

TOWN MAKING A SCIENCE.

BY CHARLES F. HOLDER.

The erecting and continuance of a large city is an art, but the making of a town or city to order, and carrying it on without a hitch of any kind by a cor-

several cottages for the superintendent or pseudo mayor, a number of tents erected, and what is known as the "tent city" was finished. The tent city is a feature peculiar all along the Southern Californian coast, for the benefit of ranchers and others from the



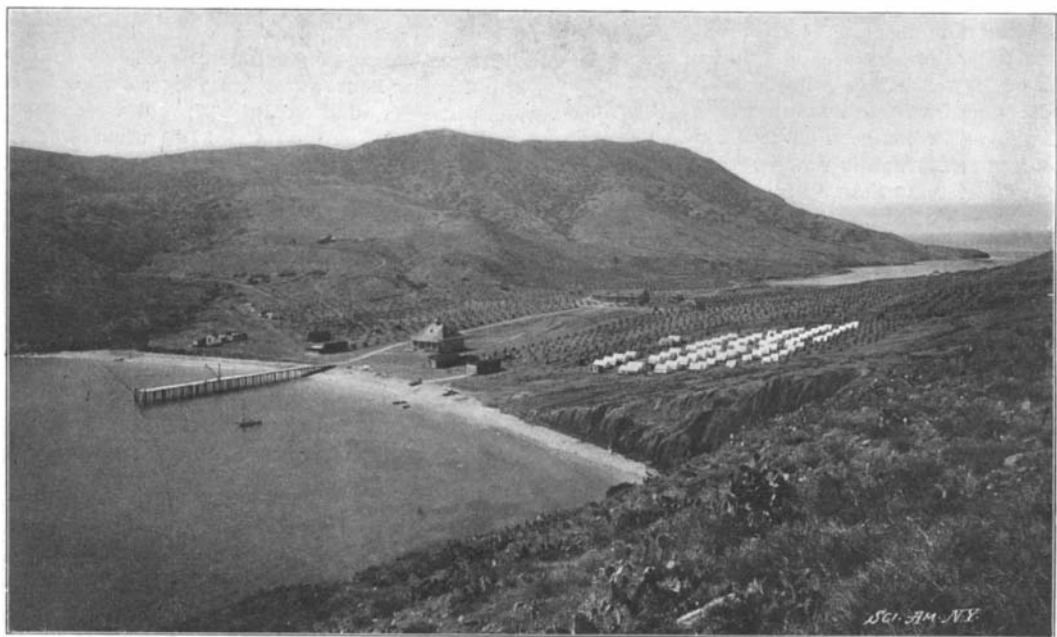
THE "TENT CITY" AT AVALON, WHEN FIRST ESTABLISHED; TREES JUST PLANTED ON SOIL THAT WAS COVERED WITH CACTUS.

poration, is certainly a science. The Pacific coast affords an excellent field for the political economist or for the person interested in the factors which enter into, not the struggle for existence merely, but the struggle for the comforts of life at a minimum cost, as here can be seen the remarkable annual birth of towns and so-called cities, which blossom as the rose for a brief time, then melt away. Here also is the land where the order is given by some large land owner to make a town, which forthwith is made, all involving most interesting phases of life.

Such an order to build a town was recently given at Santa Catalina, one of the group of islands including San Clemente, San Nicolas, Santa Barbara, Anacapa, Santa Cruz, San Miguel and Santa Rosa, strung along the Californian coast from Point Conception to San Juan, the first-named being the only island having a regular town and regular boats. Avalon has a winter population of perhaps one thousand, but in summer six or more thousand, having sixty thousand visitors during the year. It stands in a wide cañon, but is more or less restricted, and as it was evident that the time would come when another town would be needed, the owners ordered a new town. The site selected was at the north end of the island on a little bay, called the Isthmus from the fact that a deep fjord cuts in from the west, giving the locality two most attractive harbors. When the order was given to make the town the place was a desert, not a tree in sight, only a few shanties of fishermen alongshore and here and there a patch of cactus. Water was the desideratum, and this was found in a neighboring cañon to the north and piped over the hills. The ground was now leveled by an enormous amount of labor, the hollows filled, and small prominences cut down. The surveyor then came, who platted the tract, laid it out into streets, avenues, walks and a central plaza or park with provision for fountains. This accomplished, the plumbers stepped in and a system of sewerage and water pipes was introduced. The aid of the forester was next called into play, and the streets and avenues were planted with small Australian eucalyptus trees, so small that they could hardly be seen. This was two years ago. A wharf was built, a hotel or restaurant,

inland cities and towns who desire to escape the heat and enjoy life at the seashore at a minimum cost.

