

BIRD'S-EYE VIEW OF THE PAN-AMERICAN EXPOSITION.

We have so recently (November 10 and November 24) described and illustrated the general scope and the recent progress of the Pan-American Exposition that the accompanying bird's-eye view will be perfectly intelligible to our readers without any lengthy elaboration on our part. The point of view is supposed to be an elevation beyond the water gate, at the extremity of the large lake, which will form one of the most delightful landscape features of the Exposition. The Lake, including the North Bay, is approximately three-quarters of a mile in total length, and its sloping and gently undulating shores will be richly wooded down to the water's edge. To the left of the lake is seen that architectural gem, the Albright Art Gallery, its gray-white marble walls and columns showing in vivid contrast amid its setting of greensward and foliage. Descending the broad marble flight of steps and turning to the left over a bridge which separates the main lake from what is known as the North Bay, one sees across the latter sheet of water another marble building, not so large as the art gallery, but scarcely less charming in its architecture and landscape setting.

After crossing the bridge, and swinging somewhat to the right, one enters the magnificent main approach to the Exposition buildings, and the eye ranges through the long perspective of the Fore Court, the vast Esplanade, capable of holding a quarter of a million people, the Court of Fountains and the Grand Basin until it is arrested by the towering mass of the noble Electric Tower—the dominating architectural feature of the whole Exposition. To the right of the approach are the Ordnance exhibits, and adjoining them the numerous groups of buildings devoted to State and Foreign exhibits. Following down the main approach and through the Fore Court, one reaches the ornamental bridge which leads into the Esplanade. Inclosing the right wing of the Esplanade are the United States Government buildings, and the left wing is shut in by the Forestry and Mines building, the Horticultural building, the Graphic Arts building and the Temple of Music. Passing through the Esplanade, whose shorter axis measures 450 feet and its longer 1,700 feet, the visitor is confronted by the Fountain and Cascades, which, together with their setting of greensward and flower beds, extend down the main approach for 700 feet. Beyond the Cascades is the Mall, a broad, imposing concourse, extending entirely across the grounds, which measures 150 feet in width by 2,640 feet in length. Here one is confronted by a sheet of water 350 feet by 400 feet in length, from which there towers nearly 400 feet into the air the massive and pre-eminently graceful structure of the Electric Tower. To the right and left of the Cascades are the buildings devoted respectively to Manufactures and Liberal Arts and to Machinery and Transportation, each of which is 350 feet in width by 500 feet in length. At the back of the Liberal Arts building is the stock exhibit, while to the rear of the Transportation building are grouped in one structure the various offices of the administration. To the right of the Electric Tower is the building, 500 feet in length, devoted to Agriculture; while to the left of the Basin is another building of similar dimensions devoted to the Electrical exhibit. Behind the Electric Tower is the Plaza, surrounded by restaurants and the Propylæa, while immediately behind the Propylæa is the general station of the steam and electric railways. By no means least among the attractions of the Pan-American Exposition is the structure which will be given up to athletics and general outdoor sports, known as the Stadium. The major axis of the Stadium will be fully 750 feet in length and its minor axis 500 feet. The arena will be laid out as an athletic field and will be surrounded by a track for contests of speed. Seating accommodation will be provided at two sides and around one curve of the track for 12,000 people. On the opposite side of the Plaza to the Stadium will be the Midway, without which no end-of-the-century exposition seems to be complete, if, indeed, judged by its popularity, it must not be considered its leading feature.

The present progress in the construction of the buildings and that essentially novel feature the color treatment, have been very ably dealt with in our recent articles contributed by Edward Hale Brush; and after studying the accompanying bird's-eye view, our readers will agree with him that the combination of



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the delicate, tastefully-tinted buildings with the broad plazas, the generous expanse of greensward and shrubbery, and the various carefully elaborated elements of the landscape gardening, will produce a *tout ensemble* which will give the Pan-American Exposition the leading place for beauty among the great expositions of the closing years of the present century.

THE Say sugar



Fig. 3.—ANTERIOR VIEW OF CRUVEILHIER'S FŒTUS.

