At this time there is no record of borax being found in its crude state in any part of Europe, but it was known to the Arabians, who called it baurach. Hence its name. They used it to assist in reducing the oxides of metals. The conclusion at which I have arrived is that the borax used by Geber, who lived in the eighth century, was made from tincal, or crude borax, which is found in many lakes in Thibet.

In some of these lakes are numerous hot springs, the vapor of which contains boron, and the surface water is impregnated by it. Evaporation taking place, the tincal is found cystallized at the sides of the lakes. In addition to this, solid borax is found in some form or other in the soil around this district, and there is ample proof that unlimited supplies can be obtained. Tincal has been obtained from Yandok Cho from time immemorial. It is exported in small quantities hence to Lassa, where it is used by various workers in metal. After the tincal has been collected it is bartered for cowrie shells, Sheffield cutlery, and Birmingham ware. It is then sold to the Kassawaris and Khampos traders, who arrange for its transport to India on sheep's backs. Each sheep carries from 40 to 60 lbs. The transport across the Himalayas takes about nine weeks. Each driver carries a distaff, which they use to spin wool dragged from the sheeps' back, to make bags in which to pack the tincal. Should a sheep die on the way, its flesh is eaten by the drivers, and the wool taken off and spun as described. On the way vegetation is sometimes so scarce that boughs of trees have to be cut down and the leaves stripped, to feed the sheep.

From Moradabad and other parts of the foot-hills of the Himalayas the tincal is sent to Calcutta, and shipped from thence to Liverpool, where it is refined into borax, and used in making the glaze for china and earthenware. I may mention that tincal was the only form in which borax was known in Europe until the year 1742, when a Tuscan traveller and a geologist paid a visit to Monte Cerboli, Castel Nuovo, where he discovered a large number of hot springs, and noticed dense vapors arising from them; but it was not till the year 1777 that Hoeffer found out that the steam contained boracic acid at Monto Rotondo and Cestel Nuovo. In 1816 Hoeffer and Mascagni proposed to make borax from them, but the latter was too much engaged with other scientific labors, although he had obtained a patent during Napoleon's rule in Italy to make boracic acid from the fume-roles. This right he ceded to Fossi, who was the first to make it in any quantities. Gazzeri and Browret worked some of the lagoons at Monte Rotondo, but made only about 3½ tons in twelve months—a most unfortunate speculation for them.

In 1818 Laderet, a Frenchman, who was staying in Italy, hit upon a brilliant idea of utilizing the natural steam jets oozing up so plentifully from the soil, to evaporate the water, and so increase the supply of borax at a much cheaper rate, as the great cost hitherto had been the wood for fuel. I must now try and describe the very simple mode of preparing this boracic acid, and when I first visited Italy I was never more astonished in my life. I made my headquarters Castel Nuovo, which is the very centre of these curious steam puffs or fumeroles, and visited the most important places of production, Sasso, Lustignano, Ladarello, Lago, and San Federigo. Scarcely any one could give me any idea why the steam puffs contained the boracic acid, and, as I am neither a scientific nor a learned man, I can but give you what I think may be the cause, though I may be altogether mistaken in my supposition.

My exact meaning will be best understood from the accompanying diagram—all that is seen below the surface being, of course, imaginary, but, I believe, correct. The subterranean lake, A, is supposed to be surrounded with crude borax vapor, generated from the lake by deep-seated heat or fire; the vapor rises through the crevices, B, of the rocks; C are artificial lakes on the surface of the earth; D is a tank wherein any impurities fall to the bottom, boracic acid still remaining in solution; F is the evaporating house; E is a soffione vaulted over with stone and firmly bound with wrought-iron bars; and G are the crystalizing tubs or casks. Now, it appears to me that for many miles round this district there exist subterrannean lakes and seas—the sides containing borax in some solid form; and that the internal heat of the earth affects the water, dissolving the borax. The steam forces its way through crevices and fissures, sometimes puffing up to a height of eight or ten feet.

To utilize the steam jets, a wooden chimney is constructed round those selected, which conducts the steam high up in the air, in order to protect the workmen while preparing the lagoon or lake. Around this is dug an artificial lagoon, about six feet in depth and twenty feet in diameter. This lagoon is faced with bricks or tiles. The wooden chimney is then removed, and clear water run in the lake from an adjacent stream. When it is full the water is turned off, and the stream which comes up in the centre of the lagoon soon heats the water, which quickly boils, the vapor rising with such force as to cause it to bubbie up to a height of three or four feet.

This is allowed to continue for about thirty hours, during which time the water gives off a perfume like that arising from rotten eggs. It is then conducted from the lagoon by a wooden trough into a large iron tank, placed near to, but slightly below, the level of the lake, when any impurities sink to the bottom, while the boracic acid remains in solution. From the tank the solution is conveyed through pipes to a series of leaden pans or evaporators standing in a large building open at the ends and sides, but having a roof to keep out rain. These evaporators are placed over a brick built chamber, into which steam from another fumerole is conducted by a pipe at one end of the building, and after traversing the entire length of the building, escapes through a pipe at the other end. By this means the leaden pans become heated, and drive off a good deal of the superfluous water, the solution thus becoming more dense, and while in this condition it is run off through wooden pipes into large casks. When cool, the boracic acid forms on the sides of the casks in a thickness of about five inches. The liquor being drawn off, the boracic acid is removed and put into wicker baskets. After a short time it is carried to the drying chamber and placed on a brick floor, which is heated by one of the steam jets. When dry, it is packed in casks and conveyed to Leghorn for shipment to England, and refined into borax.

About 3,000 tons of boracic acid are produced annually in Italy. Besides the districts I have already mentioned in Italy, there are others, but they are insignificant.

Chili is the next important district where borax is found in a crude state. It is also found in Peru and Bolivia, but the largest deposits are in Chili. There exist large numbers of dried-up lakes containing great quantities of borate of lime. The most important is known as the Laguna de Maricunga, which, besides borate of lime, contains solid masses of salt. It is situated between the two highest ridges of the Andes, at an elevation of 1,300 feet. In some parts of the lake there are deposits of borate of lime twenty feet deep, so that when the business gets thoroughly established, borate of lime may be collected and sold comparatively cheap; and when the uses of borax are better known, and more demand for it is created,