

## Cairo : A Brief Survey of its Drainage and Sanitary and Public Health Administration.

(ABSTRACT.)

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CAIRO is unique in many ways, not the least being the fact that it has no municipality of any kind, but all the services for the conduct of municipal life are entirely under the control of the Government, and I purpose dealing with the following Departments :—

*Main Drainage Department*, which is one of the services under the Ministry of Public Works, and that part of the *Public Health Department* which deals with :—

- (a) Cairo Health Service.
- (b) Cairo Scavenging Service.
- (c) Water Service.

*Sanitary Conditions, 1882-1914.*—The drainage of Cairo at the time of the British occupation in 1882 can only be described as being most defective and unsatisfactory, on account of the generally primitive methods in vogue, and the large number of unpaved streets.

*Native Quarters.*—In the native quarters there were (and in many parts still are) only the most elementary sanitary arrangements, and sometimes none at all, but those provided by the mosques were rather better, but invariably filthy, the drains discharging into huge cesspools, which were emptied as required, and the common latrine frequently remains even to-day a hole at floor level situate in perhaps the entrance passage or just off the staircase, entirely unenclosed, or it may be partially partitioned off, and discharging directly into an unlined cesspool under house, or, it may be, the flat roof of the house, the street, or any available waste land.

It must be borne in mind that no water supply was or is laid on to the majority of the houses for domestic purposes, water required being purchased from water standards in the streets or the native water carrier, who carries his supply in a goatskin, and who usually announces his approach by ringing a small bell.

*European Quarter.*—In the European portion of Cairo, with its more up-to-date type of building, the sanitary arrangements were (and in many parts still are) on a par with those one might find in a Continental country town. All had water supply and trapped water closets with pans, but anti-syphonage was unknown.

*House Conveniences.*—All outlets from apparati led to a "French" soil pipe, and in a great many cases in houses 20 to 30 years old, lavatory, bath and

sink wastes were all connected into this frequently untrapped pipe, probably discharging direct into a cesspool under the house if no room available for it elsewhere, and examples of all these systems have been seen and smelt by the writer.

*Cesspools.*—The cesspool would be a cast iron septic tank in more modern cases, but is usually a brick or masonry pit, and badly made at that's a few run into a second chamber with "soak away" bottom, which in time gets choked. Now, when the River Nile rises, as it begins to in July (which is the effect primarily of the rains and then of the melted snows from Abyssinian mountains), the cesspools in low-lying districts are affected in consequence of the rise in the river causing a rise in level of sub-soil water, which in turn makes for an overflow of cesspools into cellars, gardens or streets adjoining.

*Emptying Cesspools.*—When necessary cesspools are pumped out by a local company known as the Cairo Sewage Transport Co. \* The tank carts into which the cesspool drainage is emptied are fitted with necessary pumps.

It was not until 1916 that the designer and engineer of the sewerage scheme which is now practically complete was appointed by the Government. The scheme selected took, from first to last, in completing investigations, surveys, drawings and estimates, two and a half years, and the estimated cost, including macadamising the unpaved roads of native quarters, £E2,000,000.

The scheme is designed for a population of 1,000,000. The population in 1907 was 644,000, of whom 100,000 might be considered educated, and less than half of these only were Europeans.

The following paragraphs 19 and 20 of Report are quoted in full :—

19. It is proposed to abolish the existing "fosses etanches" \*\* and "fosses à fond perdu," † and I propose to divide the houses to be connected to the sewers into three classes, as follows :—

"Class A": Houses, having an internal water distribution system, which is connected to the Cairo Water Co.'s mains.

"Class B": Houses, of a good class, not connected to the Cairo Water Co.'s mains.

"Class C": Sunburnt brick houses of inferior construction and "esheshes." ‡

The "Class A" houses will be drained in the ordinary way, and, being mostly inhabited by the upper classes, the quantity of sewage from them will be estimated on a population basis.

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\* This company has also branches all over Egypt in towns the size of which justify their establishing depôts. The contents of tank carts are taken to these depôts; the solids are converted into fertilisers, the sale of which yield the company good profits.

