying the proportions of the ingredients. The alloy is termed "promethium" or "titanic metal."

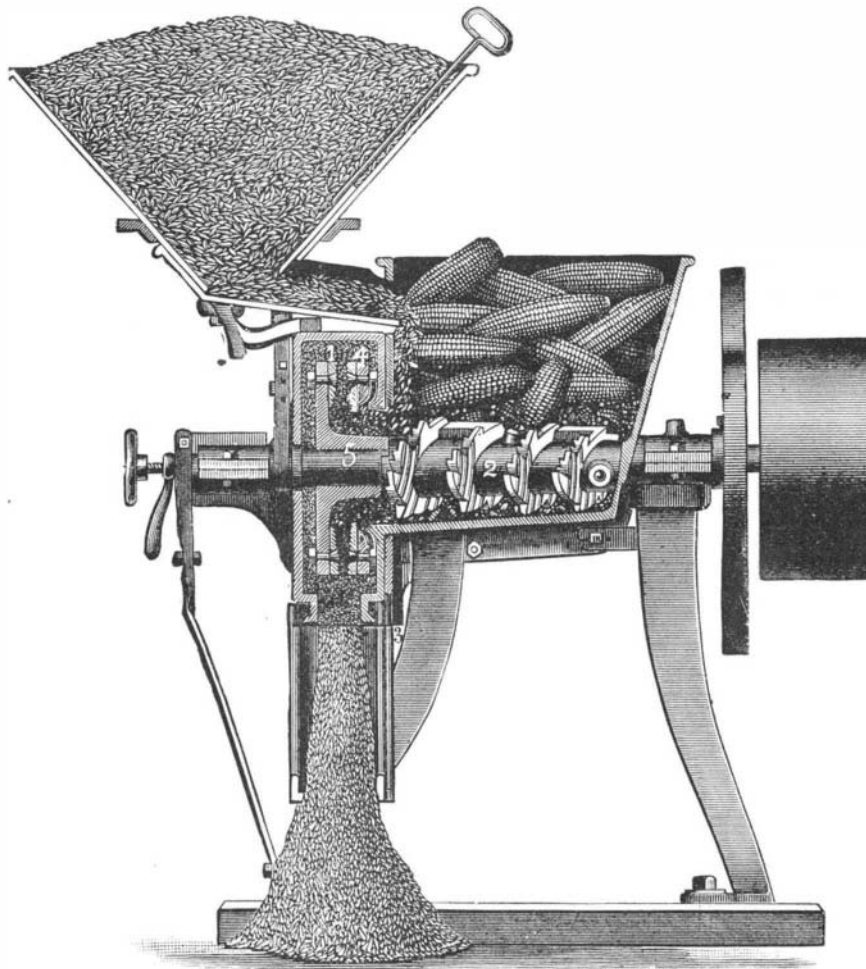
THE QUAKER CITY GRINDING MILL AT THE EXPOSITION.

In section E of the Agricultural annex at the Columbian Exposition may be seen one of the widely known Quaker City grinding mills, manufactured by A. W. Straub & Co., of Philadelphia, for grinding corn and cobs, feed and table meal. The concern was established a quarter of a century ago, and these mills have been brought to a high degree of perfection, the most recent improvement being the adoption of a thrust ball bearing for the back end of the spindle. This improvement can be added, when desired, to the mills already out. In the illustration the machine is shown in section grinding oats to lubricate the disks,



while grinding corn and cobs and mixing the product. The cobs fall at one end and slide at the other into the case around the "drunken" circular saws, which cut the cobs into three or four sections, the teeth on the sides sawing the sections fine, when they pass through the mill with the corn.

The double reduction grinding disks, an enlarged section of one of which is shown in the small view, are cast of steel and readily interchangeable. The conveyor flights upon the sawtoothed inner edge act like a fan to draw cool air and grain into the mill at a very low speed, the grain being first cut fine, then rolled, mashed and mellowed, so that it enlarges nearly one-third in bulk. In the picture, the location of the grinding disks is indicated at 1, the training ring, 4, being on a universal joint, free to move every way, except to revolve with the running disk. The crushing saws, 2, are formed on a sleeve cast fast with lead to the spindle, 5, which is of steel. The degree of fineness is regulated by turning a small hand wheel on the end of the temper screw, and there



THE WORLD'S COLUMBIAN EXPOSITION—THE QUAKER CITY GRINDING MILL.

are three discharge spouts with tin covers, allowing the desired one to be opened, either side or downward.

