Correspondence.

The Bodie Mining District.

To the Editor of the Scientific American:

The most promising field for mining enterprise on the Pacific Coast at the present time is undoubtedly the Bodie District. The Comstock Lode has ceased any longer to attract that universal attention which for so many years it has monopolized. The dividends of its mines have stopped, and investors are looking to the Bodie and other fields for opportunities that the Comstock no longer furnishes. Here on the coast mining has been reduced to a scientific basis. The element of chance is more and more eliminated; and sound hypotheses based on geological facts and years of careful experiment, guide the prospecting and development of new mines. The Bodie District, which I purpose to describe, is located in Mono county, California, near the Nevada line. It is about 36 hours' ride from San Francisco, almost due west. It is reached, however, by way of Carson, from which place you stage it over the country 110 miles. The first individual who discovered valuable mineral deposits in this district was W. S. Bodie, of Poughkeepsie, New York. This was as long ago as 1859, and from this enterprising prospector the district has taken its name, being organized as such in July, 1860. The Mono section was first worked, but not systematically; and in 1861, what was then known as Bunker Hill (since famous as the Standard) was discovered. A company, with a nominal capital of $1,110,000, was incorporated in 1863, but failed in any practical results, although such names as Leland Stanford and F. K. Bechtel were at its head. In the following year the Empire Company of New York was incorporated, combining four or five other mines, with $10,000,000 capital. Trenor W Park succeeded in raising $300,000 actual money on stock sales for development purposes. The effort as a whole, however, proved entirely theatrical. A very good mill had been erected, and ten years later, when the Syndicate Company was incorporated with large privileges, this was refitted, and with a sufficient capital work began in earnest. Then followed the astonishing developments in the Bunker Hill (Standard) mine which brought abundance of working capital into the district, and speedily the Bechtel, the McClinton, Belvidere, Bulwer, Bodie, Mono, Tioga-Con., and other mines were opened up; followed, since the establishment of the "Veta Madre" theory (or mother vein), by the Dudley, Jupiter, South Bulwer, Chieftain, Noonday, Richer, and a host of others.

The geological character of the entire district is volcanic—"a volcano within a volcano; a chemical caldron subsequent to a widespread upheaval by subterranean fires," as one writer puts it. "Bodie mountain," in the language of Professor Silliman, who reported on the district, "is an isolated mass of trachytic porphyry, having white crystals of a feldspathic mineral implanted in a lavender colored paste; it is an island of irruptive rocks. The whole surface of the surrounding region is covered with decomposed porphyry, in which are seams, abundantly supplied with fragments of quartz, jasper, chalcedony, and other vein stones derived from the breaking up of the crests of the mineral lodes. The eye experienced in gold bearing drifts recognizes at once, in the aspects of the sides of this mountain, the probability of the existence there of profitable deposits of gold." Silliman thoroughly believed in the existence of one great *mother lode*. Subsequent discoveries tend to substantiate this. A transverse section of Bodie Bluff shows the many veins of ore, spread out like the sticks of an open fan; that is, they all tend to a common center, where they are supposed to meet and unite with the mother vein. This formation extends through the entire district, but no cross cuts have yet been made. A theory entertained by many is that the whole geological formation was riven asunder, and the chasm filled by sedimentary action. Professor William P. Blake, of the Sheffield School of Mining, believes that the structure of the rock indicates that "the veins were deposited gradually in fissures, by thermal springs." Both theories would favor the great depth of the veins. On the surface the veins are hard and sterile of metal; at sufficient depth they become soft, friable, and rich; and deeper still more rich, and so decomposed as to even yield to the shovel. The extent of the mineral ledge is between *two* and *three* miles. It was supposed at first that the general dip of the veins was in a southwesterly direction, but recent developments prove conclusively that they run easterly, and the probabilities amount almost to a certainty that the Dudley and Jupiter claims, on the east side of the ridge, have the same rich ore bodies that maintains in the Syndicate, Standard, and Bodie. In all these leading mines the farther they prospect the more ample and richer become the mineral deposits, tending more and more to prove the "*veta madre*" or mother vein theory. They are down over 400 feet in the Bodie, 520 feet in the Tioga, and over 700 feet in the Standard, but in the latter are temporarily drowned out with water. The Bruce drift in the Bodie has proved immensely rich and increases as it goes southward. In the Standard there is a thousand feet of rich ore laid bare. All these veins are mingled with carbonate of lime, a good indication for permanency. This formation extends clear through to Noonday on the extremest south, with the certainty that the rich veins of the Standard and Bodie bear off to the east, through the east side of Mono. There is every probability that the next bonanza will be opened in Jupiter and Dudley, which are just to the south and east of Bodie and Mono. Good ore is already being taken out, but they are waiting for their pumping machinery, so that they may penetrate to the lower levels below the barren cap rock which covers the district. When this is accomplished these mines will likely prove a *dividend proposition*. A large amount of machinery is being brought into the whole district. The Noonday is erecting a 20 stamp mill. The Standard and Bulwer Companies are jointly putting up a 30 stamp mill; and pumping and hoisting machinery has been ordered for a number of other mines.