\*\* Cesspools.

† Sump pits.

‡ Mud huts.

The " Class B " houses will be drained to a watertight collecting chamber, and the " Class C " houses to a form of gully, both connected to street sewers.

20. There are five sources, therefore, from which we may expect to derive sewage from the scheme, viz., the upper classes, the mosques, the public conveniences, flushing tanks, which must be placed under certain conditions at the heads of pipe sewers, and the drainage from " Class B " and " Class C " houses.

In addition of course to calculating the quantity of sewerage, there is the surface water, which is very limited and uncertain in quantity in Cairo, and averages about 1 in. annually. It was originally intended to use the separate system of sewerage wherever there was a suitable outfall for surface water. The Public Health Department was, however, opposed to the separate system being used at all, owing principally to the fact that the intake of the Cairo water supply is *below* the town. Therefore no surface water, largely on sanitary grounds, and partially on account of native sentiment, drains into the River Nile.

A portion of the city is drained by gravitation and the remainder by sectional system, each of which is provided with an arrangement for lifting the sewage (Shone Ejectors operated by compressed air), and discharging it into a sewer at a higher level, which in its turn usually discharges into the main collector.

Average depth of sewers in city and minor streets, 2 metres (6·56 ft.), in major streets 3 to 3½ metres (9·84 ft. to 11·48 ft.).

One more extract from Report, and this as to gradient of sewers. The designer pointed out the fact that a greater minimum velocity for flow is required for an Oriental sewerage scheme than is usually the case, there being more extraneous matter in Oriental than in Occidental sewage, and he therefore has allowed for a minimum velocity for all sewers when flowing full or half full of 1·05 metres (3·12 ft.) per second.

*Native Population.*—To turn again to the native portion of the population, in view of the fact that there are frequently no sanitary arrangements, or only those of a most primitive and insanitary order in their houses, it has been necessary to provide accommodation for them by (a) public conveniences, (b) mosque latrines.

*Public Conveniences.*—As to (a) there are about 30 of these now\* in existence in various parts of the native quarter, with an average latrine capacity of ten, thus providing accommodation for 300 persons at any one time. The number of latrines proposed at present is about 250. There is

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\* December, 1918.

always a native attendant on day duty, who at night sleeps on the ground inside the entrance !

*Mosque Latrines.*—With regard to (b) the Mosque Latrines, a Moslem going to pray in a mosque has to purify his body by washing before entering the place of prayer ; accordingly, in every mosque there is an ablution place in which there are w.c.'s and washing places. On entering an ablution place he generally proceeds to use the w.c., and after he washes his feet if they are bare, or else takes off his shoes or slippers, and steps into the ablution place, where he squats on a stone slab, and under water running from a tap washes his hands, mouth, nose, face, then the arms as far as the elbows, ears, hair, neck, three times, then his feet once ; then he proceeds to the praying place in the mosque, being theoretically bodily clean.

As there are extremely few mosques for women and no public conveniences, their habits are still very primitive.

A brief description of a mosque latrine may interest, since it is estimated that these are used by 150,000 persons per diem. These latrines are composed of porcelain fittings, each with a flushing rim and stone seat, and are connected by short lengths of pipe to 6 in. troughs ; there is also a small flush tank with chain.

For ablution purposes in the w.c. a small circular basin with tap and supply of water is placed at right-hand side of w.c.

The lengths of 6 in. troughs are flushed by water from the ablution places, which is collected in large flushing tanks, discharging automatically.

To wash and purify himself the man first goes to "standing" slabs, where he washes his feet, then to ablution places, and then he is cleansed as before described for mosque service, and enters the mosque by a gangway apart from the latrines.

Needless to say, the whole of the latrines are built of impervious materials, the doors alone being of wood, and where possible the designer harmonises the architecture with that of the main building.

