

EXCAVATIONS AT CORINTH.

BY PAUL ELSNER, ATHENS.

Of the high mountains which border the Gulf of Corinth none has so beautiful and bold an outline as the inaccessible rocky pyramid of Acro-Corinth, which is crowned by a ruined fortification, at one time of the utmost strategic importance. With an air of command it looks down upon the palaces and towers, on the multitude of temples flooded with a halo of blinding sunlight from the glowing Greek skies, and upon the wealth of monuments, which mark the ancient city, once covering with bewildering glory the enormous "emporium," which, with an area of 20 kilometers, slopes gradually from the foot of the Acropolis to the shore of the sun-bathed sea. After a long epoch of highest culture, beginning about 800 B. C., the fall of Rome brought destruction upon this community, at that time permeated by the spirit of commercialism. For fully a century the weeds grew undisturbed in the streets of the city, which the Roman Consul Lucius Mummius destroyed 146 B. C. Cæsar rebuilt the city and during the height of the Roman Empire it attained a pinnacle of unwonted glory as a cosmopolitan trade center. Mighty waves of Goths and Slavs swept over it and proved destructive to its wealth and position; then under the alternating dominion of the Frank, the Turk and the Venetian this splendid center of culture finally disappeared altogether. Deeper and deeper grew the strata of earth which were layered upon the ruins of the city, stirred only now and again by the plow of the farmer.

To the later period of flourishing culture of the city, in ancient times, only a few pillars of a Doric temple bear pathetic testimony; these pillars are shaded by the high cypresses within the purlieu of the modern village called "Old-Corinth." When the American Archæological Institute in Athens began the large scientific enterprise of the systematic examination of this extensive site of Corinth under the leadership of its director, the eminent archæologist, Dr. Rufus Richardson, in the year 1896, it faced serious difficulties. For even the ancient temple, which in the course of the excavations was entirely exposed and definitely recognized as the Sanctuary of Apollo, furnished no valid clew to the topography of Corinth; and yet the excavations, interrupted only by the Græco-Turkish war of 1897, secured for the fortunate seekers a series of successes.

At the very beginning of the first effort the spade struck the ruins of a theater of the Roman period built immediately above an older Greek theater. It was found at a depth of about 15 or 20 feet and had been surrounded by a laurel grove. Its slumber of centuries duration "in the secret recesses of earth's deeps" had been disturbed only by a number of trenches, which now furnish an intelligent plan of its construction.

Three water-courses were also unearthed; the celebrated spring of flowing water called Peirene, walled up during the Roman period; a second spring disturbed by an earthquake, which lies between the theater and the Temple of Apollo, at the foot of the hill crowned by the latter; and finally the old city fountain of Corinth. Time has dealt so kindly with this venerable structure, a fountain surmounted by Poseidon with dolphins at his feet, that it is the best preserved type of any Greek water-course hitherto excavated. The fountain was inclosed in the time of the Romans by a balustrade, 30 meters in length, shimmering in red, blue and yellow colors. The sheen of the wealth of color is as resplendent to-day as it was in the olden days, when the women and maids of Corinth gracefully bore their earthen jars to the melodious fountain to be filled. This resplendent balustrade is a most instructive example of the polychrome process used in Greek structures.

Further excavations of a part of a marble staircase which led from the propyla downward to the wharves and to the Agora (market-place) indicate clearly the contours of the topography of Corinth.

Furthermore, the spade disclosed by successive steps in a westerly direction all the structural appurtenances of the propylon, so that this triumphal arch formerly frowning down upon the city, could now be easily reconstructed. There are to be considered in this connection two colossal figures of Phrygians, dating back to the first or second century of the Christian era. Connected with the right and left pillar of the propylon, they bore the Corinthian capitals and the architrave of the triumphal arch, which have also been found. The features of the one colossal figure, 2,000 years old (found inverted in the soil), were fully preserved; in the other, the nose, formed of a separate piece, had been inserted. In the neighborhood of their bases, which are

ornamented in relief, there were found two female heads, more than life size, whose imposing beauty materially heightened the majestic impression of the propylon. The last finds of relief-representations of Helios and Selene furnish the last link in the series of structural parts of the propylon.

Of the rich statuary discovered, only the follow-



TWO FEMALE HEADS, OVER LIFE-SIZE, FOUND NEAR THE PROPYLON.

ing can be mentioned here; a life-size head of Ariadne, a relief of two almost life-size dancing girls, with classically beautiful drapery of the garments, dating back to the Roman period, and a small Greek votive-tablet, representing seven gracefully grouped figures artistically finished.

