HISTORICAL SKETCH OF MINING LAW.

BY ROSSITER W. RAYMOND.

The question of the nature of private ownership in mines, and of the relation of the State to both public and private lands containing valuable mineral deposits, may be discussed either upon general grounds of public policy and political theory or by the historical method of studying its development in society and through custom and law. In other words, we may inquire what the rights and the duties of the state ought to be, according to certain assumed principles, or we may inquire what they have come to be and are likely to become, through the actual experience of nations, and of our own nation in particular. And, having settled this point, we may take up the further inquiry, What part of these governmental powers and duties belongs to the national authority, and what must be left to the several States?

A priori, it may be said that the Government acquires jurisdiction of a peculiar character over the mining industry by reason of the unique character of the industry itself, as constantly tending towards a permanent exhaustion of the natural resources of the land. The deterioration of soils through ignorant or reckless agriculture may be cured in time by wiser methods; forests wantonly destroyed may be replanted; fishing grounds left to themselves or restocked artificially may recover their prolific abundance of supply, but coal, iron, copper, lead, petroleum, gold, and silver will not come again within the history of the human race into the places from which they have been extracted. A waste of them is a waste forever.

It is true that neither the world in general nor any country so large and so richly endowed by nature as ours is in immediate danger of the actual exhaustion of its mineral resources. The time when all the coal will have been burned up or all the iron will have been mined is still too remote to have any special bearing upon political economy. But history is full of examples of local and (so to say) commercial, though not actual, exhaustion of such resources. Abandoned mining districts, even on the virgin soil of the United States, are a familiar feature, while in older countries these landmarks of former industries and civilizations are numerous enough. To take a striking instance at home, we may reflect upon the extraordinary development of the petroleum production of the United States and the surprising spectacle which it presents to-day of an immense overproduction and a correspondingly depressed market, coupled with the approaching certainty
of a complete exhaustion of the territory known to be oil-bearing. It
is notorious that this industry, left to itself without governmental in-
terference, has been conducted with such recklessness that even the
records of experience gained in it have been lost for the most part, and
the sources of supply have been in many cases needlessly impaired,
while the supply itself has been wasted. Considering the national im-
portance of this article, both for domestic comfort and for foreign trade,
we are tempted to believe that a governmental regulation of the pe-
troleum business would have been justifiable and beneficial.

But reflection may convince us that it is, on the whole, wise to leave
industry untrammeled, even at the risk of occasional loss of public
wealth, which a strict supervision might have saved. At all events, a
democratic Government is not well adapted to assume the paternal atti-
dude. In the long run, it is not likely to know more about the needs of
the country, or of any individual industry in it, than the citizens en-
gaged in that industry. As Herbert Spencer has pointed out, it is con-
spicuously unfitted to do those things which, in his opinion, Govern-
ment ought not to try to do; and its well-intentioned endeavors to
control the acts of the citizens are likely to be blunders in policy, while
they are almost certain to become encroachments upon liberty. We
leave, therefore, even the waste of timber, anthracite, and petroleum to
the operation of self-interest, and exert the authority of the state only
so far as may be necessary to preserve the public peace and safety, and
to secure the mutual respect, among individuals, of individual rights,
putting the mining industry, in this respect, on the same basis as any
other. We have, perhaps, gone too far in this direction. Better so
than to have gone too far in the other. The following passage from the
address of Hon. Abram S. Hewitt, president of the American Institute
of Mining Engineers, in 1876, on "A Century of Mining and Metallurgy
in the United States" (Transactions of the American Institute of Min-
ing Engineers, Vol. V., page 183), states the matter in a nutshell:

"Turning to the State and Territorial legislatures, we find that they
have, in some cases, provided for inspecting mines in the interest of the
safety of workmen. Perhaps the best law of this kind is that of Penn-
sylvania, in which State the peculiar perils of coal mining have forced
the legislature to take measures of protection. But we find nowhere
such a technical control of mining as is exhibited in many European
states, where the Government requires of the miner that he shall not
waste w unnotly or ignorantly the resources which, once exhausted, will
never grow again. Our people waste as much as they like and no one
interferes. Admitting that this is an evil, it still remains a matter of
doubt how far, under the circumstances of our particular case, the super-
vision of authority could remedy it. For my own part, though inclined
to restrict as far as possible the functions of Government, I am not dis-
posed to say that for so great an end as the conservation of the mineral
wealth of the country it may not properly enforce some measures of
economy with as good right as it may forbid the reckless waste of timber or the slaughter of game out of season. But in our nation, at least, governmental interference is the last resort, and a poor substitute for other cause; which, in the atmosphere of freedom and intelligence, ought to be effective. We are, perhaps, in our material career as a nation, like the young man who has ‘sown his wild oats,’ and now, by mature reflection and the lessons of experience, is likely to be better restrained than by the hand of parental authority.”

