found and utilized by the engineers of the Suez Canal. There is abundant evidence that the cutting of the Isthmus was considered possible by the ancients; this opinion was confirmed by scientific Frenchmen during Napoleon's expedition to Egypt, and at a still later period by English and American engineers of eminence; but the carrying out of the undertaking has been reserved for the enterprising spirit of the present day. While the feasibility of the scheme was being discussed, the public looked on it as visionary, and certain to result in failure if attempted. At last, however, in 1855, a Frenchman, Ferdinand de Lesseps, fired with all the enthusiasm of his nation, and favoured by the French Government, set his mind to the carrying out of the scheme. He spent several years, not only in examining the locality and condition of the land, but also in sounding the views of the Court of Cairo, and found no difficulties which could not be overcome by the combined power of science, capital and policy. As is usual in such undertaking the popular incredulity was not without support from men of high engineering skill, and men of European reputation were not afraid to condemn the project as impracticable. But M. Lesseps was not discouraged. In 1859 he formed the "Suez Canal Company" with a capital of 400,000,000 francs; the Viceroy of Egypt taking one half the stock. Operations for the building of the canal were commenced in 1861.

The first step was to establish on the Mediterranean, the port of Said, (which stands on the ruins of old Pelusium,) and to dig a fresh-water canal about half the length of the projected Suez Canal, from which water was procured to supply engines, men and animals. As the cut from Port Said to Timsah Lake was easily overcome, operations were commenced at this point first; from the Menzaleh Lake water was obtained to feed the canal, through which small vessels were at an early date enabled to pass the whole length of the Isthmus. These vessels sailed from the Mediterranean on the great canal to Lake Timsah, passed there through gates into the fresh-water canal, and from thence into the Red Sea. The first vessel which sailed between Africa and Asia in this manner was the Austrian bark "Il Primo;" the second the French feluca "Marie Louise." At last many English vessels of transport destined for the Abyssinian campaign, followed with success the same route, and their short trips contributed considerably to show the advantages to be derived from the Suez Canal.

The harbour of Port Said, a large basin sheltered by two colossal stone piers stretching out into the sea, affords accommodation for the largest ships. The piers are composed of enormous masses of stone, each weighing about two tons. The stones were made artificially, each costing about 420

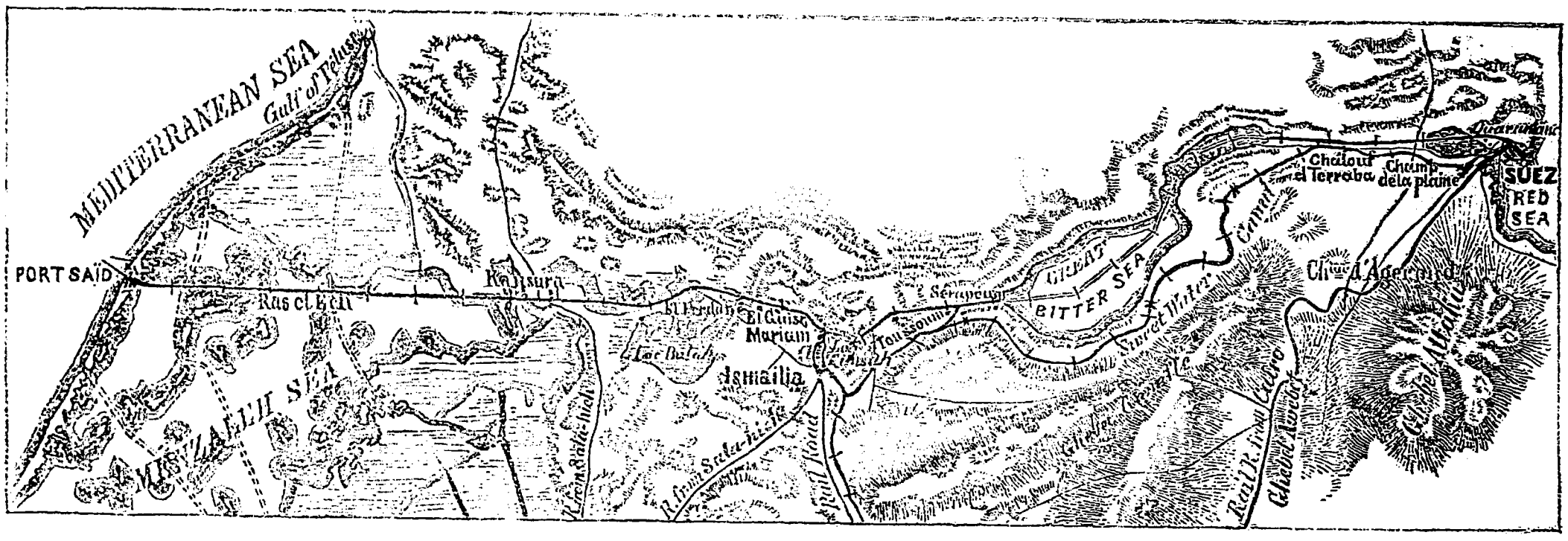
M. FERDINAND DE LESSEPS,
Chief Promoter of the Suez Canal.