The town at the Isthmus is not designed wholly as a tent city, but is to be provided with cottages and hotels, and the owners are merely waiting for the trees to grow before this is accomplished, and this is well shown in the accompanying illustration. The



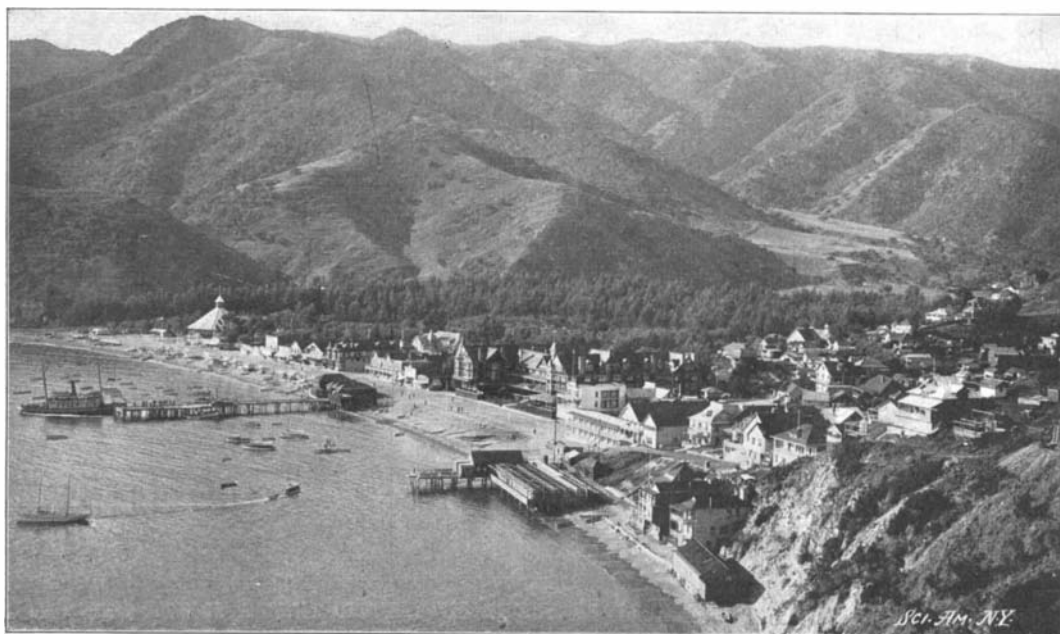
TOWN MAKING IN CALIFORNIA; SHOWING EUCALYPTUS TREES IN THE TOWNSITE TWO YEARS OLD.

trees are now in some instances twenty feet in height, and well illustrate the rapid growth of trees in Southern California. Where there is an abundance of water, eucalyptus trees will attain a height of one hundred feet in ten years. Certain acacias, as the black wattle of Australia, will attain a height of sixty feet in eight years; the live oak, supposed to be a very slow grower, twenty-five feet in fifteen years, if plentifully supplied with water. The date and fan palms are equally rapid

growers in this country, and all illustrate the possibilities of creating towns with forests grown to order. In 1890 there were but few trees at Avalon, but to-day it is filled with a dense growth of trees which afford a most grateful shade. Two of our illustrations show the growth of about three years and the evolution of the town.