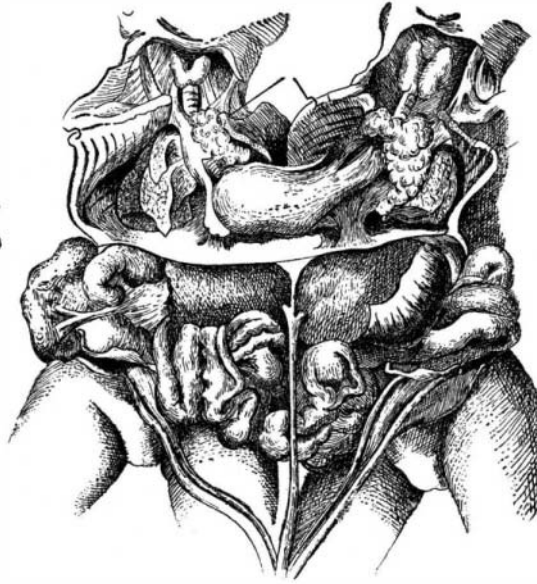


Fig. 4.—THORACIC VISCERA OF CRUVEILHIER'S FŒTUS.

refinery in Paris is using the 20 ton electric truck for the transportation of sugar. It is intended to carry a 9-ton load, although it has carried 17 tons. It is capable of a speed of 7½ miles an hour, and 25 miles can be made without recharging. Electric motors are used to steer the two front wheels. The company will, it is said, order ten other trucks of similar construction.

SEPARATION OF THE BRAZILIAN THORACO-XIPHOPAGOUS TWINS.

The thoraco-xiphopagous twins of Brazil, who have attracted no little attention during the past year, have been separated by one of the most remarkable surgical operations chronicled within recent years.

In the SCIENTIFIC AMERICAN of February 24, 1900, we published an account of the preliminary operation performed by Dr. Alvaro Ramos, surgeon of the Hospital Misericordia, of Rio Janeiro, which revealed the fact that the livers of the two girls were united. Before undertaking this operation, an excellent radiograph was obtained, for the purpose of ascertaining as far as possible the exact location of certain internal organs. Strong doses of hyponitrate of bismuth were administered to the patients. Owing to its opacity to Roentgen rays, this substance was revealed in the stomachs and in portions of the intestines, thus proving that there was no connection of these organs in one abdominal cavity. A reproduction of this radiograph was published in the issue above mentioned. When Dr. Ramos discovered the serious nature of the operation that would be necessary to effect the severance of the two bodies, he concluded that for the time being the investigation should be carried no further. Valuable indeed was the information obtained at this operation, and Dr. Chapot-Prevost, lecturer of the Academia de Medicina, of Rio de Janeiro, decided to undertake a second and final operation.

Dr. Prevost first determined whether the liver could recuperate and whether hemorrhage could be controlled. Careful experiments with dogs proved that the liver healed readily, and grew with an astonishing rapidity. A careful physiological and psychological study of the twins convinced him that an operation might be successfully performed.

The modern surgeon has been taught by long experience that too much care cannot be taken in preserving the most perfect asepsis. In the present case the most elaborate preparations were made. The attendants took disinfecting baths, dressed themselves in new clothes thoroughly sterilized, and washed their hands and arms in six disinfecting solutions before entering the operating room.

The twins were prepared for the operation with the same elaborate precautions. They were washed with soap and water and with sulphuric ether, and were then wrapped in sterilized cotton covered with gauze. A specially devised operating-table was employed, so constructed that it could be separated into two parts.

The first incision made extended from the navel upward, its middle lying at the ensiform cartilage, near the false ribs of the right side of Maria. The anterior superior surface of the liver was exposed, when the flap was turned back toward Rosalina. It was found that the liver bridged the two cavities and occupied two-thirds of the connecting space. Below this bridge was a second bridge formed by the union of the two mesenteries. After the cartilage in the median line had been severed, still another bridge two centimeters long was discovered, formed by the union of the two pericardial sacs. The separation of this third bridge was a most delicate task.

When the anastomosing branch of the two mammary arteries was severed, the blood streamed out in a red deluge. The points were seized and the hemorrhage controlled. The imprisoned tissue was cut, and the edges of each sac sutured with cat-gut. To prevent the intestines of the one body from passing into the other body, the mesenteric bridge was ligated with silk at two points; the intermediate portion cut, and the intestines placed in their proper positions. The pleura of Maria, it was found, extended across the line of union. This unforeseen difficulty was overcome by detaching the parietal pleura, and connecting it by means of a fine cat-gut suture with the median fold, which adhered to the pericardial bridge.

After the internal parts of the thorax had been thus separated, operations on the other side were begun. The skin and cartilage opposite the first incision were severed to expose the liver. Skilfully the surgeon cut the liver so as



THE TWINS BEFORE THE OPERATION.



ROSALINA AFTER THE SEPARATION.