There is unquestionably a big future before them all. The gold and silver mineral is not found in pockets, but is disseminated with average yield throughout the length and breadth of all the veins. Resembling the Comstock in many striking particulars, the Bodie bids fair to outrival that veteran district, which has so long dominated the stock market of the Pacific Coast. H. S. W.

San Francisco, August 1, 1879.

A Canal Mowing Machine.

To the Editor of the Scientific American:

I notice in your paper for August 16 an article with the following heading, "A Canal Mowing Machine Wanted," and wish to say that such a machine, and one which is as much superior to the one described in that article as a land mowing machine is to a scythe, has already been invented, and has been in operation every summer for a number of years on the canal of the Connecticut River Company, at Windsor Locks, Conn. It is driven by belting from the engine of a steamer built especially for it, and works well. It will be run a part or the whole of the coming week.

The machine consists of a frame of as near as I can guess 12x8 or 10 feet, with a shaft at the end to be attached to the boat, on which, at about the center, are a tight and a loose pulley, and at each end a disk or crank, with short connecting rods to the side rods running through guides, and connected with the knife bar by small chains over pulleys. I have no time for a detailed description. It can be seen probably at any time, on application to Mr. S. H. Allen, Secretary, Windsor Locks, Conn. I would advise Mr. Fish, of the Erie Canal, to examine this machine. The Windsor Canal is 6 miles long, and is the largest water power in the State of Connecticut. It is also a navigable canal, for which purpose it was built.

J. S. ALLEN, Engineer.

Windsor Locks, Conn., August 16.

"The Devil's Darning Needle."

To the Editor of the Scientific American:

The statement of Mr. W. M. McGee, in your issue of August 16, to the effect that the thick-legged walking-stick (*Diapheromera femorata*), which I recently treated of in your columns, may sometimes survive the winter, is founded on mistaken identity. It dies with the first severe frost, and passes the winter, as I have shown, in the egg state. Not so with the water boatmen—certain elongate long-legged heteropterous insects (genus *Ranatra*)—which bear a very general resemblance to the walking-sticks, and which were, beyond any doubt, the insects observed by Mr. McGee. Popular terms are variously applied in different parts of the country, but that employed at the head of this communication is most associated in the popular mind with the dragon flies (*Libellulidæ*). Yours respectfully, C. V. RILEY.

August 16, 1879.

Turbo Shells and Sea Beans.

On the beach of Little Saba Island (St. Thomas) there was being formed a reddish sandstone conglomerate rock composed of the *débris* of the rock of which the higher parts of the island consist, cemented together by calcareous matter derived from the corals and calcareous sand.

This rock, which was hard and compact, contained embedded in it plenty of the various corals from the beach, and large turbo shells (*T. pica*) with their nacre quite fresh in luster, and their bright greenish color unimpaired.

Large examples of these turbo shells, as much as two inches in diameter at the base, are in St. Thomas, carried up far inland by terrestrial hermit crabs.

I saw a large number of them among the bush at an elevation of 1,000 feet, some of them with the crabs in them, many empty. These large, heavy sea shells occurring in abundance at great heights puzzled geologists, until it was found that they were carried up by the crabs.

On the shore at Little Saba Island grow a number of plants of *Guilandina bonduc*. This plant bears a pod covered with prickles, which contains nearly spherical beans of about the size of a hazel nut, which have a perfectly smooth, as it were, enameled surface, and are flinty hard. These seeds float, and are carried by ocean currents to distant shores, and are in Tristan da Cunha and Bermuda known as "sea beans," and supposed to grow at the bottom of the sea. Don Jose de Canto showed me one found in the Azores.—*Moseley, Notes by a Naturalist.*

WE have it on the authority of Dr. Bock, of Leipsic, that the nervousness and peevishness of our times are chiefly attributable to tea and coffee; the digestive organs of confirmed coffee drinkers are in a state of chronic derangement, which reacts on the brain, producing fretful and lachrymose moods. Ladies addicted to strong coffee have a characteristic temper, which might be described as a mania for acting the persecuted saint. Chocolate, he adds, is neutral in its psychic effects, and is really the most harmless of our fashionable drinks.

