

electric power at high-tension lines a few miles to the west. Incidentally, it may be noted that the California hydro-electric companies are not at present in danger of bankruptcy. The Trona plant operates a 440-volt motor service, using fuel oil. Despite the long desert haul of fuel, costs are reasonable.

Drinking water is a treasure. Usually there is an adequate supply, curtailed slightly in dry seasons, for human consumption. This is obtained from springs high up in the Argus mountains at some distance from the town. From wells near the plant a slightly brackish supply is available and finds technical use in the plant. It also serves the company swimming pool, a popular feature.

The problem of the cooling of liquids is solved in various ways, in spite of torrid weather, from the spraying of exposed piping to vacuum evaporation and standard compressed-ammonia refrigeration.

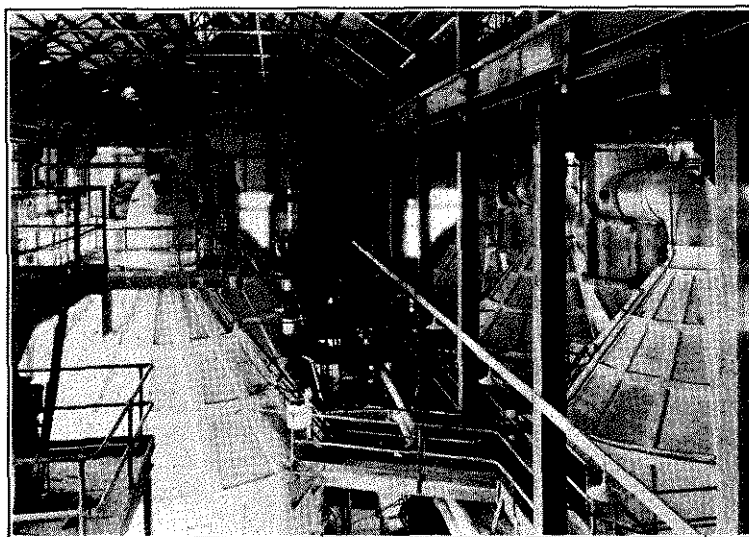
#### Living Conditions

The human element in the desert industry remains very much of a problem. The weather is undeniably hot at times. Wages run from 10 to 30 per cent higher than in Los Angeles. Sliding scales are arranged to encourage employees to stay a second and third year on the job. Mechanics have the advantage of steady work in contrast to the lay-offs common in adjacent coast cities. Employees receive all company supply store profits.

Although the thermometer runs up to 115° F. once in a while, the low humidity gives compensation. A man may dry up more or less, but at least he will not be prostrated by the heat. Ample porches surround business offices and stores, and the numerous company dwellings are designed with an eye to good ventilation, particularly during sleeping hours. While the summer climate leaves something to be desired, fall, spring, and winter are delightful.

#### Modern Plant Economies

The phase-rule chemist is not the only one at Trona who looks askance at solar evaporation. Sun-dried salts would have to be loosened, shoveled up into vehicles, and laboriously carried to storage or dump. Wherefore the engineering staff has adopted a gospel of pipe lines and pumps. Nothing



Triple-Effect Evaporators at Trona

is hauled that can be sluiced; nothing is shoveled that can be dissolved, sucked, or blown in some manner suggestive of a fluid. As a result the company employs a minimum of muckers and a maximum of intelligent young fellows with hands on valves and eyes on chronometric recorders.

Filter presses are avoided where possible. Instead, the separation of crystalline matter is carried out in conical settling chambers, which are washed by countercurrent brine.

The wash waters, or rather wash brines, after doing duty, pass on through the elaborate pipe system to such part of the plant as may be appropriate to receive them and continue the cycle. On account of limited water supply, saline solutions are employed to the limit for washing purposes before fresh water is expended.

#### German Practice

In spite of the obvious advantage of the Stassfurt potash industry from the wage standpoint, a comparison with Trona bears closer analysis. The Stassfurt beds, deep beneath the earth, constitute a mining problem, not amenable to handling with a collection of pumps, evaporators, and pipe lines alone. The desert operators, after having weathered the drop in the price of potassium chloride from \$155 per ton, ten years ago, to \$34.50 today, are now confident that the Searles Lake industry can hold its own indefinitely against any such competition.

Chemically the Stassfurt problems do not compare with those of Searles Lake. The German supply consists of segregates of individual double salts which can be dissolved by themselves and treated with relative simplicity. Ages ago Nature went through a complex sequence of solid-phase depositions, roughly analogous to the processes which Trona must now do in a manufacturing plant. The components are to be sure in a different assortment. At Stassfurt, therefore, separate veins or beds lie ready for selection. In contrast with Searles Lake, for illustration, it is a simple matter to obtain potassium chloride from the single, ready-made mineral carnallite,  $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ . Trona's polyglot solution is another story. We can therefore take our choice—engineering brains, pumps, and pipe lines, or pick, shovel, and hoist. And the desert industry is quite sure of its answer.

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**Helium Plant Makes Initial Shipment**—Shipments of helium from the Government's new helium production plant, near Amarillo, Texas, started May 6, with the dispatching of a tank car filled with about 200,000 cubic feet of helium, to Langley Field, Va. The new plant, which has been designated as the Amarillo helium plant, was built and is operated by the Bureau of Mines at Soncy, on the Rock Island Railroad about 7 miles west of Amarillo. The helium is extracted from natural gas having a helium content of 1.75 per cent, produced from the Cliffside structure lying northwest of Amarillo. Gas from 26,000

acres of land is available to the plant through a contract between the Department of Commerce and the Amarillo Oil Company.

The car in which this first shipment was made is one of two specially built helium tank cars owned by the Air Corps, U. S. Army. It carries helium under a pressure of 2000 pounds per square inch. When the car reaches Langley Field the helium will be discharged into other containers for use in the Army's lighter-than-air craft and the tank car will be returned to the Amarillo plant for reloading.