

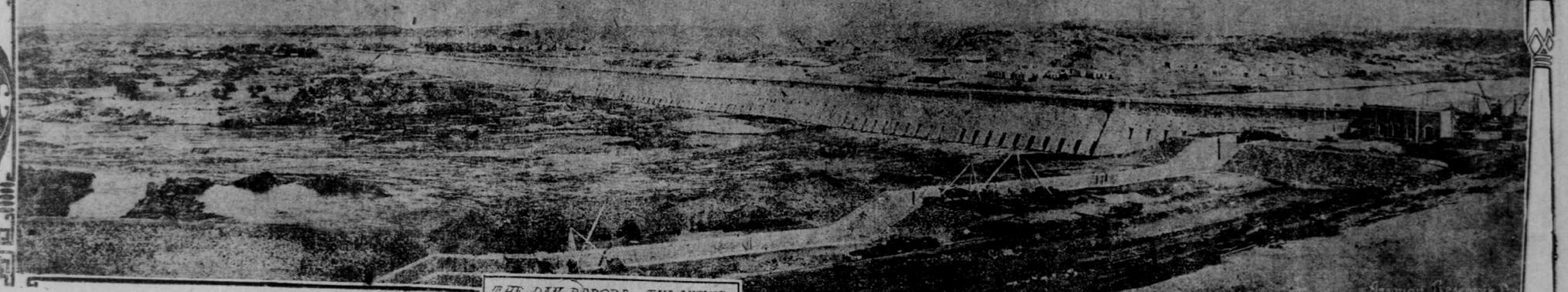
THE SALVATION OF EGYPT



Fred Greenwood of San Francisco Writes From the Scene of the Raising of the Great Assouan Dam in the Nile, Which Will Double the Capacity of the Irrigation Reservoir



LAMAL BEY DUKE OF CONNAUGHT CHAFIK BEY COLLECTOR OF TAXES TPOON OF EGYPT



THE DAM BEFORE THE EXTENSION WAS BUILT ON AND AS IT IS TODAY TO THE RIGHT IS THE CANAL WITH THE DOCK

HERE was laid recently at Assouan, Upper Egypt, the foundation stone for an extension to one of the most stupendous and extraordinary feats of engineering that the world has ever seen; the building of the monumental dam across the Nile, which now ranks as one of the largest structures in the world and one of the wonder sights of Egypt.

This dam is not the first attempt to send the waters of the Nile through various channels to irrigate and fertilize vast stretches of desert land extending for miles into the interior. Under the old systems in use, however, irrigation was little more than a direct flood of water precipitated into basin areas surrounded by embankments. These ancient irrigation methods were spasmodic and ineffective. About a century ago effort was made to produce a satisfactory system of perennial irrigation which would fertilize the land with gentle but constant flow of water in the dry season. This was attempted by cutting deep canals to convey the Nile water to the lands when the river was at its ebb, but it was discovered that when the river rose these canals had to be blocked by hastily constructed barriers, or the amount of havoc wrought by the overflow of the river would be a calamity. So the canals were blocked, and, as a result, millions of tons of dirt and silt accumulated which had to be cleared away by enforced labor at the cost of untold misery among the native laborers. Temporary, at its best, the system soon proved inexpedient, and 50 years later the first serious attempt to improve conditions was made by the construction of the celebrated barrage at the apex of the delta. Two bricked arch viaducts were built, which crossed two branches of the Nile, having 152 arches of about 16 feet span, which were entirely closed during the summer months by iron sluices, thus heading up the water and throwing it at a high level into six main irrigation canals below Cairo.

Great difficulty was experienced in the construction of this old barrage, which was built under the superintendence of French engineers, who were greatly hampered by the momentary whims and varying commands of their oriental chiefs. Fifteen years passed before it was possible to close all these iron sluices, and another 20 passed before the structure was reinforced so thoroughly as to render it fit for the purpose for which it was first constructed. The labor forces employed were enormous, at one time including 12,000 soldiers, 3,000 marines, 2,000 laborers and 1,000 masons, all

