

MOULDS FOR SOLDERING PIPES.

The apparatus represented in the accompanying figure consists of a bronze mould formed of two pieces opening through a hinge, and which is fitted either horizontally or vertically to the extremities of the two lead pipes that it is desired to solder together. For vertical pipes a special hopper is provided. It is necessary to scrape and carefully prepare the extremities of the pipes to be united. Then the mould is heated and fixed to the latter. After this the molten lead, which has been raised to a red heat, is poured in. In this way there is obtained a very clean joint without any burrs. It is to be remarked that only lead is employed, instead of the soft solder used with the soldering iron and lamp.

These moulds, due to M. Tye, permit of soldering more rapidly and surely than with the ordinary process, and of effecting a considerable saving, resulting from the difference in the cost of the material and diminution in manual labor. These apparatus are made in several series, varying according to the external diameters of the pipes. They can be arranged for uniting pipes of different diameters and for soldering two pipes at right angles, and either horizontal or vertical.—*La Nature*.

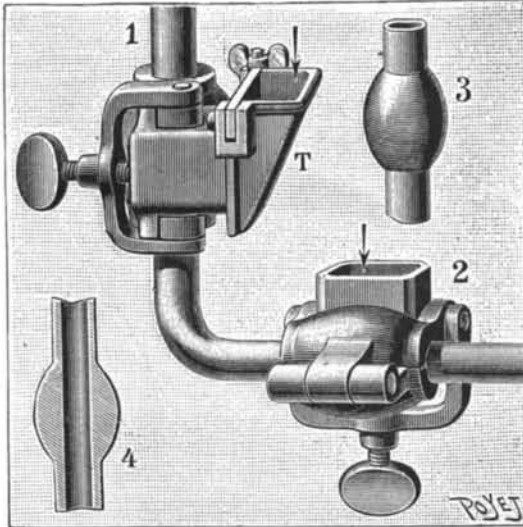
BORING OIL WELLS AT SEA.

The early settlers in California were familiar with the indications of oil, which were common at various localities up and down the coast, and the asphaltum from beds in the sea, where this product oozed up out of the bottom, formed an important factor in the household economy of the ancients. In almost every burial place on the coast asphaltum is found. The natives employed it to mend objects which were broken, and as a base in which to place ornamental pieces of pearl mosaic; baskets were fastened to ollas by this means, and it was used for endless purposes in lieu of nails, cordage and glue. The natives on the islands obtained their supply from the water, and today the rocks at various places can be seen splashed with asphaltum which has drifted in. This is particularly noticeable after an east wind, showing that there is a large area in the deep Santa Catalina channel from which asphaltum oozes up. Off Redondo Beach, Los Angeles County, it is extremely troublesome, oozing out of the sand offshore and drifting in. Between Santa Monica and Los Angeles there are undoubted deposits, and north of Santa Barbara several enormous ones. That owned by the More estate extends some distance alongshore, so that vessels run in and the asphaltum is shoveled aboard. The quality, it is said, is quite equal to that of the famous Trinidad variety.

At Santa Paula, oil wells were long ago developed, and later the oil-producing belt was found at Puente, and again at Summerland, below Santa Barbara, where a singular state of affairs may be seen. That the oil-bearing strata reached out into the ocean soon became apparent at Summerland, and the drill scaffold-

ings, looking like windmills without the wheel, began in a short time to extend down the little cañon which they had filled and to creep up the shore in the direction of Santa Barbara. At first, as shown in the accompanying illustration, they kept along the sides of the hills which breast the ocean here, but gradually they turned seaward, until one more adventurous than the rest rose from the water. The work was started at extreme low tide, and finally the tall scaffolding appeared twenty or thirty feet from shore, seemingly rising from the sea.

The illustration shows the location of three wells, which at low tide are in the water and at flood tide are

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completely surrounded, the men working on platforms of various heights which they ascend when working as the sea rises. The structures that are built in the sea have not yet experienced a strong southwester, and it is assumed by some that there will be a fall in oil when a heavy sea begins to break against the scaffolding. The drill is worked in the water by an engine on the beach, the fuel being the oil pumped up; this engine working several wells. At present the most daring well scaffold stands in six feet or more of water at high tide, and there is rumor that others will be pushed out into the shallow water near the kelp beds. This is probably the only place where oil is pumped out of the ocean. Undoubtedly the entire coast in this vicinity overlies an oil-producing stratum. Off what is known as More's wharf, half a mile out, oil rises to the surface in several places. A spring of water also rushes up here with such velocity that it can be taken up and used if one does not mind a slight intermixture of salt. A similar spring is known on the Florida coast, where it is said that a vessel can lie alongside the great rush

of water and fill her tanks with fresh drinking water out of the ocean.

Probably one of the most extraordinary sights of oil wells is seen in Los Angeles. Oil was first discovered in the west portion, in what was considered a choice residence part of the city, but like magic the lighthouse-like scaffoldings began to rise until the land appeared fairly to bristle with them. Fine residences were ruined by the proximity of the unsightly objects, and, finally, the section was given over to them, and now resembles certain sections of the oil region in Pennsylvania. See the *SCIENTIFIC AMERICAN* for July 17, 1897.

The wells have advanced in a well defined tract in a northeasterly direction, and at present appear to be stopped by the large Catholic cemetery, which overlies the oil-producing strata. Not far distant is the Los Angeles River, which probably will ultimately be encroached upon and made to give up its hidden riches.