The other method of inquiry above referred to, namely, the historical, is worthy of greater attention than it has received with relation to this subject among American authors. The present writer has given in the article “Mining,” in Lalor’s “Cyclopedia of Political Science,” an outline of the history of mining jurisprudence, which may be consulted by those who are interested. For readers of German, the files of the Zeitschrift für Bergrecht, a quarterly magazine edited and published at Bonn, Germany, by Berghauptmann Brassert, afford a treasury of information and acute criticism. Acknowledgment is here made particularly to a paper on the taxation of mines by Dr. Ad. Arndt, of Halle-an-der-Saale, published in that magazine, Vol. XXIII. (1882), page 18, from which many facts have been taken. Another authority of which abundant use has been made is the dissertation of Dr. J. F. Reitemeier (Göttingen, 1785), entitled “Geschichte des Bergbaues und Hüttenwesens bei den alten Völkern.”

The purpose of this paper is to present such an outline of the history of mining law, and its present form in other nations, as may facilitate an intelligent study of the questions presented by the relations of the mining industry to the Federal, State, and Territorial governments of this country.

ANCIENT MINING TENURES.

Prehistoric mining.—So far as can be inferred from the traces which remain (such as the extensive gold and copper workings of a nomadic pre-Tartar race in Siberia, the ancient copper mines of Lake Superior, the mica mines of North Carolina, the turquoise mine of New Mexico, etc.), the earliest mining was apparently carried on by individuals and without permanent ownership of land. But the nature of the industry, even more than that of agriculture, tends to fixity of tenure; and this is the secret, in fact, of the intimate relation between mining and civilization. Civilization involves order and law—that is, the protection of property and the enforcement of contracts—and thus permits the investment, as distinguished from the hoarding, of wealth. Mining and the manufactures dependent upon it both require and create civilization, because, to a greater extent than nomadic pursuits, or even agriculture, they require fixed capital, operate for future profit, and are unable to run away when threatened.

Phoenician and Egyptian mining.—It is, therefore, not surprising that under those early civilizations in which despots controlled both wealth
and labor, mines should appear as royal property. Originally acquired, with all other forms of property, by conquest, they were retained by the conquerors. Sometimes enterprising adventurers, like the Phoenicians, traded throughout foreign countries, buying not only the metals but also mining rights. In other cases sovereigns operated their own mines by the labor of purchased slaves, convicts, and prisoners of war. The descriptions of the horrors of the Egyptian mines, furnished by classic writers, are often quoted.

Greek mining.—The petty sovereigns of the Grecian islands were mainly the owners of their mines. There is a record of one instance in which a mine royalty was paid amounting to one-tenth the gross product, namely, by the gold and silver mines of Siphnos to the Delphic Apollo. The drowning of the mines by the rising of the sea, at a later day, was attributed to the anger of the deity at the discontinuance of this religious tribute.

The republic of Athens owned extensive mines, which were leased in "claims" of size fixed by law. The lessee or "locator" paid to the state a certain fee for his privilege, and also one twenty-fourth of the gross product. At the beginning of the Persian war the annual income from this source was about $30,000, which was distributed among the citizens. There were also extensive mining operations in the provinces of the Macedonian Philip, which fell, with the rest, into the hands of the Romans.

Roman mining.—The Romans found the art of mining actively practiced by many of the European tribes which they overcame. The iron of Elba, the gold of Lombardy, the gold, silver, copper, and iron of Gaul, and the gold, silver, lead, iron, and tin of Britain, were known to them. Above all, the mines of Spain, Sicily, and Sardinia, which had made Carthage strong to wage war upon Rome, were the rich booty of the first two Punic wars. After these, successive conquests secured the mines of Asia Minor, Greece, Macedon, Asia, Egypt, Gaul, and Britain. There were thus two classes of mines under Roman law, those owned in Italy by private citizens (which seem to have been held and taxed like other property), and those in the provinces, which belonged by right of conquest to the state.

The system of farming the revenues pursued by the Romans extended to the provincial mines. According to a recently discovered fragment of mining regulations, the procurator metallorum leased the mines to private persons or companies, and farmed out the collection of the royalties or rents to a conductors. The system proved ruinous as well as cruel. The lessees employed vast numbers of slaves, and robbed the mines without regard to anything else than the maximum profit to be secured during the term of their leases. The result was an immense temporary productiveness, followed by a corresponding exhaustion and reaction. The emperors effected many reforms. They caused a stricter inspection of the operations of mining to be maintained;
they discontinued in large part the employment of slaves (except convicts), and in many cases a sort of feudal relation grew up with the inhabitants of the mining districts, who worked under the Government supervision, and paid a certain tribute in money or in kind, retaining for themselves the remainder of the product of their labor. There seems to have been no uniform rule as to the amount of tribute. It was fixed in various ways, according to the circumstances of each case; but the guiding principle appears to have been that the miner’s share should amount merely to wages for his work, and the state or the landowner should have the rest. In special cases, explorations were encouraged by grants of privilege.

**MEDIEVAL MINING LAWS.**

*Barbarian mining.*—The mining industry of the Western Empire was first overwhelmed by the barbarians. The Byzantines held out longer, but at last they too succumbed, and the mines of Asia Minor, Thrace, and Greece fell to the Arabs. There are hints in history of rude and limited mining operations by the Arabs in Spain, the Franks in Gaul, and the Goths in Italy; but the period down to the eleventh century is practically a blank.