What is known as the "tent city" is more or less peculiar to California, and the local papers, from the heart of the Sierras to the sands of the ocean, during the summer months, all contain glowing advertisements of the "tent city." Such cities, with a population of several hundred, are found at Long Beach, Newport and Coronado and in lesser degrees at many points. The equipment of the "tent city" constitutes a business in itself. At Avalon the writer was shown a large circus tent which in winter contained furniture of every description, carpets, matting, oil stoves, dishes, lamps and other household articles by the score. Here were also tents of all sizes, floorings, in fact the "tent city" was here in winter quarters, everything classified and arranged with order and system. In April or May a gang of men descends upon the winter quarters, and like magic the vacant lots are filled, the floors fitted, tents erected, carpets laid, furniture placed, water turned on, and presto! in a day a city is reared as though by the touching of the proverbial button. Each tent is neatly and well furnished, and can be rented for a nominal cost, the owners of the island giving the ground rent and free water, each lot being sewered and perfect in its sanitary arrangement. The visitor can rent a tent for sleeping, a parlor and kitchen, or he can rent a single room. In the center of the "tent city" is a store where every description of food carefully prepared and cooked can be obtained. Nearby the Y. M. C. A. has opened a reading room and library.

The question of the physical and moral welfare of such a community would seem an important and difficult one to manage; but all this and even the amuse-



SHOWING SITE OF A TENT CITY, AFTER THREE YEARS OF FOREST GROWTH (EUCALYPTUS.)

ments are included in the plan, and we have a city where every door is open and where probably the jail is used hardly once in the season. On the borders of the city is a large hall or pavilion arranged as an amusement hall, and in the immediate grove is a band stand where the finest band in Southern California gives an open-air concert from seven until nine, seats being provided for twelve hundred people. No smoking is allowed within the area of the seats. At the end of the concert the band adjourns to the "pavilion," and a ball is given free to the inhabitants of the "tent city" and others. No policeman is in evidence in the town, though guardians of the peace are present in citizen's clothes. In fact, here is a summer municipality of large size, run or conducted by a corporation that attends to everything; keeps the town clean, provides amusements, sustains a health officer, administers justice through a justice of the peace, provides the government with a post office, and maintains two daily boats between the island and the mainland—an experiment in government worthy the attention of the pessimist who affects to believe that communities cannot be run by machinery, as this virtually is, so well arranged and systematized are the methods. It might be assumed that a series of stringent and excessive taxes would be imposed upon each resident, but investigation shows that each resident of the tent city of Avalon pays but \$2.75 per capita per season for the privileges, which is the cost of the round trip fare from Los Angeles to the island, a distance of fifty miles, more or less. This and the rent of tent constitute the sole tax. This town building idea, so successful in Southern California, is worthy of trial along the Atlantic seaboard as a plan for securing an outing during the heated term for hundreds who would otherwise have to stay at home.

Detecting Blood-Stains.

A new method of distinguishing human blood stains is now being employed with some success. It is the practical result of the experiments made by Bordet in 1898-99. He showed that by injecting defibrinated blood of an animal into animals of different species, the serum of the latter animals acquired the property, after a certain time, of agglomerating and dissolving the red corpuscles pertaining to the species whose blood had been injected. The serum thus obtained has been called *cytolitic*. He also showed that this serum, when mixed with defibrinated blood of another species, furnished at the end of a few minutes a red liquid, clear and limpid, while if added to the serum of the first animal whose blood had been used to prepare the cytolitic serum it gave an opaque liquid which soon formed a flaky precipitate. It is this observation which Uhlenbach has applied to the diagnosis of human blood. He injected every 6 or 8 days about 10 cubic centimeters of defibrinated beef's blood into a rabbit, and after five injections he obtained a serum which dissolves beef's blood exclusively. By taking a one per cent solution of the blood of 18 different animals and adding 6 or 8 drops of the serum obtained from the rabbit, he found that all the tubes except that containing the beef's blood remained perfectly limpid, while the latter became cloudy and gave finally a woolly precipitate. A series of similar experiments upon human blood gave the same results, and he was able to distinguish between the former and beef's blood in samples which had been dried for over a month. The researches of Wassermann and those of Schultze in which human blood has been compared with that of 23 different animals, confirm those of Uhlenbach, and the precipitate was obtained only with human blood; one exception must be made, that of monkey's blood, which at the end of a certain time gave a very slight precipitate. The method is very efficacious, and blood which is three or four months old may be detected in this way, where other methods would fail. The experimenters state that the material of the blood stain to be examined should be soaked in a small quantity of a normal salt solution, and after filtering, the liquid is divided in equal parts in two test tubes. To one is added a few drops of the serum of a rabbit which has undergone the treatment with human blood, and to the second, the serum of an untreated rabbit. A third tube contains diluted blood of another kind of animal and to it is added another portion of the serum of the first rabbit. The tubes are kept at 37 deg. C. and if at the end of an hour the contents of the first tube become cloudy and then precipitate while the other two remain clear, it is certain that the spot is that of human blood, except in the remote case where monkey's blood might be considered.

