

THE EGYPTIAN PYRAMIDS AND THEIR BUILDERS.

THE first lecture of the course organized this winter in Montreal by the Province of Quebec Association of Architects was delivered on Jany. 22nd, in the Art Gallery, before a crowded audience, by Mr. S. H. Capper, the recently appointed Professor of Architecture at McGill University, who took as his subject, "The Egyptian Pyramids and Their Builders." The chair was occupied by Hon. George Drummond, and at the close of the lecture, which was illustrated by a very interesting and complete set of lantern views (part of the equipment provided for the Chair of Architecture by Mr. Wm. C. McDonald, its founder), a hearty vote of thanks was accorded to Professor Capper on the motion of Mr. Andrew T. Taylor, President of the Association. The following is an abstract of the lecture, for which we are indebted to the kindness of the author:

After noting the physical characteristics of Egypt, which, as an habitable country, consists solely of the bed of the Nile, rendered fertile by the annual inundations of the river, Professor Capper first dealt with the ethnology of the ancient Egyptians. At the furthest point to which we can trace them back in their monuments, some six thousand years ago, there appear to be two, if not three, distinct races in Egypt, of which the dynastic race, probably the latest invaders, would seem to be allied to the ancient Phoenicians. It is surmised that these 'Punic' tribes, leaving their original home on the Persian gulf, made their way along the coast up the Red Sea, whence, crossing over into the Nile Valley, they conquered and occupied Egypt, becoming the dynastic race known to us in a long and magnificent succession of sculptured monuments. Other waves of this great tide of migration and conquest settled on the coasts of Philistine and Syria (the Philistines of Biblical history being one branch) and made their way further west to the famous settlement of Carthage and its offshoots in the extreme west of the Mediterranean. The Egyptians, when they first become historically known to us, are a people in a very high state of socially organized life, perfectly acquainted with the arts of masonry and sculpture, of carpentry and turning, of working in copper, of pottery-making, glazing, weaving and dyeing; in many respects their workmanship and works have never been surpassed by anything man has accomplished since their day.

Egyptian history begins for us with the fourth dynasty of kings, dating from the earliest years of the fortieth century before Christ. To the time immediately anterior to this dynasty the 'Pyramid of Degrees,' or Stepped Pyramid, of Sakkara is generally ascribed.

Within the last few years the Pyramid of Sneferu, first king of the 4th dynasty, has been identified at Medum and thoroughly explored. Though much ruined, it is in some respects better preserved than the more famous Pyramids of Gizeh; in particular the temple, attached to every pyramid on the eastern side, has in this instance been completely preserved, buried under piles of debris. The Pyramid at Medum, known to ancient Egyptians as 'Kha,' is a most interesting link, showing the development of the true pyramid from the truncated form known by the name of 'Mastaba.' This pyramid and that at Sakkara are the only instances of successive enlargement, the 'accretion theory' of pyramid-building being shown to break down when applied to the great Pyramids of Gizeh. Further, the Pyramid at Medum was the direct model followed by Sneferu's successor, Khufu, when he built his much grander pyramid at Gizeh, the one having been brought to the true pyramid by a final layer or casing, built at a totally different angle from the original slope of the 'Mastaba' core, while the other was built directly to the true pyramid angle. The dimensions of Sneferu's Pyramid are: height, 7×25 cubits; side of square base, 11×25 cubits; those of Khufu's—'The Great'—Pyramid at Gizeh being precisely similar, with a length of 40 cubits substituted for the 25 cubits of the earlier monument. This ratio of height to base-circuit, viz., 7 to 44, is precisely equivalent to the nearest simple approximation of the ratio of the radius of a circle to its circumference;

and this theory of pyramid building seems to be well established by the most accurate measurements of modern times. The theories and paradoxes sought at various times to be established in regard to the Great Pyramid, are almost innumerable; in comparatively recent times they have been chiefly associated with the name of Professor Piazzi Smyth, of Edinburgh, whose excellent work of solid investigation is sadly marred by the fanciful theories in which the learned explorer allowed himself to run riot. Within the last few years Mr. Flinders Petrie has given accurate data for the first time to the world, the result of a most painstaking scientific research, illumined by great critical acumen; and in the works of this eminent English Egyptologist are to be found the most recent and most authentic statements of our present knowledge on the subject.

Turning to the pyramids of Gizeh, the lecturer was compelled by want of time to limit himself to a description of the Great Pyramid, built by Khufu, the second king of the fourth dynasty, and known to the ancient Egyptians as "Akhet." It is one of the largest and—when completed—loftiest buildings achieved by man, covering some 13 acres, with solid masonry, and attaining a height of 481 feet. The side of the base is (within two or three inches) 756 feet long. The accuracy of workmanship is probably unrivalled in all human building. The most careful modern measurements, taken with instruments of scientific precision, prove that the accuracy of levelling of the casing-stones of the Great Pyramid is equal to "most modern opticians' straight edges" of an equal length; while the descending entrance passage, partly built, partly driven through solid rock to a total length of some 350 ft., reveals an error of less than one-quarter of an inch in the sides and of three-tenths of an inch along the roof. This extraordinary accuracy, however, which is far greater than anything attempted in modern masons' work, is not true of the uppermost chamber within the pyramid, which is considerably out of level, a fact that would seem to indicate that the master-builder or architect had passed away before the completion of his work, leaving it to less careful successors to finish. Mr. Flinders Petrie's researches had thrown great light on the mechanical methods of the pyramid builders and the organization of labor. The remains of what were believed to be the barracks of the workmen still existed on the west side of the Second Pyramid, quite adequate to house from 3,500 to 4,000 men. In all probability some such staff of skilled masons would be employed continuously; while during the period of the Nile inundation, when agricultural work was at a standstill and the people ready and thankful for employment, a special levy of perhaps a hundred thousand laborers would be requisitioned to quarry the stone on the east bank of the Nile, and convey it (by water) to the site at Gizeh. There is therefore great probability in the statement of Herodotus that 100,000 men were employed to build this pyramid, working during 20 years for 3 months at a time. Under the circumstances the pyramid building, far from being an oppressive exaction, would be a great scheme of public works, finding employment for the unskilled population at the season when they would otherwise be idle.

PERSONAL.

Mr. John E. Belcher, architect, of Peterborough, Ont., is at present visiting in England.

Mr. C. J. Gibson, architect, Toronto, has removed his office to the Janes building, corner King and Yonge streets.

Mr. A. G. McIntyre, a well-known Toronto contractor is about to remove to Berlin, Ont., where, with the assistance of a partner, he expects to do an increased business.

Mr. John Shaw, of the firm of Shaw & Gilkes, contractors, Winnipeg, died in that city on January 28th. Mr. Shaw had been a resident of Winnipeg for 16 years, having previously lived in Quebec.

Mr. Samuel Birch, of McKelvey & Birch, Kingston, Ont., has left for England, where he will spend a few months as expert for a Canadian firm interested in plumbing and heating in the great metropolis.

The firm Roy & Gauthier, architects, Montreal, has been dissolved, Mr. L. Z. Gauthier continuing. Mr. Victor Roy has formed a new partnership with Mr. Alp. Content, and the new firm will be known as V. Roy & A. Content.