*The German mining freedom.*—The codes of the Middle Ages show that all mines were considered the property of the sovereign, independently of the ownership of the land. The right of the sovereign (reckoned among the *regalia*) was, however, in practice a right to grant permits for mining and to receive certain tributes from it, and its exercise was modified by the rise of an entirely new principle—that of the German *Bergbaufreiheit* or “mining freedom”—which was the earliest form of what we call, in the western mining districts of the United States, “the right of the discoverer.” This appears first as a local custom, remarkably prevalent in the German mining districts, according to which every citizen had the right to mine wherever he discovered metalliferous deposits not covered by a previous claim. It has been suggested that this immemorial custom sprang from the *Markgenossenschaft*, an early form of communism, in which the land of a *Mark* was held in common, and redistributed annually. Such a redistribution not being fairly practicable for mining lands, it might come to pass that they would be left in the hands of the same occupants, so long as they continued to work with suitable industry, and would revert to the commune when abandoned.

As the titles to land became vested in individuals, the right of the mining discoverer would come into conflict with that of the land owner. It would conflict also with the claim of the sovereign. But since the sovereign principally cared for the revenue, and the miner was willing to pay a fair tribute, a compromise in the latter case was not difficult. By “granting” the *Bergbaufreiheit*, and insisting only upon the tribute, the sovereign saved his dignity and the most valuable part of his
regalia. As for the land owner, he was recognized by neither party. Both the custom of miners and that of kings recognized the existence of a property in minerals separate from the surface ownership. The doctrine, so familiar to us, that the owner of the land owns all beneath it to the center of the earth, and all above it usque ad colunnum, was not only unknown, but its exact opposite was declared by the authorities of that age. Thus the Sachsenspiegel quaintly says: "All treasure lying hidden in the earth deeper than a plow goes, belongs to the power of the king," and the king gave it to the miner.

The German miners, carrying their Bergfreiheit with them, penetrated into the Roman and Slavonic provinces; and the first written code which remains to us, expressing the relation above described, is from one of these mining colonies—the famous agreement made March 24, 1185, between the Bishop of Trent, in the Italian Tyrol, and his German miners, characterized in the quaint Latin of the document as Argentarii, qui solent appelari Silvatorii.(a)

According to this treaty, concluded between Bishop Albrecht and a representative committee of the miners, mining is declared free to all, rich and poor, on the semi-annual payment to the bishop of certain specified fees, in lieu of all taxation. The bishop guarantees protection and also immunity from ordinary legal process, except in cases of personal injury committed by a miner. In other words, questions of mining rights, etc., arising among the miners, are to be decided by themselves, and according to their own rules and customs. They on their part agree to increase their annual tribute if new discoveries shall augment their profits, and also, that, if the bishop shall fall into financial difficulties, they will lend him money.

It happens that this bishopric of Trent and its flourishing community of miners furnished occasion for the commencement of a struggle that lasted for more than a century between the emperors and the territorial lords. The mining freedom established by Bishop Albrecht was undisturbed during his time, but his successor, Conrad, was summoned before an imperial tribunal by the emperor, Frederick I., who laid claim to the Tridentine silver mines on the ground that, according to usage elsewhere (in Lombardy), they should be included among the regalia. The dispute was settled in a way characteristic of the times. The bishop kept the mines (or, more strictly, the right to receive the annual dues), but consented to accept them as the gift of the emperor, who thereupon, in 1189, solemnly granted to his late antagonist the rights in controversy, "that his generous kindness to the church and its representative might be reckoned a service to God." What the emperor gained by this settlement was a precedent strengthening his claims elsewhere. It is noteworthy, however, that the privileges of the miners themselves

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do not seem to have been called in question. Probably if the emperor
had won his cause, the old treaty would have been ratified by him.

The general principle of “mining freedom,” and a body of unwritten
maxims regulating the tribunals of miners, doubtless originated as early
as the ninth or tenth century. The earliest written codes, which bear
date in the thirteenth century, give internal evidence that they are but
records and arrangements of pre-existing rules. The famous Iglau code,
established about 1250 by King Wenzel I. of Bohemia, was the source
and model for many others, and was itself probably derived from the
ancient Bergrecht of Freiberg, which again doubtless grew out of the
customs brought thither in the twelfth century by miners from the
Harz.