The popular interest in the so-called Correspondence Schools continues to increase, so that new institutions in this line are pursuing new measures to gain the attention of future patrons. One of the latest ideas is the consolidation of the American School of Correspondence of Boston with the Armour Institute of Technology of Chicago, Ill., whereby the corresponding students may have the advantage of the new institute in finishing any course they may take by personal study at the institute. Under the system arranged, the marks the corresponding student receives will be given due credit in the institute.

THE JAUBERT METHOD OF PRODUCING OXYGEN GAS.

M. George F. Jaubert, an eminent scientist of Paris, has invented a method for producing oxygen which is extremely simple and cheap, and will no doubt find numerous applications. The inventor has been work-

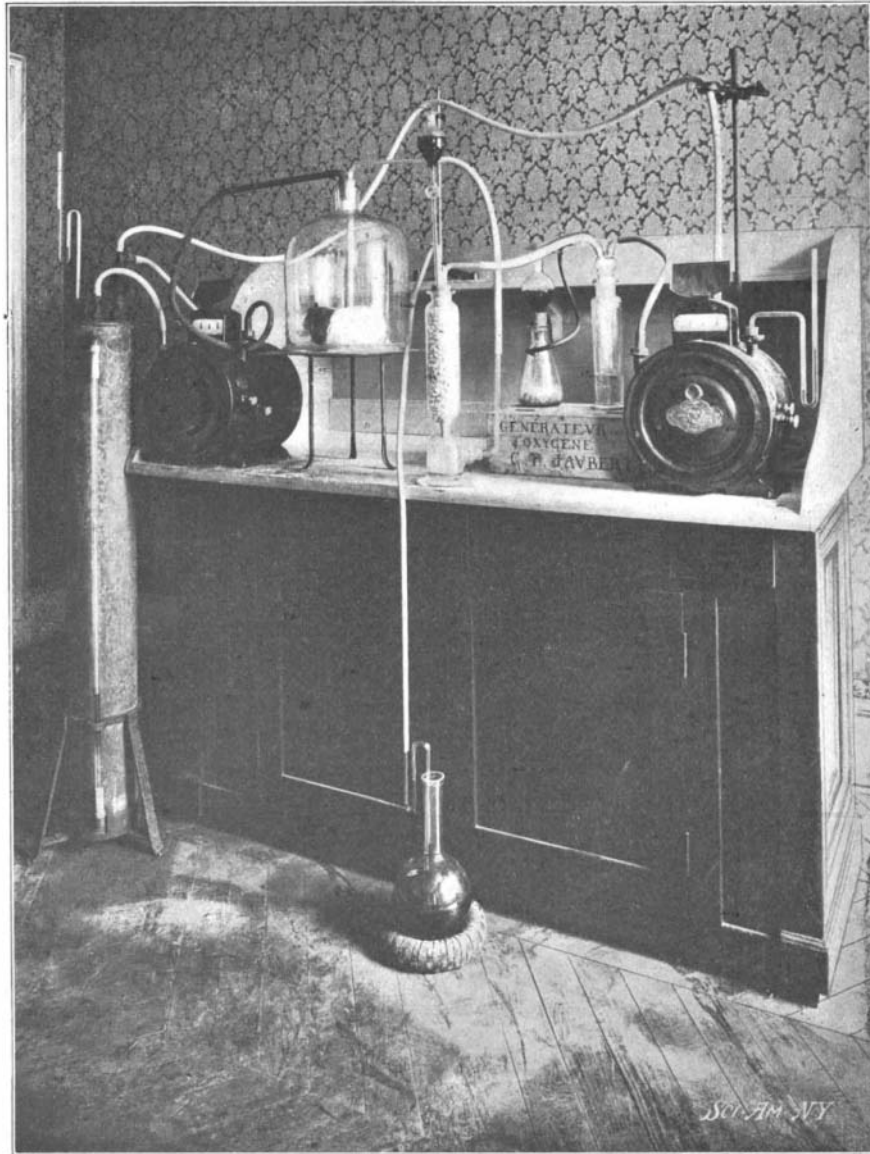
is one of great importance, and if the recent experiments can be relied upon, a great step in advance has been made. Peroxide of sodium or potassium is used to prepare the oxygen. These compounds are very rich in oxygen and will give it off again in the pure state by a proper decomposition. The peroxides are generally formed by heating the metal in a current of oxygen, when they absorb the gas in variable proportions, forming a series of higher oxides. These bodies are generally decomposed by water and it suffices to place a small quantity of peroxide in a vessel of water, when a violent disengagement of oxygen takes place.