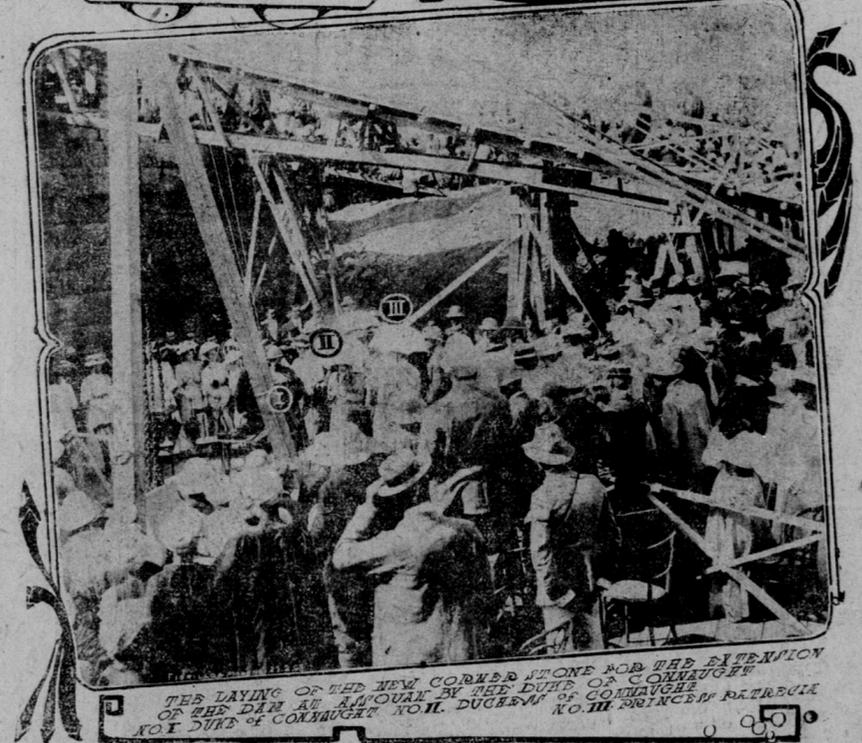
busily working on this vast scheme. But none of these plans or works proved satisfactory. It was not until the monumental dam at Assouan, by far the most stupendous achievement of its kind in ancient or modern times, was conceived that the British government felt that it had entered upon the right road to success. This great dam at Assouan, 550 miles above Cairo, is not a solid wall, for the masonry is penetrated by 180 sluice gates intended for regulating the flow of water. Constructed from granite blocks brought from the old quarries at Assouan, it runs directly across the river for a distance of 2,150 yards. Rising 130 feet above the foundation, the thickness of the dam varies from 23 feet at the top to 98 feet at the bottom. The 180 sluice gates include 149 lower sluices 23 times 6 1/2 feet for the distribution of water and 40 upper sluices 6 1/2 times 11 feet to permit the escape of surplus water. The iron gates of the sluices are regulated by the help of electrical winches standing on top of the dam. The total length of the immense dam is one and a quarter miles; the height from foundation about 130 feet; the difference of level water above and below 67 feet and the total weight of masonry over 1,000,000 tons.

To the west of the dam has been constructed a navigation canal by means of which boats are "flocked" up and down stream. The same length as the big dam, it is provided with four locks each 230 feet long and 3 feet wide. The two upper gates of the locks are 63 feet high, and the others 49, 39 and 35 feet high.

When the Nile begins to rise, usually at the beginning of July, all the 180 sluices are opened. After December 1, when all the suspended mud has passed through and the water has become comparatively clear, the gates are gradually closed, one after the other in regular order. The lake upon the dam becomes quite full about February 1.

When the want of water in Egypt begins to be quite noticeable, which is about the end of April, the quantity required for cultivation is drawn off gradually from the reservoir until it is entirely empty. This occurs usually about the middle of July.

The original plan for the Assouan dam was worked out by Sir William Willcocks at the Egyptian ministry of public works, under the superintendence of Sir William Garstin, under-secretary of state. The carrying out of the plans was entrusted to a firm of English contractors, Messrs. John Aird & Co. Two months after the signing of the contract the permanent



THE LAYING OF THE NEW CORNER STONE FOR THE EXTENSION OF THE DAM AT ASSOUAN BY THE DUKE OF CONNAUGHT NO. I DUKE OF CONNAUGHT NO. II DUCHESS OF CONNAUGHT NO. III PRINCESS PATRICIA

works were commenced, and soon thousands of native laborers and hundreds of Italian granite masons were hard at work laying the foundations and preparing the bed of the river to receive its enormous weight of masonry. In February, 1899, the cornerstone of the dam was laid by the duke of Connaught. Immediately after, the work was fairly started. At times there was great pressure to get a section completed before the inevitable rise of the Nile, and as much as 3,600 tons of masonry were executed per day, chiefly at a certain point in the dam. A triple line of railway and numerous cars and locomotives were provided to convey the materials from quarries and stores to every part of the work. The maximum number of men employed was 11,000, of which 1,000 were European masons and other skilled men.



JUST BEFORE THE WATERS OF THE NILE COMPLETELY ROSE OVER THE DAM

formally declared complete, though so many were the unseen and unexpected difficulties encountered that at one time Sir Benjamin Baker, under whose advice the plans were accepted, stated to Lord Cromer that he could form no estimate of the actual cost or time that might be involved. All that he said when the "rotten rock" in the bed of the river was discovered was "that, though conditions were bad, the job could be done." To which Lord Cromer replied that, whatever the cost in time or money, the dam must be finished.