Agriculture in France.

The fifth and last volume of the reports of the United States commissioners to the Universal Exposition held at Paris, in 1889, has recently been distributed from the State Department. It is a profusely illustrated volume of 900 pages, and constitutes the report of Professor C. V. Riley, as expert commissioner for the eighth group and representative of the Department of Agriculture, on the agricultural phases of the Exposition. The volume is divided into two parts, the first devoted to agriculture, vine cultivation and wine making, use-

ful and injurious insects, field trials of implements, and stock shows, while the second part is a history of the agricultural exhibit and agricultural products of the United States. In the preparation of the first part of the report Professor Riley was aided by Messrs. Amory Austin and C. L. Marlatt, while the second part, in addition to Professor Riley's reports on the international congress of agriculture held during the Exposition, and upon injurious and beneficial insects in the United States, contains reports by experts, mostly connected with the Department of Agriculture, upon such topics as the meat industry of the United States, associated dairying in New England, the leather production of America, tobacco, viticulture, vegetables, cereals, etc. Some 219 cuts and 77 plates are included in the two parts of the volume.

The chapters in the first half of the report upon the agronomy and agricultural statistics of France and her methods and appliances for agricultural instruction are of great interest and value to the agriculturists of this country, as exhibiting the wise liberality with which the French republic fosters agriculture and the generous provision which the state makes for instruction in the science, many features of her system, Professor Riley thinks, being well worthy of our imitation. The Minister of Agriculture in France is a cabinet officer, and liable to frequent change, in common with the other ministers of the state; but his chief subordinate, the Director of Agriculture, is practically a permanent officer, the present (1889) incumbent having held the office for some 20 years. Three other directors also report to the Minister of Agriculture, charged respectively with forestry, the stud (Haras) and waterworks. There are also various councils, committees and commissions for the consideration of technical affairs, such as the superior commission upon the phylloxera, the consulting committee upon epizootic diseases, etc.

Agricultural instruction is provided for by the National Agronomic Institute at Paris, three national schools of agriculture, one national school of horticulture, twenty-seven practical agricultural schools, seven farm schools, thirteen primary agricultural schools, ninety departmental professorships of agriculture and courses in normal schools, professorships of agricultural chemistry in various faculties of science, seventeen courses of agriculture in lycées, colleges, primary schools, etc., and fifty-six agronomic stations and agricultural laboratories. This generous provision puts agricultural instruction within the reach of almost all, and the recently instituted order of the *Merite Agricole* is held up to all sincere agriculturists as a goal to be striven for only second to the historic decoration of the Legion of Honor.

That the extent to which scientific agriculture is fostered in France is not exaggerated is shown by the magnitude of the agricultural interest. With a population (in 1886) of a little over thirty-eight millions, the capital employed in agriculture in France exceeds 100,000,000,000 of francs or about 20,000,000,000 of dollars. The figures are almost inconceivably large, and only intelligible when it is remembered that the great majority of the holdings of land in France are very small, and that therefore the closest cultivation is practicable or rather necessary. Of 5,670,000 holdings in France, 2,167,000 occupy less than one hectare (1 hectare equals 2.47 acres), while only 30,000 occupy over 100 hectares (247 acres), almost half the holdings being thus less than three acres in extent. A comprehensive exhibit of the appliances for agricultural instruction in France was made at the Exposition, and other countries made similar but less comprehensive exhibits of the same subject. All of these the report gives a succinct account, but the greater part of the chapter on this subject is devoted to France, and deservedly so, for, says the author, "probably in no other country in the world has agriculture received greater attention from the government."

The second part of the volume forms an exhibit of certain phases of agriculture in the United States, each chapter written by an expert. The monographs composing this part of the report were translated into French for distribution during the Exposition, and their preservation in English in this permanent form is to be highly commended, since they form the most complete and modern treatise upon American scientific agriculture we have seen. The volume has an appendix of several pages devoted to expert opinion from French and English newspapers on the American exhibit, showing a high degree of appreciation of it. The report as a whole is a most valuable contribution to agricultural literature, and many of its chapters might with advantage be reprinted separately for special distribution.