Science has been presented with valuable additions by these relics of vanished ages, for which it is indebted to the American Archæological Institute.—Translated for the SCIENTIFIC AMERICAN from the *Illustrirte Zeitung*.

Another Floating Dock.

Another huge floating dock was recently launched from the shipyard of Messrs. Swan & Hunter, at Wallsend-on-Tyne, England. Although similar in character



COLOSSAL FIGURE BEARING THE ARCH OF THE PROPYLON.



RELIEF OF HELIOS AND SELENE.

to the floating dock lately built by the same firm for the British Naval Station at Bermuda, it is much smaller—4,500 tons maximum lifting capacity—and is intended for commercial rather than naval purposes. It has been constructed for the port of Durban, Natal. The necessity for a structure of this type was proved during the South African war, since this port has no

dockyard facilities, though an extensive scheme of providing adequate dock accommodation and port re-organization, including the construction of graving docks of a large size, is in progress. But the superior advantages of the floating pontoon dock, in lieu of the usual type of graving dock for commercial purposes is becoming more and more emphasized every year. The designs for this floating dock were carried out by the engineers, Clark and Standfield, London. The extreme length of the dock is 365 feet, width 87 feet. The distance between the guard timbers on the side walls is 61 feet, so that the dock can accommodate vessels up to 60 feet beam, while, when still retaining a freeboard of 4 feet, it can take a vessel drawing 18 feet over keel blocks 4 feet high. Its dead weight lifting capacity is 4,500 tons. The dock consists of three pontoons and two side walls, and any of the pontoons can, when required, be removed and lifted by the dock itself, thus making it self-docking in all its parts.

The machinery of the dock is contained in the upper portion of the side walls, and consists of two separate but identical installations. Each installation comprises a boiler and two pumps, each pump driven by its own separate engine; and the piping arrangements of the dock are so arranged that either pump can empty the whole of the compartments on its side of the dock.

In addition to this there is a communication through the central bulkhead across the dock, so that, in case of any breakdown it would still be possible to lift the dock by the engines of one side alone. The boilers are of the ordinary return tube marine type 10 feet long by 9 feet 6 inches diameter. The engines are of the horizontal compound tandem type, placed on either side and driven directly onto the vertical spindle of the centrifugal pumps, which are placed right down at the bottom of the dock, directly on the top of the main drain of the pumping system, the weight of the shafts and the propellers being taken on ball bearings at the engine deck.

The dock itself is divided into 40 water-tight compartments, each of which has a separate communicating pipe, each pipe being provided with its separate valve. All these distributing pipes are collected together into the main drain on which pumps are seated and the discharge and inlets into this main drain are governed by large screwdown valves and by automatic flap valves outside the dock. The different compartments are all worked by means of bell cranks and rods and levers from the valve house, which is placed centrally on each wall, whence direct communication can be made to the engines and the inlet and outlet valves, so that the valveman standing in his house has complete control over the whole of his section of the dock. In addition to the ordinary requirements of a dock, the present one is provided with a small but very complete electric light installation, which will enable work to be carried out on ships through all the hours of both night and day. The direct-current system is utilized at a tension of 110 volts, the electric cables being all contained in steel tubes to prevent being injured with the exception of the cable which crosses the dock, which is drawn into lead and suitably armored.

Fish Flour in Norway.

A great deal is done in Norway to improve and preserve the provisions produced in the country and to procure a market for them abroad. The fisheries represent one of Norway's chief industries, and quantities of fish are sold at very low rates, particularly during summer. One way in which these are utilized is by means of an invention which quickly dries and pulverizes the flesh of fresh fish. The resulting product, called fish flour, is easy to transport from one place to another and has great nutritive value. A new and profitable branch of industry might be established in America, by utilizing fish in this way.

The Growth of American Parks.

The American Park and Outdoor Art Association has compiled some interesting statistics which show what great strides have been made in, improving the appearance of our large cities. Fifty years ago no municipality in the United States had reserved a single acre of land for park purposes. Last year there were in cities of more than fifty thousand population 2,360 parks and squares with a total area of 59,717 acres, the valuation being \$531,571,947. In the entire United States there are about 75,000 acres of park land, for the improvement and maintenance of which at least \$11,000,000 are spent annually.