

The plant, in working operation, was very interesting. The *debris* of former types of pots and partitions gave evidence of the assiduity with which the problem had been attacked and followed up. The actual pots in operation worked without the explosions characteristic of other electrolytic sodium processes. The ladling-out of the metal was witnessed, and showed that the workmen had become familiar with the manipulations required. The current kept the electrolyte molten without the assistance of extraneous heating, except in starting. The arrangements for collecting the gases and producing nitric acid worked apparently as well as could be desired. The principal drawback to the process is the large amount of electrical power absorbed in the resistance of the porous partition, an inevitable concomitant of its use, but a disadvantage more than offset by the other features of the process, provided the process is run where power can be obtained cheaply.

Your committee admires the energy and pertinacity with which a very difficult problem has been attacked; the finding of a material which will be substantially unattacked by the fused salts used, and also act as a porous diaphragm, has been accomplished; the details of construction of the porous diaphragm have been well studied out; the idea of protecting its supporting walls by making them secondary anodes is ingenious and of practical advantage.

In view of the above conclusions, we recommend the award of the John Scott Legacy Premium and Medal to J. D. Darling, of Philadelphia, Pa.

Adopted at the stated meeting of the Committee on Science and the Arts, held Wednesday, October 2, 1901.

Attest: WM. H. WAHL, *Secretary*.

THE SAPPHIRES OF MONTANA.

Mr. George F. Kunz, the noted gem expert, in a recent publication, makes some interesting remarks on the occurrence of sapphires in Montana, which was first noticed in 1891, and appeared to be so promising that several companies were formed to mine for them systematically. The sapphire region extends for a distance of six miles along the Missouri River, the central point being Spokane Bar, about twelve miles from Helena; while another region lies about seventy-five miles east of this, centering at Yogo Gulch.

The gems of these two districts exhibit marked differences by which they may readily be distinguished. Mr. Kunz says of them : " Much beautiful material has already been obtained, but little of high value. Those from the Missouri bars have a wide range of color—light blue, blue-green, green and pink—of great delicacy and brilliancy, but not the deep shades of blue and red that are in demand for jewelry. . . . The Judith River region is more promising, the colors ranging from light blue to quite dark blue, including some of the 'cornflower' tint so much prized in the sapphires of Ceylon. Others incline to amethystine and ruby shades. Some of the more peacock-blue, and some . . . show a deeper tint in one direction than in another. Some of the 'cornflower' gems are equal to any of the Ceylonese, which they strongly resemble. W.

USES OF INFUSORIAL EARTH.

Infusorial earth, sometimes known as fossil meal, diatomaceous earth, and by other names, has of late years found numerous applications in the arts. Its principal use is in the manufacture of dynamite, the virtue of its property of absorbing and holding in suspension several times its weight of oily substances, such as nitro-glycerine. It is used also as an ingredient of soaps, the cleaning powers of which it assists principally by its mechanical action. It also affords a source of silica in the manufacture of the so-called soluble glass, or silicates of the alkalis. It is used in the manufacture of extremely light bricks and other compositions for fire-proof linings of magazines and the like, and in similar compositions as a filtering medium for water, and for other uses less important.

The *Chemical Trade Journal* mentions another suggestion in connection with the material, which is interesting : An argillaceous earth named "tfol," which contains free gelatinous silica, is largely used in Northern Africa by the Arabs as a substitute for soap in washing linen. Lahache finds that it has great capabilities of absorbing oil, one part of this substance completely absorbing five parts of heavy tar oil. When the compound is mixed with the water a perfect emulsion is formed, which does not adhere to the sides of the vessel. It is proposed to employ this earth for the purpose of emulsifying heavy tar oil for disinfecting purposes. For this purpose the tfol is first mixed with an equal weight of water, and then intimately incorporated with sufficient heavy tar oil to make a paste. W.

PROGRESS IN TELEGRAPHY.

The enormous strides that have attended the development of telegraphy during the nineteenth century are strikingly illustrated by some statistics recently issued by Sir W. H. Preece, K. C. B., late electrician to the English Post-office. In 1870 the number of words transmitted per minute was only 80 ; in 1890 the number had been increased to 450. In 1870, 9,850,177 messages were dispatched throughout the United Kingdom at a cost of \$3,061,505, while in 1900, 89,576,961 telegrams were sent, bringing in a revenue of \$17,296,765. The total number of government and private cables encircling the globe is at present 1624, covering a total length of 187,353,172 nautical miles.