This shows the spirit in which this gigantic enterprise was conceived and accomplished. On December 10, 1902, after three years of prodigious labor, the dam was formally declared complete in the presence of the duke and duchess of Connaught and Lord Cromer. Now the Egyptian government has de-

clared that the dam shall be raised nine feet so as to store water to a height of 23 feet above the present level. The quantity thus stored will be more than two and a half times that contained by the present reservoir, and will afford sufficient irrigation for 950,000 acres of land now lying waste in the southern districts of Egypt. The cost of this extension is estimated at \$1,500,000 English money, or \$7,500,000 American coin.

One unfortunate feature about this vast dam at Assouan is that the temples of Philae and many others in a lower Nubia will be completely covered by the dammed up water, thus causing

undue saturation of the sandy soil, which will probably undermine the foundations of the temples and ultimately cause their destruction if not removed. However, the idea of placing them on other sites has already been under serious consideration.

The photographs accompanying this page were sent to The Sunday Call by Mr. Frederick Greenwood, a well known San Franciscan, who was present at the ceremony of laying the foundation stone of the extension, on February 13, which was performed for the second time by the duke of Connaught. A bronze tablet commemorates the laying of the first cornerstones in 1899.

CARVED WORK BOXES FOR GIRLS WHO SEW

NOW that the needlework, embroidery and the sister handicrafts have regained so high a place in popular favor, the fitting out of the work box, basket or bag is a matter of some moment, declares the New York Herald. Every one, in fact, cherishes as great a pride in the style and beauty of her tools as in the work itself. There is no end to the thought and taste, not to mention the money, which may be expended in stocking the work box or basket. The receptacle itself must be of the daintiest, and whether it be bag, box or basket, should have some characteristic decoration suggestive of the girlish owner.

To the girl who knows no limit to her possible expenditures there are the most exquisite carved work boxes of ebony, sandalwood and other fine woods, on which the carving has been done by hand and is, of course, very valuable. There are also beautiful inlaid work boxes, circular, rectangular or square, on which the designs wrought with the inlaid work are almost as beautiful as jewels. Many of these work boxes, like the same sort of boxes used in our great-grandmother's day, are fitted with trays and small compartments for the neat disposal of sewing silks and the necessary tools of needlework.

Even more valuable than the carved wooden boxes are those of ivory. Even nowadays, so that a box of any size costs hundreds of dollars. Indeed, the girl is very fortunate indeed in worldly matters who can afford an ivory work box. There are the most exquisite small ivory cases, which are fitted with gold thimbles, scissors, needle case, bodkin and silk case and which are used as part of the equipment of very beautiful work boxes or for the traveling case. In these cases all the receptacles for the fittings are hollowed out of the ivory and each golden tool fits exactly into its perfect bed. The cases close like a purse and many of them lock.

A work box of carved sandalwood fitted with one of these ivory cases and with numberless other sewing and embroidery tools in gold and ivory is so exquisite a thing that it seems almost a pity it may not be used as an ornament on the chateleine or in some such fashion. Of course the mono-

gram of the owner is wrought in the carving, or if not that then a golden monogram is fitted on the top on the inside. And such a valuable piece of property must, of course, be kept locked, so that its tiny key is added to those which a girl must guard.

If one is not to have a carved sandalwood box, fitted with gold and ivory sewing tools, there are most attractive leather boxes, fitted with leather cases, which are to contain all the sewing implements. In the case of a leather box these would preferably be of rather heavy silver, as the style of fittings is usually determined by the style of box. There are also boxes of basketry upholstered with leather or satin. Those with satin linings are very pretty. The blue lined baskets are especially pretty with silver fittings.

Then for girls who think this style of box too heavy and severe there are charming French boxes covered with brocade or with plain satin, decorated with French engraved heads and with applique garlands, bouquets and similar designs. Many of these boxes are decorated also with bands of old gold galloon and gold lace. They are elaborate enough to be worthy of the most exquisite gold and ivory fittings. The ingenious girl may make such a box for herself if she is sufficiently skillful to make the cover fit smoothly and the corners betray no sign of the amateur.

Sewing bags are exceedingly popular and many girls prefer them either to work boxes or baskets even of the most elaborate description. For the frilly type of girl especially the charmingly dainty workbag is appropriate. Almost any silk, if it is fairly stout in quality, may be used for these bags, but of course all young girls desire their sewing bags to be as pretty as possible, and no silk, satin or brocade is considered too handsome for them. Especially popular just now for these bags are the handsome, old fashioned embroidered taffetas which have grounds of deep color, and on which are embroidered stiff bouquets in vivid colors, gold leaves and other set designs usually with a touch of gold in them. Such a bag was made of deep pink silk, which had a quaint, old time design of stiff bouquets of roses in yellow and deeper pink, red and gold. The bag was drawn up with a gold cord and lined with plain yellow taffeta.