*Functions of the Main Drainage Department.*—The Main Drainage Department of the Public Works Ministry deals primarily with the drains of Cairo, and advises on the schemes of any other towns in the country when called upon to do so. Application in Cairo to connect the drains to sewer must be in first instance made to the above named department, which causes an inspection of the premises to be made, reports on any alterations or additions required, approves plans, inspects works during construction, and finally passes work on completion ; and, further, no alterations or additions are permitted without the authorities' consent.

*Bye-laws, etc.*—There are no drainage bye-laws, regulations or decrees of any kind in existence at present time, although there is a draft scheme for

these already prepared. Only in 1914 was the first house drainage system connected to the new sewers, and at the end of December, 1918, 1,130 of the principal buildings in Cairo (and this includes hotels, blocks of flats, etc., but excludes Government buildings) had been connected thereto.

*Cairo Main Drainage Scheme.*—This consists of drainage by the Sectional and Gravitation systems.

The Sectional system is divided into sixty-three areas, each of which is provided with ejectors for forcing the sewage, by means of compressed air, through sealed sewage mains into the main collector at Port Ghamra. The compressed air required at each ejector is supplied through cast iron pipes laid in circuits to ensure continuous service throughout the city. Eighty kilometres (about 50 miles) of air and sealed sewage mains are needed for the Sectional system. Each ejector station consists of two spherical cast iron receivers of the necessary capacity to suit the requirements of each area and contained in a cast iron casing or tubing.

*Sewage Farm.*—This sewage farm is situate in the desert about 20 miles from Cairo, and is reached from the nearest railway station (nearly two miles away) by trolley.

At the farm the sewage is received in tanks, where it undergoes a process of sedimentation, and at the present time the effluent is passed direct on to the land, which is of such a nature that it is capable of absorbing it all.

The fertility of the farm is marvellous, and the green colour most refreshing to the eye, and in December, 1918, there were about 750 acres under cultivation.

*Department of Public Health.*—This Inspectorate is by no means the least important of those necessary to maintain and improve that "vast cosmopolitan Eastern city," Cairo.

*Inspection of Insanitary Houses, etc.*—There are no powers to close insanitary houses or buildings of any kind, nor any law to enforce owners to keep buildings sanitary.

*Cairo Scavenging Service.*—"There is an Arrêtè of the Ministry of the Interior, of June 7th, 1913, which forbids the deposit of any kind of rubbish or filth, house refuse, paper, straw, etc., on waste land or in any public street unless in a dustbin.

"House-to-house collection of rubbish, etc., is undertaken in certain streets, which may be indicated from time to time by Arrêtè.

"In such quarters or streets refuse must be deposited in public dustbins or in covered private bins easily handled. The latter bins are to be placed on the pavement outside houses, shops, etc., between dawn and 8 a.m. and 1 to 3 p.m. to allow of emptying, and must be withdrawn as soon as the agents of the scavenging service have removed contents."\*

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\* Egyptian Government Almanac.

In the case of some large blocks of flats, the removal of the refuse is undertaken by a contractor, who pays for the privilege. Despite these regulations a large part of the native and poorer European quarters are frequently littered with garbage thrown from houses. This practice is dangerous, as it breeds flies.

As to street scavenging, there is an effective service of men and boys regularly employed, but it must be remembered that the cleansing of the streets does not present quite the same problem in Cairo as, say, in London, owing to the great difference in the rainfall. Against this, however, is the fact that the volume of animal traffic, horse, donkey, mule and camel, is vastly greater than that of motor-propelled vehicles, whilst in London motor-propelled vehicles largely preponderate.

*Water Service.*—This service is under the control of the Director of the Hygienic Institute of Cairo, who undertakes a regular inspection of all public water supplies, whether in the hands of the Government, of companies, or of private individuals.

The principal source of supply to Cairo is in the hands of a public company, established in 1865, and it should be mentioned that the intake of the water from the Nile is *below* Cairo—a somewhat unusual procedure.

Water, filtered (or unfiltered), is supplied to buildings by the cubic metre or at a fixed annual charge for gardens. There is usually a special tariff per metre for industrial establishments.

Time and space forbid further details, so now—"Khoulost."\*

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\* Arabic—"I have finished."