development Colorado naturally leads in the richness and variety of her exhibits. This State has suddenly risen to the first rank as a silver producer, and stands close to the head of the list of Gold States. In the relation of production to area Colorado holds the first rank; for gold and silver combined she stands at the head, and likewise for silver alone. Exclusive of coal and iron her metallic product the census year was twenty-two and three quarter million dollars, and nearly if not quite as much last year. Lake county, which yields more than half the total product of the State, is richly represented in the exhibition, but not quite so brilliantly as the newer district of Gunnison county, which has required an annex to receive the excess sent by the enthusiastic miners. The Gunnison exhibits include thousands of pounds of rich carbonates, great blocks of ruby silver, native silver, iron, coal, and marble. For the transportation of one block of galena weighing 4,000 pounds a special road had to be constructed over the mountains. From the other mining districts of the State generous contributions of gold, silver, lead, and copper ores have been sent to the exhibition, the baldest enumeration of which would fill columns.

The exhibits from Utah rank next to those of Colorado in variety and volume. About fifty productive mines and over a hundred prospects are represented. The majority are silver-load ores; among the rest are ores of antimony—one block of 3,000 pounds assaying 60 per cent; bismuth; a 500 pound block of sulphur, nearly pure; great masses of iron ore; brown coals from beds of three to thirty feet in thickness; mineral wax from the Wahsatch Mountains; marbles in great variety, and other minerals testifying to the vast undeveloped wealth of the great basin.

The exhibits from New Mexico embrace a great variety of silver, gold, copper, and lead ores, turquoises, and small specimens of all the minerals found in the Territory; also a fine display of native jewelry, Pueblo pottery, blankets, etc. Grant county sends specimens from two hundred mines, and other counties are represented by ores from a hundred mines or more each. The Arizona exhibits come mainly from the Tombstone District and from Pima and Pinal counties.

The Copper Queen Mine sends a pyramidal mass of copper ore weighing two tons. It is a carbonate, assaying from twenty three to twenty-five per cent. A seven ton block of galena is to be added to the exhibits from this territory. Some of the richest ore is contributed by the West Side Mine, assaying 3,339 ounces silver to the ton, with a large assay of gold. Another specimen yields 2,905·7 ounces of silver and 21·88 ounces of gold. The Contention property exhibits a sample of telluride of gold and horn silver that assays $1,762.10 gold and $12,378.15 silver. A specimen from the Grand Central Mine, Tombstone District, weighing 115 pounds, runs $11,923.22 to the ton, of which $2,286.29 is gold and $9,536.93 silver.

Wyoming, Montana, Dakota, and Idaho are represented by specimens aggregating many tons, among them a block of soda from Wyoming, weighing 500 pounds, and Montana ores assaying as high as 3,300 ounces of silver.

Though presenting less of novelty, the agricultural displays are large and attractive; and the same may be said of the machinery departments, which comprise a great variety of crushers, amalgamating machines, pumps, engines, excavators, and other appliances for raising and reducing the buried wealth of the mountains. The exhibition will remain open until October, and part of it is intended to be permanent.

PRISON ELECTRICITY.

Opposition to prison labor is not altogether unreasonable from the standpoint of the artisan whose trade is invaded and the products of whose labor are undersold by contractors employing convicts. Yet to the public at large the maintenance of large numbers of prisoners in unproductive idleness would appear still more outrageous, indeed not to be thought of.

That offenders against the peace and property of the community should be made self supporting, however, is not more simple and reasonable in theory than it is difficult to put into practice. It is particularly difficult with those who most need the discipline of labor—the petty offenders who fill our police courts and penitentiaries under short time sentences. It is not easy to find useful employment for unskilled tramps, drunkards, station house rounders and the like, who make up the large portion of the criminal classes and ultimately furnish most of the long term convicts. The latter can be taught the simpler trades, and, under the contract system or otherwise, made to pay for their keeping or more, though the conditions under which such labor is massed and employed are such as to yield results not at all pleasing to those who are employed in the same trades outside of prison walls.

Originally the clause "hard labor" in the sentences of malefactors contemplated labor purely as a punishment. It was not productive labor. The convict was put into a treadmill or set to turning a loaded crank, no attempt being made to utilize the energy exerted. The treadmill has been displaced partly for sentimental, partly for economic reasons. The convicts hated it, and no useful result came of it. The substituted factory system yields better results, and worse. Prison labor is now productive; but it is apt to interfere grievously with prison discipline, and also with the rights, real or fancied, of honest labor, as may be seen in the universal condemnation of prison labor by trades unions.