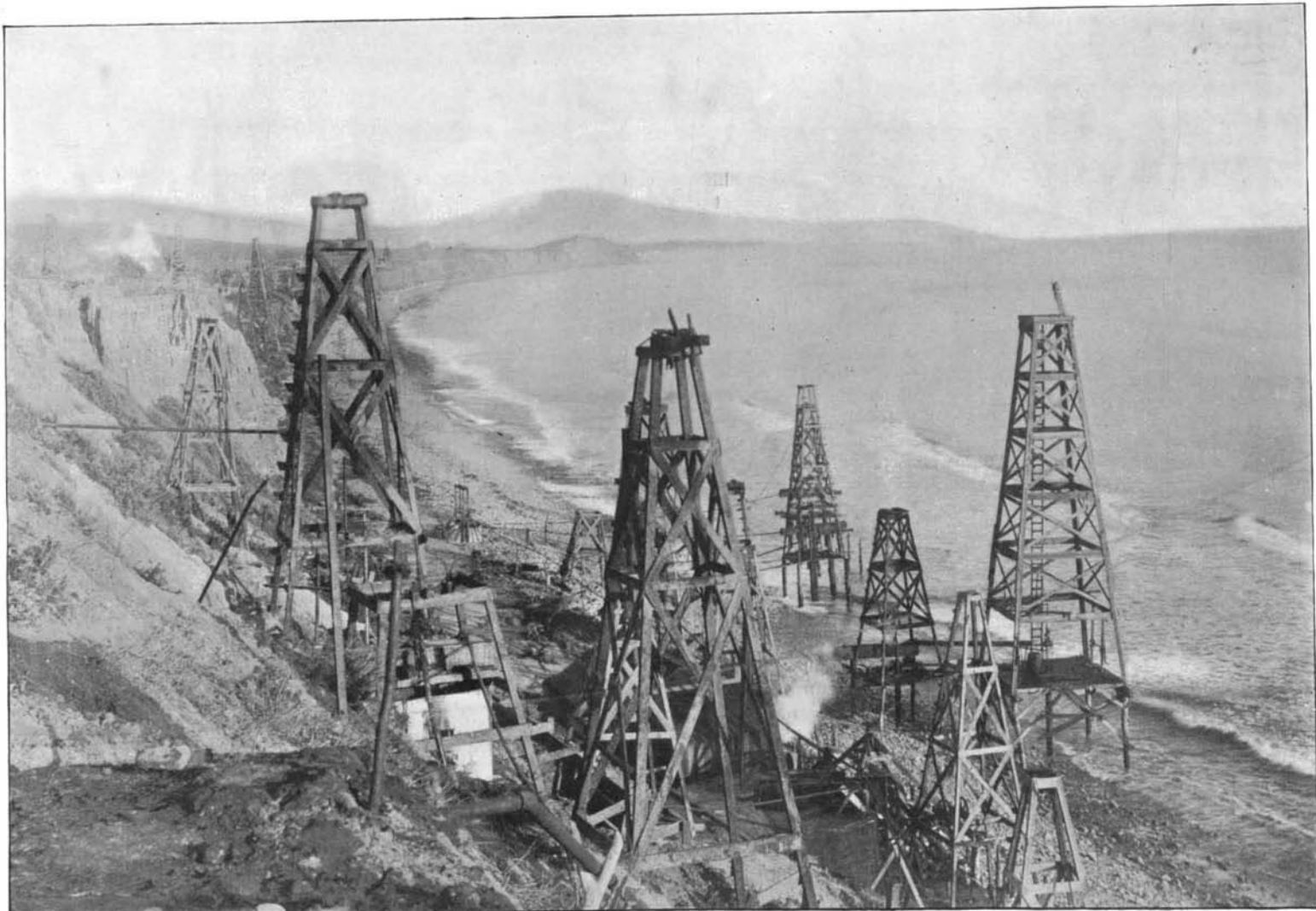
The discovery of oil in and about Los Angeles bids fair to revolutionize certain lines of business, and promises to produce the long wished for power for manufacturing. The Terminal Railroad has adopted the oil as fuel, and the Southern Pacific is said to be experimenting in the same direction.

California is without deposits of coal, if we except lignite beds, which crop out in various places, so that oil, as fuel, will supply a long felt want, and become a factor in the rapid development of this growing city.

Reported Discovery of Strontium.

The discovery of a large bed of strontium at Put-in-Bay Island, reported from Toledo, has awakened a considerable amount of interest among the manufacturers of fireworks, as it is thought likely that it will result in a considerable reduction in the price of fireworks in which strontium nitrate or strontium carbonate is used. One large manufacturer of fireworks in New York, who makes use of about one hundred and fifty tons of strontium nitrate in a year and imports the whole of it from Europe, states that it costs his firm now about seven and a quarter cents a pound. If the strontium should be found in large quantities, it would have the effect of lowering the cost of certain classes of fireworks, that is, all those that use a red or crimson light. At present the supply comes chiefly from Germany, and the American manufacturer has to pay a high price for it.

On the approach of a thunder storm French peasants often make up a very smoky fire, says Industries and Iron, in the belief that safety from lightning is thus assured. By some this is deemed a superstition, but Schuster shows that the custom is based on reason, inasmuch as the smoke acts as a good conductor for carrying away the electricity slowly and safely. He points out that in 1,000 cases of damage by lightning 63 churches and 85 mills have been struck, while the number of factory chimneys has only been 03.

**OIL WELLS ON THE SEA SHORE NEAR SANTA BARBARA, CALIFORNIA.**