francs. There is a dredging machine employed at the entrance of the harbour to keep it free from sand. The town of Port Said, named after the late Viceroy, has now about 12,000 inhabitants, though eight years ago it was but a squalid-looking village containing a few fishermen's huts. The town is of course laid out after the modern fashion with straight wide streets and squares, and the population, composed almost exclusively of those connected directly or indirectly with the works of the Canal Company, comprises a mixture of nearly all nationalities.

The whole length of the Suez Canal is 162 kilometers (about 100¼ miles English); the upper breadth averages 90 meters, the lower 22; at several stations the breadth is greater to give room for ships of larger size to pass. The depth of the canal is intended to be 8 meters (26 feet 3 inches), sufficient to pass the largest steamers and East Indiamen. A number of dredging machines are always ready for use to keep the bed free from sand. The borders of the canal are mounted with broad and high dams to keep off the sand during the gales of the desert, and it must be borne in mind that the soil of the desert of the Isthmus is not composed of gravel, but of a very firm clay which prevented so far the banks from sliding; the ground moreover is not level, but much undulated and surrounded by hills.

As soon as the Canal leaves the waters of Lake Menzaleh, it cuts the road to Salahieh near the settlement of Kanzura. This road leads to Syria, and facilitates the commerce by land between Egypt and Asia Minor, which commerce is conveyed by caravans. Passing the dried-up lake of Balah, and the little Arabian settlement, El Ferdane, the highest point of the Isthmus, El Guisr, is reached. Here is erected a splendid edifice in Oriental style; it is the Villa Mariam which was built by Said Pacha, but is now crumbling to pieces. The Canal then passes through the beautiful Timsah (Crocodile) Lake, on the borders of which stands Ismaila, a town built on the North-western shore, and named after the present Viceroy. It has at present about 7,000 inhabitants, and will be the future capital of the Isthmus. It contains many fine buildings, among which are the palaces of the Viceroy and of Baron Lesseps. The lively stir on the wharfs indicates its commercial importance as regards the traffic on the Canal. It will furnish water and provisions to passing vessels, and perhaps become the seat for a number of factories and commercial establishments. Here, as we said, will be the scene of the great festivities at the opening ceremonies.

At Serapium—where stand the ruins of the forty temples built by the Egyptians of olden times in honour of Serapis, the god of fertility—the Canal enters the Great Bitter Lake, the greater part of which has dried up or turned into swampy grounds. These grounds are a curiosity on account of the salt cliffs which rise out of the ground, and are composed of pure white salt. The Canal, as far as Serapium, is supplied with the water of the Mediterranean and of the intervening lakes. At this place, therefore, the water of the two seas may be said to unite. One of the most interesting points on the whole work is the "Champ de la Plaine," where the greatest number of labouring men were gathered during the construction of the Canal. They lived in tents and huts, and often numbered



MAP OF THE SUEZ CANAL.

more than 14,000 persons. This number was generally reduced to about 8,000 at the time when the Mahomedans returned home to keep the feasts of Bairam and Ramazzan. The remaining portion belonged to all nationalities, and had cultivated a singular language of their own, which was common among themselves, but totally unintelligible to strangers. The engineers and foremen commanding this army of men, were composed of Frenchmen, Germans, Englishmen, and Americans, the French predominating.