It is suggested that all the penal advantages of the old treadmill system may be regained, with better economic results than with the factory system, by attaching dynamo-electric machines to the cranks, and storing electrically the energy developed. In this way the prisons and penitentiaries would be converted into sources of brute energy to be sold for outside use in running machinery, electric lighting systems and the like. Blackwell's Island, for instance, now maintained at great cost as a harbor of refuge for drunkards and other petty offenders, sent up for ten days or a month at a time, would become a valuable source of convertible power to be sold for industrial uses. The "rounders" might not like the place so well, but the honest public would like it better. Ten days in the treadmill would sober off a "beat" as effectually as ten days of idleness, and in the interval he might help to store up many "foot-tons" of available energy. With prisoners under long sentences the plan might not be so profitable to the State, but it would obviate what is becoming the source of much social and political controversy. Skill wisely directed is worth more than mere energy, and a good boot or hat may sell for more than the energy the maker could store up in the same time in a Plante cell by turning a crank. But the storage cell would never give offense to the citizen who was trying to support a family by the voluntary production of boots or hats, while the indirect economy that would flow from a simplification of prison work, with the prompter utilization of the strength of criminals of all grades and conditions, might more than make up for the loss through the less profitable employment of a few skilled hands.

Oil and Mineral Deposits at Mendoza, South America.

A correspondent residing at Mendoza, the capital of the province of the same name of the Argentine Confederation, calls attention to the promising deposits of minerals and mineral oil in that little known region. Mendoza lies close to the Chilian frontier at the foot of the Andes, in latitude 33° south, longitude 69° west. It is soon to be brought into closer communication with the coast and rest of the world by the nearly completed Andean Railway. The mineral deposits close to the city are described as immensely valuable, yet almost entirely neglected. The opening up of steam communication will make the region, our correspondent thinks, an exceedingly promising one for investment and enterprise.

The petroleum deposits are found at the foot of the first spurs of the Andes, on an open plain, about ten leagues southwest from Mendoza, at a place called La Sierra de Cacheuta. Some of the oil collected on the surface of the ground showed on analysis:

Volatile combustible matter	91·66
Fixed carbon	7·24
Ash	1·10

As all the kerosene used in the republic is imported from the United States, it is believed that a refinery at Mendoza would find it easy to command the large home market, and be able also to export largely to the adjoining republics of Chili, Peru, Bolivia, etc., and to the Brazilian Empire. The price of kerosene at Mendoza is $5 a can.

In the immediate vicinity of the oil springs, precious metals are found in considerable quantities, and a large amount of silver is extracted in a desultory sort of way from a mine close at hand.

The climate of the region is temperate and salubrious, and allows the production in perfection of all European grains and fruits.

Lubricator Litigation.

In a paragraph in our number for July 22 last, it was inadvertently stated that in the suit of the Detroit Lubricator Company against a concern styled the American Lubricator Company, the verdict was in favor of the latter. It should have stated just the contrary. The verdict was in favor of the Detroit Lubricating Company, fully confirming and sustaining their rights. The suit was brought in the United States Court, Eastern District of Michigan, Justice Mathews presiding. The patent of the Detroit Lubricator Company, sustained, as above stated, by the Court, was granted May 22, 1877, number 191,171. The invention has proved to be very valuable in the economy of the steam-engine, and is being very extensively adopted. Persistent attempts to infringe appear to have been made by the concern styled the American Lubricator Company, who carried the folly so far that they continued their infringements after a verdict and an injunction was obtained against them; the final result being that the principal members of the concern were brought up before Judge Brown, of the U. S. Court, in February last, adjudged guilty of contempt, and fined, besides having to pay costs.

A Ride through the Thames Tunnel in a Phosphorescent Railway Carriage.

At the present time a railway carriage painted inside with the Balmain phosphorescent paint, is included in the train which leaves Liverpool Street station for Rotherhithe, *via* the Thames Tunnel, at 11:8 A.M. Although only one-half of the available space of the carriage is painted, the phosphorescent light is quite sufficient to enable the passengers to distinguish small objects when passing through the tunnel; and, moreover, the light is powerful enough to enable a person to read the indication of an ordinary watch. It is probable that the railway companies will be enabled to effect a considerable saving in gas and oil by using the phosphorescent paint.

Recovery from Rabies.