German codes.—A brief summary of the Iglau code(a) will suffice to
indicate the general nature of medieval German mining law. This
curious document is in Latin, and bears the seals of Wenzel, king of
Bohemia, and his son, the margrave of Moravia. After a pious and
wordy prelude, it ordains that certain officials shall fix the boundaries
of mining claims, and defines the dimensions of these and the conditions
on which the possessory title of the miner may be acquired and main-
tained. The full size of the surface granted, when unoccupied space
permits, to a single mine is 479 feet along the course of the vein by 196
feet in width. A certain proportion of the claim is set apart for the
king, another for the town, or the original owner of the land. Special
rights of administration and judgment are accorded to the mining courts
of Iglau, and various principles and methods are laid down for the deci-
sion of intricate cases of conflicting claims. The thrifty burghers of
this mining city (Bergstadt) won fame and profit by keeping the provi-
sions of this code a secret, and acting under their guidance as arbitra-
tors in questions of mining jurisprudence referred to them by other
provinces. One of the most frequent causes of dispute was the privilege
conferred upon the party driving a deep adit, which, by draining
the water from the mines of other parties, and by facilitating their ven-
tilation, was held to entitle the owner to a share in their profits. To
secure this reward and other incidental “adit privileges,” the adit must
be a certain distance below any other similar work and must be prose-
cuted under certain conditions.

Apparently gold and silver mines only were at first the subjects of
such legislation. The right to other minerals appears to have gone
with the ownership of the land, or at least to have been claimed by
the land owner.

The quadrirpartite conflict in the empire.—There were thus, in the thir-
teenth century, four parties more or less in conflict over mining rights—
the emperor, the territorial princes, the miners, and the land owners.

(a) Repeated here from the author’s article on “Mining” in Lalo’s “Cyclopedia of
Political Science.” The code itself is given in Count Caspar Sternberg’s “Geschichte
der böhmischen Bergwerke.”
MINING LAW.

This confusion was simplified by the "golden bull" of Charles IV. (1356), which surrendered to the electors the claims of the emperor, and excluded also the land owner, putting all metals, precious or base, together with salines, under one rule, that of the territorial sovereigns. (a) The latter, wisely encouraging the industry of mining, vied with each other in grants of privilege to mining cities, which thus became centers of science and jurisprudence as well as of wealth. The famous seven mining cities of the Harz, and the "ancient and honorable free mining city of Freiberg," in the realm of the Saxon counts of Meissen, are examples.

The number of electoral princes in the empire was very great; and by their grants and assignments the number of "mining lords" (*Bergherrn*), that is, of those who controlled mining rights, was made still greater. Since nearly all of them issued special mining codes, these were correspondingly numerous, and increased the complexity of German mining law. In one point the codes agree, namely, in the assertion of the exclusive mining right of the *Bergherr*. But this right was variously exercised. Sometimes certain minerals were reserved to be mined by the *Bergherr*; sometimes the reservation applied to specified territory; sometimes absolute grants of the mining right for given areas and for specified minerals were made, with or without provision for tribute; sometimes mining was made free, subject to such special grants; that is, exploration for minerals and on territory not thus excepted was thrown open to all, with the promise that discoverers of valuable minerals should receive definite grants of mining ground at a certain rate of tribute, usually one-tenth, sometimes only one-twentieth, of the product.

Apart from the reservations above named, the general type of a German code of the fourteenth, fifteenth, and sixteenth centuries was somewhat as follows: It included free, or nearly free, exploration (buildings not being imperiled, and damages to surface or to agriculture being chargeable to the explorer); the immediate announcement (*Muthung*) of a discovery made; the issue of a preliminary permit; the survey, location, and regular grant of the mining ground, after the deposit had been sufficiently exposed; the obligation to prosecute the work continuously, unless natural causes, such as foul air or excess of water, prevented; the payment of royalty to the *Bergherr*; the division of a mining enterprise into shares (*Kuxe*, usually 128 in number); the furnishing of mine timbers by the crown forester, or by private owners under agreements and regulations supervised by the crown officers, etc. The driving of adits was the privilege of the *Bergherr*, but it was very generally conceded to private parties, with the appertaining advantages and revenues. It was common to give the lord "by ancient usage," one-eighth of the spot in every leased mine. He was, however, liable to assessment.

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(a) The words are: *Universas aurum et argentum sodinas atque mineraz siuan, cupri, ferr, plumbi, et alittera euniasque metalli, ac eiam salis tam inventus quam inventiendi.*
like any other stockholder, and forfeited his stock by non-payment. Mining leases covered a certain area of the surface and a space below the surface, either bounded by vertical planes or by surfaces parallel with the dip of the vein. The first was called a square location (Geviertfeld), and the second an inclined location (Gestreckfeld). The possessor of an inclined location was generally allowed to work about 21 feet (3½ Lachter or fathoms) into the hanging wall (roof) of his vein, and an equal distance into the foot wall (floor), and to extract all ore found within these limits, as well as in the vein proper, which he might follow indefinitely downward (in die eneige Teufe). The simple square location was applied to beds, masses, and even to true veins, when they dipped not more than 15° below the horizontal.

French mining law.—In France the king was able to maintain his claims against the feudal lords. The patent of Charles VI., issued May 30, 1413, declares that to him and not to ceux qui ont juridictions hautes, moyennes et basses, belong all mines everywhere in his kingdom, and the right to collect the mining tithe, and ordains, in the exercise of this sovereignty, that every miner may mine freely anywhere, even under the surface owned by another, provided the said tithe be duly paid—payant à nous notre dixième francheement.