In order to extend the Canal as far as the town of Suez, it was necessary to cross, for a distance of two kilometers, the Red Sea, which is very shallow at this point. The Canal terminates at a cape opposite the town, and is protected by a powerful stone pier from the swells of the sea. A basin of 300 meters (326 yards) wide, and 750 meters (815 yards) long, is constructed to secure a haven for the largest ships, the cost of which is to be borne by the Egyptian Government. The town of Suez itself which was, not long ago, a poor and wretched place, has now grown to a considerable extent, and has assumed quite a city-like appearance. Magnificent stone buildings are everywhere in course of erection, and the population has grown in nine years from 5,000 to 20,000 inhabitants. The commerce, which is already extensive, will no doubt rapidly increase by the traffic on the Canal.

Our illustrations give a plan of the canal; a portrait of M. Lesseps, the distinguished engineer and projector of the great undertaking; the ceremony at the inauguration of the reunion of the waters of the Red Sea and the Mediterranean; and the "last stroke of the pick" on that auspicious occasion, struck by His Excellency Ali Pacha, the Egyptian Minister of Public Works, on the 15th of August last, in the presence of a vast concourse of spectators. To give *eclat* to this last performance, an embankment about a league from the mouth of the canal at Suez had been specially reserved; and the formal union of the seas was celebrated with appropriate ceremonies. At the *fêtes*, on the 16th instant and following days, doubtless there will be spectacles much more magnificent.

THE HEAT OF THE MOON.—The late Lord Rosse measured the heat that comes to us from the moon. Using one of his great reflecting telescopes as a burning mirror, he condensed the moon's rays upon one of the most delicate of heat-gaugers—a thermopile. Without being able to determine by what fraction of a Fahrenheit's degree the lunar warmth increases the temperature of the terrestrial atmosphere, he found, as an approximation, that the radiation from the moon is about the ninety-thousandth part of that from the sun. He conceived that the variation of heat from one satellite follows the same law as that of light, *i. e.*, that we have most warmth from the full moon, and least from the nearly new. By comparison with a terrestrial source of heat Lord Rosse estimated the actual temperature of the moon's surface at lunar midday to be about 500 degrees Fahrenheit. This scorching results from the slow rotation of the moon, which makes its day equal to our month, and from the absence of any atmosphere to screen the lunar world. Years ago Sir John Herschel, who had more than once proved himself a prophet by his sagacious inferences, remarked that "the surface of the full moon exposed to us must necessarily be very much heated, possibly to a degree much exceeding that of boiling water." Fontenelle and his followers to the contrary notwithstanding, the moon can be no place for human beings, unless they are salamanders.

TRAVELLING STONES.—They have walking stones in Australia, and, as we are informed, they have travelling stones in Nevada. Here is a description:—"They are almost round, and a majority of them as large as a walnut, and of an irony nature. When distributed about upon the floor, table, or any other level surface, within two or three feet of each other, they immediately begin travelling toward a common centre, and then huddle up in a bunch like a lot of eggs in a nest. A single stone removed to a distance of three and a half feet, upon being released, at once started off with wonderful, and somewhat comical celerity to join its fellows; taken away four or five feet it remained motionless. They are found in a region that, although comparatively level, is nothing but barren rock. Scattered over the barren regions are little basins, from a few feet to a rod in diameter, and it is in the bottom of these that these rolling stones are found. They are from the size of a pea to five or six inches in diameter. The cause of these stones rolling together is doubtless to be found in the material of which they are composed which appears to be loadstone or magnetic iron ore."

A LIGHT MATTER.—It is alleged that an invention has recently been made whereby sewage, by some process, is converted into gas. Setting the Thames on fire may be, therefore, viewed as possible, and, doubtless, also profitable. Perhaps, too, the invention may be turned to such good use that our sewage may be burned before polluting our fair river. We now throw it to the dogs by wasting it at Barking. By converting it to gas we should certainly establish the fact of our enlightenment. The cost of gas at present is so heavy here in London that nobody but millionnaires can afford well to make light of it.—*Punch.*

BYRON IN BED.—Upon one occasion he found the poet in bed, with his hair *en papillote*, upon which Scrope cried, "Ha, ha! Byron, I have at last caught you acting the part of the Sleeping Beauty." Byron, in a rage, exclaimed, "No, Scrope, the part of a——fool, you should have said." "Well, then, anything you please; but you have succeeded admirably in deceiving your friends, for it was my conviction that your hair curled naturally." "Yes, naturally, every night," returned the poet; "but do not, my dear Scrope, let the cat out of the bag, for I am as vain of my curls as a girl of sixteen." *Gronow's Reminiscences.*