M. Jaubert has found a method of manufacturing these bodies by the electrochemical process at a low cost, and at present a large hydraulic plant has been erected in the Isère district. For commercial use this body takes the form of compressed blocks about 1½ inches cube, or small pellets ½ inch in diameter. These are used in a gas-generator in the same way as carbide and the supply of oxygen given off is regulated in various ways. The advantages of such a method of producing oxygen need not be dwelt upon; the prime material is in a very compact form and gives a supply of gas at a moment's notice. The product, known as "oxylithe," is now on the market, and its price may reach as low as 10 cents per pound. One pound of oxylithe will furnish 75 to 125 liters of gas.

One form of gas generator is shown in the engraving and section. The oxylithe in powder is placed in the hopper, A, above the water reservoir; the mouth of the hopper is closed by a ball, C, which is connected above to a flexible diaphragm, D; the latter may be loaded with weights. At first the powder falls into the water and the gas is generated. When the pressure rises above a certain point, it acts upon the diaphragm, lifting the weights, and the ball closes the orifice, and *vice versa*. The output may thus be regulated by the load upon the diaphragm. This form is designed for laboratory use. On a large scale, apparatus No. 2 is used. Here the pieces of oxylithe are fed into a central tube, E, and fall upon an inclined platform, F, giving off gas and finally reaching the bottom. The gas passes off by the upper tube, G, and is generally passed into a water-cooled chamber to condense the water vapor.

One of the chief applications is the production of "artificial air." M. Jaubert has made a number of experiments by which it is possible to maintain respiration for an indefinite period in an inclosed space. The engravings show such experiments with artificial respiration.