English mining law.—The principle of mining freedom took little root, apparently, in England. Perhaps the sole trace of it in recent times is the custom of "tin bounding" in Cornwall and Devon. The number of Cornish mining terms which betray a German origin indicate that the enterprising German miners of the Middle Ages probably found their way to that region and left their mark upon both institutions and language. But in this case the British crown has left its mark also, though only in the way of a ratification of the miners' custom. King John declared in his patent of October 20, 1201, that all tin mines in the whole of his kingdom belonged to him(a), and graciously authorized all miners to dig for tin wherever they chose. The claim by prerogative to all gold and silver mines as property of the crown is an immemorial one in England, and it was not until the reign of William and Mary that tin, copper, lead, or iron mines could be owned and freely worked by the subject if their ores contained intermixtures of the precious metals. In the celebrated "case of mines," in the reign of Elizabeth, the ground of the royal claim was thus stated from the bench: "The common law, which is founded upon reason, appropriates everything to the persons whom it best suits, as common and trivial things to the common people; things of more worth to persons of a higher and superior class; and things most excellent to persons who exceed all others; and because gold and silver are the most excellent things which the soil contains, the law has appointed them, as in reason it ought, to the person most excellent, and that is the king."

Strictly speaking, the crown has never surrendered its right to mines of

\[ a \] Stannaria sunt nostra dominio.
pure gold or silver or either of these mixed with other metals than tin, copper, lead, or iron. But practically in Great Britain, the mineral right of whatever kind originates in the ownership of the soil, although it may be alienated and separately conveyed by the act of the owner, who must, however, to make such conveyance effective as a basis for mining, expressly grant, not only the minerals, but also the right to enter upon his lands, dig, and carry away the minerals. Usually also the right to occupy the surface with roads, buildings, machinery, waterways, etc., is specified.

The custom of tin bounding is recognized as "ancient" by the charter granted to the stannaries of Cornwall in the third year of King John. It was thus defined in a modern case at law (Rogers vs. Brenton, 10 Q. B., 26): "That any person may enter on the waste land of another in Cornwall, and mark out by four corner boundaries a certain area; a written description of the land so marked with metes and bounds, and the name of the person for whose use the proceeding is taken, is recorded in an immemorial local court, called the stannary court, and proclaimed at three successive courts held at stated intervals; if no objection is successfully made by any other person, the court awards a writ to the bailiff of the court to deliver possession of the said "bounds or tin-work" to the bounder, who thereupon has the exclusive right to search for, dig, and take to his own use all tin and tin ore within the described limits, paying to the land owner a certain customary proportion of the ore raised, under the name of "toll tin." The right descends to executors, and may be preserved for an indefinite time, either by actually working and paying toll, or by annually renewing the four boundary marks on a certain day." The custom in Devonshire, it is said, is a freehold interest descending to the heir and unaccompanied by the obligation to pay any toll to the land owner. It would probably be held void in law, since even the Cornish custom was pronounced by Lord Denman, in the case above cited, to be sustainable only by actually working and paying toll.

MODERN CODES.

Returning now to the development of mining law on the continent of Europe, we find that in the eighteenth century both the claims of the land owner and the complaints of the miner began to make themselves heard. In different states, different minerals were exempted from the tribute imposed on mining, and released to the owners of the land. Coal throughout Germany, and iron ore in some provinces (e.g., Silesia), were among these exemptions. The mining of other substances was embarrassed by many regulations and burdens. Thus in Prussia the officials of the crown fixed the price of the product, determined the dividends or assessments of the private stockholders, appointed mining captains, engaged laborers, etc., and the mines paid extra for this paternal supervision, so that although the nominal tribute was but
one-tenth, the total contribution amounted not infrequently to more than 20 per cent. of the gross product. These exactions and interferences, coupled with the practice on the part of the state of reserving for its own operations the most profitable minerals and the best territory, caused a dissatisfaction on the part of the mining communities which ultimately brought about important changes.

France.—The first effect of modern ideas in this respect was seen in France. The Constituent Assembly (1791) decreed, under the influence of Mirabeau, that the mines and mineral deposits of France were the property of the nation, and authorized the Government to grant temporary "concessions" of them, giving preference to the land owner, to whom was also expressly reserved all that part of every mineral deposit lying within a hundred feet of the surface. But the law of 1810 (Code Napoléon) finally fixed in its present form the French system. It declares that the property in minerals goes with the property in land, but that the Government may separate the two, granting the mineral right to another, even in perpetuity, on the condition of a tribute paid to the land owner. Mines only are subject to these conditions; minières (open workings or diggings) and carrières (quarries) are left to the land owner. Salt works are reckoned as mines. The payments of miners to the state comprise a fixed annual fee of 10 francs for each square kilometer (about 247 acres) of mining ground, a tax (formerly variable, but fixed in 1839 at 5 per cent. of the net profit), and certain contributions (centimes additionnels) for administrative purposes. A law passed July 27, 1880, provides that without the consent of the landowner no prospecting license or mining concession shall be sufficient to authorize digging or the erection of buildings, etc., in walled inclosures, courts, or gardens; or the location of shafts or adits within 50 meters of buildings or their adjacent walled inclosures. Under these restrictions, and after certain formalities (including advertisement), an applicant for license or concession may obtain authority to take possession of the necessary surface for his work. If his occupation lasts but one year, and the land can then be used as before, the land owner receives as damages twice the net annual income of the land. If the occupation is longer than a year, or if it permanently injures the land, the owner can force the miner to purchase the property at twice the value which it had before mining or exploration began. No mining operations are allowed to be conducted in such a way as to endanger the safety of the mine, the workmen, or the public, the maintenance of highways, the stability of dwellings, or the permanence of mineral springs, or springs constituting the water supply of towns, farms, or public institutions.

