

of protecting them. Except in the case of State-proprietorship, no security is given to those who work the springs. The restrictions imposed and the rights and privileges accorded, made with an eye to public welfare, have certainly their *raison d'être*; but are the legal measures which fix their principles and determine their application in accordance with present necessities?

In France the right to work free mineral sources must be authorised by the State, the aim of this law being to prevent possible danger from the distribution or sale of noxious waters. The privileges accorded to *entrepreneurs* are: The authorised sources are surrounded by a protective perimeter, the radius of which is 1 kilomètre; but springs may be declared of public utility, in which case a protective perimeter of variable extent may be assigned to them. As for springs which are merely "authorised," they are only protected against mining-works of a nature calculated to injure "the conservation of mineral waters." The superintendence of the working of springs in France has been intrusted, at different times, to doctors, to overseers of mineral sources, to Inspectors of mineral waters, and mining engineers have also visited the thermal establishments. In case of any abuse or improper use of the waters, or manner of working calculated to injure their conservation, or if the public health and needs are not properly provided for, the State may order the expropriation of the source and the dependencies necessary to its successful working.

If it is considered what these restrictions, obligations, and privileges become in practice, it will be seen that something more is needful to safeguard the working of mineral sources.

The authorisation of the working of sources, which is chiefly sought for with the idea of getting the public to believe that the waters have been approved by the Academy as medicinal waters with certain properties, is undoubtedly useful; but, by the manner of granting it, it endangers the reputation of waters already established in medical and popular favour. It may be withdrawn, but really never is. Withdrawal of authorisation is an extreme measure never resorted to, and so the law is practically a dead-letter.

The superintendence by Inspectors was recognised as so inefficacious that in 1883 it was done away with. The mining engineers intervene only in extraordinary circumstances, and their ordinary inspection is a mere formality.

The question of the protective perimeter is the only important matter suggested by a study of the legal measures taken to safeguard mineral sources; but it is not satisfactory, as by one law 1 kilomètre of protection is afforded, while by another the extent may be varied according to circumstances, and the proprietors complain that the protection given is not adequate.

The solution of the question lies in—(1) The proper protection of sources; (2) the protection of the names of sources. To every authorised source a certain fixed perimeter should be given, and a further extent varying with the necessity for further protection.

The name of all sources having gained a fixed reputation should be protected against appropriation, for a great deal of mischief is often done by such appropriation, both to the public and to the name of the genuine original water.

The paper concludes by making propositions in accordance with the above-mentioned views.

THE WORKING OF MINES IN BELGIUM CONSIDERED WITH RESPECT TO THE HEALTH AND SAFETY OF THE WORKERS THEREIN EMPLOYED.—By Professor Dr. H. KUBORN.

[Summary of a paper read (in French) at the Congress in Hydrology, &c., at Liège, September, 1898.]

The first part of the paper consists of a statistical exposition of the state of the mining industry in Belgium, and the condition of the miner, his wages, liability to accident, death-rate, and insurance, temporary and other, against mischance and death. The latter part of the article sketches the history, down to the present, of Belgian legislation in regard to mining. The following is a brief summary of this part of the paper:—

For a long time the only attempt to provide by law for the health and well-being of miners was the Imperial decree of 1813 prohibiting owners from allowing children of under ten years to go down into or work in mines. In 1870 the condition of the trucking-galleries, and especially the ventilation of the shafts and tunnels, left much to be desired. But gradually owners were obliged to ameliorate these matters. The slightest accidents were made the subject of inquiry, and, in consequence, provincial regulations relative to ventilation, lighting, and the method of work were imposed. In 1869 the subject of the employment of women and children in underground work was discussed at great length by the Academy of Medicine. The resulting report aroused great indignation amongst the workpeople and those whose pecuniary interests were involved. It was urged that to exclude women from the mining industry would be to throw them into beggary and prostitution. But certain owners, influenced by the results of the inquiry, discontinued the employment of children under twelve, and gradually excluded girls and women from their mines.

The propositions of the Academy were introduced into and passed through the House of Representatives, but they were thrown out in the Senate by one or two votes. The Government, however, in spite of keen opposition on the part of those having vested interests, persisted in their efforts to insure the health and safety of the miners. The scattered laws and regulations on the subject were codified in 1884. Ventilation, air-currents, and the section of galleries were regulated proportionately to the number of workers, the extent of the work, and the amount of noxious gases in the mine. Free currents of air which might be vitiated by contact with gas, so as to endanger the miner, had to be separated from the main channels of traffic in the mine. Where necessary the engineers were to test the sufficiency of the circulating air by means of the anemometer. The walls separating the trolley-tracks from the air-channels were to be as impermeable as possible, and every precaution was to be taken to prevent the accumulation of noxious gases. Doors in the mine were to be opened frequently, and a proper system of doors maintained. Abandoned tunnels were to be made inaccessible to miners. Mines subject to firedamp were to be divided into three classes, according to the prevalence of the evil, and relative precautions