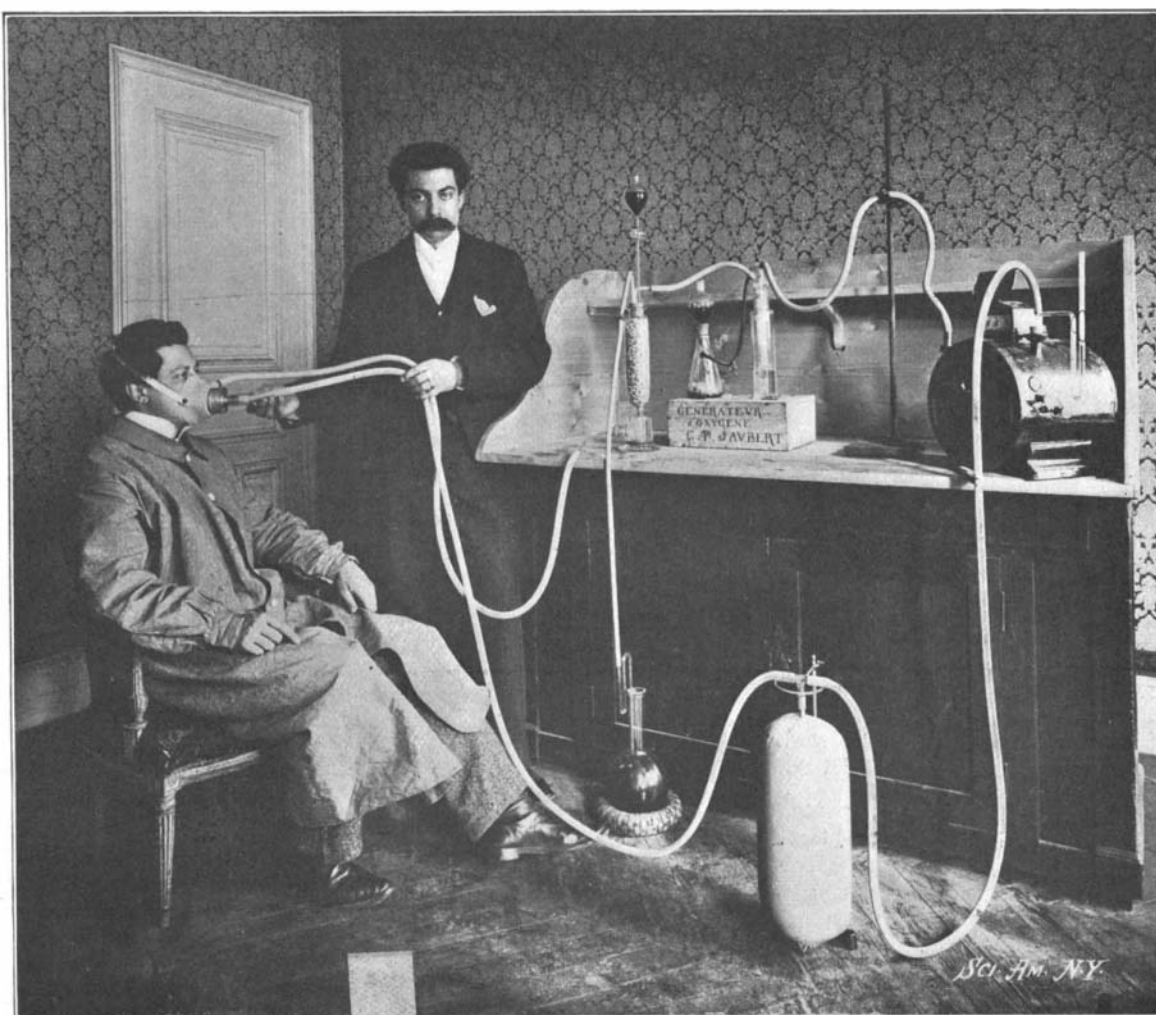
A guinea-pig has been made to live for a number of hours inside a bell-jar; the carbonic acid gas which it gives off is sent into an oxygen generator and its supply of oxygen is renewed in the right proportion. The renewed air is sent into the bell-jar by a second tube, thus forming a closed cycle entirely separated from the exterior air. To the left of the bell-jar is an aspirator for setting up the circulation in the apparatus. The carbonic oxide passes first into a cleaning apparatus, then into the oxygen generator on the right, and returns to the bell-jar through a gas-meter. An analogous method is used for human respiration; the bell-jar is replaced by a mouth-piece with the proper tubes (as shown in the engraving). In this way a person may live for a great length of time entirely out of contact with the external air, depending only on the supply of oxylithe. Diving apparatus has been



EXPERIMENT OF KEEPING ANIMALS ALIVE WITH THE JAUBERT CONTINUOUS PROCESS OXYGEN APPARATUS.

ing in this direction for a number of years with a view of finding a body which would produce oxygen in a manner analogous to the production of acetylene by carbide of calcium.

He has been studying the subject with reference to artificial respiration, to be applied to diving apparatus and especially to submarine boats. The latter question



THE JAUBERT RESPIRATION EXPERIMENTS WITH OXYGENIZED ARTIFICIAL AIR.