Belgium, etc.—The principles of the French system have been imitated in other countries. Where the Code Napoléon has survived, this system has usually been retained. It remained in force until 1865 in the Rhine province of Prussia. It is still in force in Belgium, where,
however, the tax on profits is but 2 per cent., instead of 5; and in Luxembourg, where the molybdenite iron-ore mines lying deeper than 35 meters are the subject of “concessions,” and the Government had, down to 1883, granted away 892 hectares (2.47 acres each) out of a total of 2,002 hectares of such mineral lands, in 50-year leases, at 750 francs per annum per hectare granted, or else 37,500 francs per hectare actually worked out.

Greece.—The Greek law of 1861 is imitated from the French, and contains the same distinction as to mines, open workings, and quarries. Mines are granted by the Government. The land owner receives a proportion not exceeding 5 per cent. of the net profit. The state receives annually 30 centimes per hectare of the concession, and a proportion of the net profit, not exceeding 5 per cent.

Italy.—The Sardinian law of 1859 is similar. It distinguishes between mines and open workings. The former are worked under royal concession. The fixed tax is 50 centesimi per hectare of surface (but not to amount in any case to less than 20 lire or francs), and the proportional tax is 5 per cent. of the net profit.

Mexico.—The Spanish ordinance of mines, published in 1785, has been substantially in force until the present year in Mexico, and was the law in the territories which the United States acquired from Mexico by conquest and purchase. It asserts the right of sovereignty over all species of metals, and authorizes concessions, dependent upon continuous working and annual tribute. It is also very full in its directions as to the manner of mining, attempting to correct in this way the tendency to reckless robbery of mines, inevitable under such tenure. The size of claims (invariably “square locations”) is regulated by the dip of the vein, as shown by a shaft 30 feet deep; the length of the claim along the course of the vein being 200 yards (varas) and the width varied from 100 to a maximum of 200 yards, according to the dip, the smallest width being granted to a claim on a vertical vein, and the greatest on a vein departing 45° or more from the vertical. These measures are so calculated that under the most frequent circumstances (the dip varying from 45° to 60° from the horizontal) the vein will pass out of the claim at the vertical depth of 600 feet, at which depth, the ordinance naively remarks, it is commonly much exhausted. It need hardly be said that the introduction of steam engines and the construction of deep adits have long since rendered it possible to mine to the depth of 4,000 feet. The taxation of Mexican mines has always been heavy—especially when the export tax on bullion is included. Spain did for her American provinces what Carthage and Rome had done for Spain; and the spirit of her legislation, the desire to wring as much plunder from the rich mines as possible, lingered in the land after the Spanish rule had been overthrown.

Recent events, however, promise a more liberal policy, calculated to attract and protect foreign capital. By an amendment to the constitution, the control over mining and mining judicature, previously vested in the several States, has been given to the central Government, which
has issued a new code, based upon the Spanish ordinance, but containing important amendments, which bring it into greater harmony with modern conditions and methods. Having received, up to the time of completing this article, merely general accounts at second hand, of this new code, I prefer to make, at the present time, no further comment upon it than this simple mention of its appearance.\(^a\)

Spain.—The modern Spanish law of 1859 declares all inorganic, metallic, combustible, saline, and calcareo phosphatic substances, occurring in such a way as to be obtained by mining, to be the property of the state, and subjects of its concession, without which no one can dispose of them. The so-called Bases para la nueva legislación de minas of December 29, 1858, established three classes, corresponding to the French carrières, mines, and mines. Minerals of the first class (chiefly the earthy minerals and rocks) are left to the land owner. The second class comprises placer deposits, and alluvial deposits of metals, bog-iron ores, and old ore and slag heaps. This class also is left, in part, to the land owner, but may, under certain conditions, be granted by the state to another. The third class comprises ore deposits in general, and mineral combustibles, with asphaltum, petroleum, graphite, salts, and vitriols, sulphur, precious stones, etc. The concessions granted in the second and third classes are subject to the following annual tax: On mines of precious stones and metals (except iron ore) 20 pesetas (franes) per hectare. On all others, 8 pesetas per hectare. This is the rate fixed by the law of December 31, 1881. Previously the tax was half as great, viz., 10 and 4 pesetas for the two grades respectively; but there was an additional tax of 1 per cent. of the gross product, which is now