CUTTING PACKING COMPANY.—ONE OF THE LARGEST ESTABLISHMENTS OF THE KIND IN THE COUNTRY.

Next to mining, the fruit products of the Pacific coast give it celebrity throughout the world. The size, quality, and abundance of these products render them especially suitable for foreign markets, where they are largely shipped in the shape of canned goods, prepared so as to retain their natural flavor, and cheapen their comparative cost to the consumer.

As illustrating this large and growing industry, the Cutting Packing Company, both by merit and reputation, is well worthy of description. The house was established in 1853, on Commercial Street, San Francisco, Cal., under the name of Cutting & Co., and was necessarily very small in its capacity and imperfect in its appointments at that time.

In 1875 it was incorporated as the Cutting Packing Company, and by careful management and a proper spirit of enterprise the development of the business has been constant and reliable, until at the present time its magnitude is enormous and really a monument to the energy that developed it. Besides canning fruits, the concern now can meats, vegetables, honey, preserves, jams, and jellies, and manufacture pickles and cider. The following figures will prove interesting to the readers of the SCIENTIFIC AMERICAN, as concisely exhibiting the magnitude of this important industry:

GOODS PREPARED FOR MARKET IN THE YEAR 1878.

900,000	cans fruit	averaging 2½ lb.	each.
475,000	" vegetables	" 2½ "	"
110,000	" meats	" 2½ "	"
285,000	" preserves, jams, and jellies	" 2 "	"
76,000	" strained and comb honey	" 2 "	"
24,000	glass packages honey	" 2 "	"
18,000	" " jams and jellies	" 2 "	"
15,000	" " pickles and sauces	" ½ gal.	"
16,000	wood packages pickles and sauces	" 25 "	"
12,000	quarts champagne cider.		

This product represents the following material used:

FRUITS.

Apples	190 tons.
Apricots	110 "
Blackberries	75 "
Currants	45 "
Cherries	25 "
Gooseberries	20 "
Grapes	60 "
Peaches	325 "
Plums	160 "
Quinces	40 "
Raspberries	12 "
Strawberries	45 "
Pears	210 "
To 1	1,317 "

VEGETABLES.

Asparagus	15 tons.
String-beans	45 "
Peas	60 "
Tomatoes	350 "
Pickles	175 "
Corn	25 "
Total	670 "

MEATS.

Beef, boned	220,000 lb.
Mutton, "	90,000 "
Pork, etc., "	12,000 "
Total	322,000 "

MISCELLANEOUS.

Salt	160,000 lb.
Vinegar	72,000 gal.
Sugar	360,000 lb.
Honey	110 tons.

The tin cans for putting up this immense quantity of goods are all manufactured by the concern, and it requires 1,750,000 of these, averaging 2½ lb. each. For their construction 7,500 boxes of tin plate are used, 15 tons of pig lead, and 15 tons of pig tin. The plate tin is imported from England, the pig tin from Australia, and the pig lead is mined on the coast. Sugar is purchased by the car load, and salt by the schooner load. In fact everything is conducted on a wholesale principle, yet the most scrupulous regard is paid to the minutiæ of the business, and each department works in perfect harmony with the others toward the advancement of the whole.

The warehouses and factory are located on Main Street, Nos. 17 to 41, just off from Market Street, the principal street of the city. The extent of the premises is 180 feet on Main Street, and 275 feet deep; stables, cooper and machine shops are attached; the main building for general manufacturing is 90x137 feet, and four stories high.

When I visited this large factory the peach season was at its height, and the capacity of the establishment was taxed to the utmost to dispose of the fine harvest of this abundant product of the State. Stepping on the elevator with one of the proprietors of the house, we were taken up to the fourth floor, where between five and six hundred women were busily engaged at long tables in peeling, pitting, and canning the luscious fruit. The most admirable system prevails here for the dispatch of business, and it requires but a few minutes for fruit that had been harvested the same day in the neighborhood of San Francisco, to be put in proper shape for the consumer in some far off market. An elevated railway runs the length of the room between two rows of tables; this facilitates the transportation of the filled cans to the siruping room, where boiled sirup is poured among the peaches, filling every crevice. They are then soldered up and cooked the necessary time which experience has suggested as best.

The concern manufacture their own sirups from the best "*A*" crushed sugar. They are strained twice to exclude all possible impurities.

I was shown a very neat device for soldering the tops and bottoms of the cans, upon which the concern has a patent. It consists of a simple piece of solder wire, which is cut and bent so as to just fit nicely around the edges of the can. After the wire has been properly dropped into position, the can is placed with the top or bottom, as the case may be, in a close fitting aperture on a hot oven; the wire speedily