On more than one ground the possibility of the recovery of dogs from attacks of rabies is of great importance. The demonstration that this terrible disease is not invariably fatal, even in the animals most prone to it, may at least be welcomed as affording a ray of hope for therapeutics, while the fact of the recovery of affected animals may afford an explanation of many mysterious outbreaks of the disease. M. Decroix lately communicated to the Académie de Médecine nine cases which he had collected of well-authenticated recovery from rabies. (1) M. Ménecier inoculated two dogs and a rabbit with the saliva of a rabid dog; all three died from rabies, but the dog from which the saliva was obtained recovered. (2) Decroix inoculated a dog with the saliva of one suffering from rabies; the latter died, the former became affected with characteristic rabies and recovered. (3) Some saliva was obtained from a man some hours before he died from hydrophobia, and with it a dog was inoculated; the animal presented well-marked symptoms, but recovered. (4) Reg of Lyons recorded the recovery of a dog with furious rabies, due to a bite from another rabid animal. (5) A military veterinary surgeon, Laquerrière, has recorded the case of a dog affected in consequence of a bite from an animal unquestionably rabid. The destruction of the dog was ordered, but the owner refused consent, and the dog recovered without treatment. The four remaining cases were of recovery from rabies, in man in three cases, and in the horse in the last. Decroix points out that in furious rabies the attacks increase in frequency and intensity during two or three days, then attain their maximum, and disappear in two or three days more, whereas death does not occur until the fifth or sixth day. The eminent authorities who have never met with an instance of recovery are scarcely justified in denying the occurrence of such cases described by those practitioners who have seen them. The Rabies Committee, of which M. Decroix was president, has made, since 1874, a host of experiments with various substances of reputed value in rabies, three of them with pilocarpine, and every supposed remedy which they employed appeared actually to hasten death by the violent paroxysms which it caused. The conclusions of M. Decroix are that it is experimentally demonstrated that rabies may terminate in spontaneous recovery. Up to the present day no agent has made good its claim as a remedy for rabies. The cases of recovery attributed to this or that agent may be, with equal justice, ascribed to the spontaneous termination of the disease. The dogs which recovered in the experiments carried on by the committee were left at rest, and, since the administration of medicines usually provokes convulsive seizures, it seems desirable, according to our present knowledge, to leave persons affected with the hydrophobia in the most perfect possible calm, trying experiments only upon animals. In absolute quietude and obscurity the paroxysms are far less terrible than when medicines are administered, and M. Decroix asserts that if these conditions could be secured, he would far rather suffer from hydrophobia than from many other disease. It may, however, be observed that we are scarcely justified in drawing, from the superior results of therapeutic inactivity in dogs, the same lesson in the case of the disease in man. The administration of a drug to the human sufferer by the skin or rectum, or sometimes even by the mouth, may be effected with far less disturbance than in the case of the dog. Without doubt, however, he is correct in insisting on the absolute importance of perfect tranquillity, and of the avoidance of everything which may in any degree help to excite the paroxysms. It may be doubted also whether dogs are the best subjects for therapeutic experiments, since it is probable that the conditions met with in the human subject obtain more closely in the herbivora than in the carnivora. It is very desirable, in the case of any recovery from rabies, that it should be ascertained at what date the saliva ceases to be infectious, and whether the disease can be communicated after the animal has to all appearance recovered. This is a not improbable explanation of the occasional alleged occurrence of the disease from the bite of healthy animals.—*Lancet.*

Is the Gila Monster Venomous?

In the SCIENTIFIC AMERICAN of December 20, 1879, there was figured for the first time the large lizard known in Arizona as the gila monster, and to science as *Heloderma suspectum* (Cope), or *horridum*. Among the Mexicans this reptile is supposed to be venomous, and marvelous stories are told of its pestilent breath. Our naturalists, however, declare the animal to be harmless. From the account of the specimen that has recently reached London (see page 135) it would appear that the naturalists of the Zoological Gardens there are satisfied that the reptile has a mouthful of teeth all supplied with venom. The evidence given in support of that view, however, is not at all convincing. It is to be hoped that the matter will now be more fully investigated. It is barely possible that our American naturalists have prejudged the case.

EFFECTS OF LIGHTNING.—During a recent heavy thunderstorm in the Shetland Islands, which lasted several hours, a hill three miles from Lerwick was struck by lightning, and large masses of rocks and *débris*, estimated to weigh 400 tons, were thrown down on to the public road immediately below and stopped the traffic. At the spot where the lightning struck there is a deep rut extending down the face of the hill.