\(^a\) Since this article was prepared, a digest and discussion of the new Mexican law has been presented to the American Institute of Mining Engineers, in a paper by Mr. R. E. Chisholm, an American mining engineer residing at Saltillo, Coahuila, entitled "The New Mining Code of Mexico," read at the Chattanooga meeting, May, 1885, and to be permanently published in Vol. XIV. of the Transactions of the Institute. By this code coal, rock, clay, placer of iron or tin, salt, and springs of all kinds—fresh, salt, thermal, medicinal, petroleum, or gas—are the exclusive property of the land owner. Other mineral deposits constitute a realty distinct from the soil, to be acquired by denomination and concession, and held under conditions of working prescribed by the law. Exploration, both on private and on public lands, is permitted—in the latter case with special conditions, such as bonds of indemnity to surface owners, etc. Denomination must follow within one month of the expiration of the exploring permit, which is granted usually for one month, and may be extended to two. The "claim" is a "square location," being, on lodes, 200 meters long, and from 100 meters (for a dip of 85° or more) to 300 meters (for a dip of 45° or less) in width. On placer ores of precious metals or stones, the claim is 20 meters square; on flat-lying veins or irregular deposits, 300 meters square, or, if such deposits are of iron ore, 5000 meters square. Mining products are free of all taxes on their circulation within the republic; quicksilver is free of import duty or direct tax, and for fifty years all mines of coal, iron, and quicksilver are exempt from direct taxation of any kind. Other mines will pay (apart from coinage or export duties) not more than one direct tax, which will not exceed 2 per cent. of the gross value of their product. Metallurgical establishments pay taxes like other manufactorys.
abolished. The number of mining concessions in Spain at the end of 1877 was 14,928; the average size, 19 hectares; or, more accurately, 5,782 concessions of the 4-peseta class averaged about 30 hectares each, and 9,136 of the 10-peseta class averaged 12 hectares. The total area granted was 283,728 hectares (about 700,000 acres).

Germany.—Great advances have been made in recent years, in the simplification of the mining codes of Germany. The initiative and the model, in this respect, was furnished by the Prussian law of 1865. This law, with slight modifications, is now in force in twelve German states, representing 90 per cent. of the area and of the mineral products of the empire, viz., Prussia, Bavaria, Württemberg, Alsace-Lorraine, Hesse, Anhalt, and Brunswick. It expresses two tendencies—the one towards a wider recognition of the rights of the land owner, the other towards a withdrawal of the Government from undue interference with mining (either by competition or by control) and a reduction of the burdens of special tribute and taxation. The inclined location is no longer granted, and the miner is confined to the space inclosed by vertical planes drawn through his surface boundaries. The maximum size of a location is in Prussia 500,000 square Lechtor (2,180,000 square meters, equivalent to about 540 acres), except in certain districts where for local reasons the maximum size is only one-twentieth as great. The permission of the land owner is necessary to preliminary explorations, though he may be compelled by the authorities to give it, yet only upon receiving a bond of indemnity. A mining grant is not forfeited by ceasing to work it, unless the authorities, for sufficient reason, insist upon the resumption of work, in which case the grantee has a right of protest and appeal and six months' grace. The numerous fees, royalties, and tithes of former times are done away, and in their place a moderate tax is imposed—in Austria, Saxony, and Bavaria, a tax on net profits; in Prussia, a tax on the value of the product of 1 per cent. for the general treasury of the state and 1 per cent. to cover the expenses of supervision. Iron mines are generally, if not universally, free of royalty to the state. Benefit societies for miners (Kaufmannsverschriebe) are established by law. Bog-iron ore, gold nuggets in the soil (in Prussia), gold placers (in Bavaria), coal (in Saxony and some other states), iron (in Silesia), salt and salines (in Hanover), mineral springs and amber (except in East Prussia and West Prussia, where amber found in the sea or on the beach belongs to the state) are exceptions to the mining law, and belong to the land owner.

Austria.—With regard to the Austrian mining law (comprising the codes in force in Bohemia, Hungary, Bosnia, etc., as well as Austria proper) it is sufficient to remark here, that like the mediaeval German codes, it contains the two principles of Bergregal and Bergfreiheit, and that, like the modern German codes, it shows (though not in all provinces of the empire equally) the tendency to a practical surrender by the state of the Bergregal, and the substitution of a merely regulative
power over mining. Salt mines are a state monopoly; many other mines are state property; coal and iron mines are generally the property of the land owner. The remainder of the mines of the empire are generally the objects of temporary or permanent grants. The revenue of the state from the mines thus granted is made up of license fees for prospecting, rents paid per unit of area granted, and taxes upon gross or net income.

Russia.—The mines of Russia are chiefly on the Asiatic side of the Urals. They have been administered as a source of revenue to the state or the czar in various ways. Grants have been made to various noble families, out of which princes like the Demidoffs have amassed great fortunes. The crown has carried on large operations upon private account; and finally a sort of mining freedom has been introduced to increase the revenue from the public lands. For an elaborate account of these measures and their results, the reader is referred to the chapters contributed by Mr. E. Delmar Morgan, F. R. G. S., the well-known explorer of Central Asia, in Mr. Lock’s book on “Gold,” already cited.

Great Britain.—Modern legislation in regard to mines in Great Britain is confined to the support of a Royal School of Mines, the collection of statistics, the maintenance of inspectors, and the enforcement of certain regulations for the safety of miners and the public, the protection of children, etc. The principal statutes are the Coal Mines Regulation Act, 1872 (35 and 36 Victoria, chap. 76), and the Metalliferous Mines Regulation Acts, 1872 and 1877 (35 and 36 Victoria, chap. 77, and 38 and 39 Victoria, chap. 39). There are other acts relating to explosives, education, the employment of children, and the liability of employers for injury to workmen, which bear incidentally upon mining.

British colonies.—The mining laws of Australia and Canada follow the principles of English law, modified by old grants of the crown and by the fact that in these colonies large areas of unoccupied public land exist, on which the local governments may authorize mining, on such terms as they may choose to make.

In New South Wales, the authority to dig or mine for gold is given to all who apply for it. It costs £10 per year, and entitles its possessor to take up ground upon any gold field to the extent of 60 feet by 60 feet, or from that to 114 feet by 114 feet, according to the nature of proposed operations. For quartz mining the claim unit is 50 feet along the reef (lode) by 100 yards on each side. Sluicing claims extend to 10 acres. The miner’s right includes half an acre for a dwelling and the electoral franchise.

In New Zealand the annual license fee for “miner’s right” is £1, to which is added £1 per acre for ground held on miner’s lease, and some registration fees and a gold export duty of 2s. per ounce, which is indi-
rectly a tax on the miner. The usual maximum claim is 16½ acres. But the government has in special cases, to facilitate expensive operations, granted larger areas (e.g. 50 acres).

In Tasmania the mining regulations are exceedingly liberal. The miner's right costs 10s. per annum. Alluvial claims are for a single miner 25 yards square; for two partners, 50 by 30 yards. Larger areas are granted to discoverers. Lode claims are 200 yards along the lode by a width of 250 yards. For deep workings, 21-year leases can be obtained at 10s. per acre per annum. Dams and machinery sites may occupy 10 acres and a quarter of an acre is allowed for a dwelling.

In Victoria a similar system obtains. At the end of 1880 the area in this colony occupied as "mining claims" under the by-laws of the several district mining boards was 35,126 acres, while 24,430 acres were held under leases from the crown.

Canada.—The mining law of Canada (apart from the police regulation of mining) is found in the act of April 14, 1872, which declares that "no reservation of gold, silver, iron, copper, or other mines or minerals shall be inserted in any patent from the crown granting any portion of the Dominion lands;" that "any person or persons may explore for mines or minerals on any of the Dominion lands, surveyed or unsurveyed, and not then marked or staked out and claimed or occupied, and may, subject to the provisions hereinafter contained, purchase the same;" that the surveyed lands shall be sold in legal subdivisions, and land in unsurveyed territory and beyond the "fertile belt" shall be sold in blocks or "locations" of 80 by 40 chains (320 acres), or 40 by 40 chains (160 acres), or 40 by 20 chains (80 acres); and that the secretary of state may withdraw mineral land from sale, and lease it at a royalty not exceeding 2½ per cent. of the net profits of working it. The act also fixes the price of mining as well as farming lands at $1 per acre; but the secretary of state is authorized in his discretion to put up lands at auction and sell to the highest bidder.

The United States.—The limit of space originally allotted to this review having been exceeded, it is deemed advisable to stop at this point, without entering upon the history of mining rights and legislation in the North American colonies and subsequently in the United States. This department of the subject has been treated by a number of writers and compilers, among whom may be recommended, as giving comprehensive and suggestive views of the past and present condition of our mining law, Mr. Gregory Yale ("Mining Claims and Water Rights," San Francisco, 1867), Mr. Henry N. Copp ("United States Mining Decisions," Washington, 1874, "United States Mineral Lands," Washington, 1882, and "Land Owner," Washington, monthly), and other compilers and editors of departmental and judicial decisions, and of various statutes. The police regulations of the different States as to mining have now been collected in one place. The laws of Pennsylvania and Ohio are probably the most elaborate, the conditions of coal mining in these States
having demanded a degree of attention in the interest of public safety not yet required elsewhere. Of governmental control in the interest of economy, to prevent the waste of mineral resources, there is, as intimated in the beginning of this article, no trace in American legislation—not even in the flagrant case of the reckless robbery of the petroleum resources of Pennsylvania. As the writer has elsewhere shown (a), the idea of the Bergrecht does not exist in American law. The right of the land owner is supreme; and even when the Federal Government has legislated concerning mining titles it has done so for public lands only and in its capacity as their owner, with the power, given to the land owner by the English common law, of separating the estate in minerals from the estate in soil and disposing of either upon any terms which it might dictate.

(a) In the Reports of the Commissioner of Mining Statistics, in communications appended to the Report of the Public Lands Commission, and in various papers in the Transactions of the American Institute of Mining Engineers.