notions of manufacturers, but devices called into existence by actual requirements. For, though the object of crushing is one—namely, stripping the worthless gangue from the mineral, and, in most cases, the amalgamation of the latter, yet the method is necessarily manifold. One ore differs from another in its lithological, mineralogical, chemical and physical characteristics, and in consequence the most perfect separation and amalgamation demands battery work that may vary from slow crushing to rapid percussion. It is obvious that a friable, honey-combed quartz requires a different blow from a hard, tenaceous rock. It will naturally be said that, when the ore at the mine is known, the stamp details can be suited to it, and no further adjustment is needed. But this does not apply to custom mills; nor does it strictly hold true to private mills. For the ore in any one mine is seldom constant; lodes change as the depth increases, fresh reefs are struck, etc., and the alteration in the mineral makes some change in the battery advisable, if perfect crushing is desirable.

The reply, of course, is that milling is not to be a theoretically but a commercially perfect process; and, if the speed drop, and blows are fairly well adapted to the ore, the acme of perfection is not worth the additional complication to the battery. This is a very reasonable and conclusive answer, so long as the inventor does not bring a satisfactory and practical retort in the form of a simple and adjustable battery. Truly, it is not easy to see how this can be done. For practical reasons it is advisable to retain division of the stamping units, as in the present gravity batteries. But the use of steam, pneumatic and hydraulic cylinders, with other accompanying valves, etc., for every stamp, would convert the battery into a complicated engine. Electricity furnishes apparently the easiest solution of the problem, as its application to the percussive rock drill is well understood, and could doubtless be used in an electric stamping battery, in which stroke, speed and impact would be easily capable of multiple adjustment. But, considering the rough conditions under which most batteries have to work, is the gain worth the complication introduced? Possibly not. Yet there is room for a crusher that shall have wider limitations than either stamps or rolls in the present form.

British Columbia Association of Mining Engineers

MEETS AT NEW DENVER AND DECIDES TO FEDERATE WITH THE CANADIAN MINING INSTITUTE.

A meeting of the British Columbia Association of Mining Engineers was held at New Denver, B.C., on 17th ulto.

A letter was read from Mr. W. J. R. Cowell of the Victoria Metallurgical Works pointing out that the Provincial Government maintained an assayer in competition with private assayers, which he considered unfair to the profession.

It was decided to increase the council to ten and Messrs. J. D. Sword and J. B. Hastings of Rossland were accordingly elected to the board. The secretary (Mr. G. F. Moncton) moved that clause 4 of the Constitution and By-Laws of the Association be amended to read "members shall be professional mining engineers, geologists, metallurgists or chemists or persons practically engaged in mining, metallurgy, or metallurgical engineering." This amendment was carried thereby widening the scope of the Association. The question of federating with the Federated Canadian Mining Institute was next considered and adopted unanimously. There was considerable discussion as to the next place of meeting, Rossland finally being decided upon. It was also decided to hold under the auspices of the Association an important conference of mining engineers and mining men of the province at Vancouver in January.

The following new members were elected:

M. S. Johnson, Slocan City, B.C.
Roy Clark, Rossland
Frank Loring, Kossland
T. C. Cotherill, Revelstoke
Goodwin Ordway, Rossland
J. W. Sword, Rossland
C. W. Callahan, (Galena Mines Ltd.)
Alex. Dick, Rossland
Capt. Morrish, (New Gold Fields of B.C)
C. M. Wilson, Sandon
Dr. W. C. Howard, Vancouver
W. Ralph, Victoria
J. B. Hastings, Rossland
W. J. Tretheway, Kaslo
H. E. Carry, W. W. Gowen, and H. G. Nichols.

The secretary was instructed to ask the Secretary of the Federated Canadian Mining Institute if he would be present at the January meeting.

Since the meeting a number of applications have been sent in for membership. It is expected that after the Rossland meeting there will be at least 120 members. There are now nearly 90.

Breakage of a Winding Rope at the Hansa Mine.

Shaft No. 11, of the Hansa Colliery, Westphalia, is 389 fathoms (712 metres) deep, but the coal is wound from the sixth level at a depth of 363 fathoms (664 metres). The two-decked cages, which carry two tubs on each deck, are provided with safety catches. The winding ropes, of 2 inches (51 millimetres) diameter, and weighing 19 lbs. per yard (9½ kilogrammes per metre) are led over pulleys 16 feet (5 metres) in diameter, made up of cast-iron rims and wrought-iron spokes. The duplex winding engine is fitted with Kraft valve-gear, and provided with a steam brake, and also with one depending on the action of a weight. The ropes, which are wound up on and unwound from a drum 12 feet (3·7 metres) wide, and of 26 feet (8 metres) diameter, are 3 feet 2 inches (97 centimeters) apart in the shaft; and the winding rope is only partially counterweighted by a flat under-rope, weighing 15 lbs. per yard (7½ kilagrammes per metre). The distance between the drum and pulley shafts is 37 yards (34 metres), the height of the latter above the pit bank being 82 feet (25 metres); and the pulleys were directed to the central points of the two drums by skewing their bearings. Owing to these circumstances, and the slight distance between the shaft and the engine, the ropes had a tendency to wind up on the inner side of the drum; and in consequence thereof the edges of the pulleys nearest the shaft were subjected to considerable wear. The greatest load carried by the rope, including cage with accessories, four loaded tubs, and 766 yards (701 metres) of rope, was 14·36 tons.

On 30th June last, at 11.30 a.m., the rope of the rising cage broke suddenly above the pit bank; the upper end rebounded into the engine-room, wound itself round several iron beams, and pulled them out of their seatings in the brickwork, as the engine ran away, breaking the valve-chest. The rope of the descending cage was completely unwound, and broke where it was fastened to the drum, falling with the cage to the bottom of the shaft, although, as was shown by the guides, the safety catches came into action several times, without however engaging sufficiently with the timber.

There can be no doubt as to the cause of the accident, observes the report of the Dortmund Oberbergamt, published in Gluckauf, because the ground was strewn with pieces from the flange of the south drum which had worn very thin. So soon as the rope, in consequence of the pulley flange breaking, had lost its hold in the groove, it must, by falling on to the pulley shaft, have become slack for a moment. Before the few yards of the rising rope could be wound up by the drum, the rising cage must have come to rest, or have even commenced a downward course owing to its *vis viva* being annihilated. In the moment when the rope was again pulled taut a violent jerk must have ensued, as the winding speed at the time was 33 feet (10 metres) per second.

The broken pulley had not been a year in use, and the excessive wear mentioned above must have taken place in this short period. According to all appearances the extra-hard crucible steel wire rope, whose breaking strain was 95 tons per square inch (150 kilogrammes per square millimetre), must have worked in a too narrow groove; and in consequence of the side thrust, owing to the pulleys being slightly canted, and after a certain time, through the inner side of the flange wearing, the rope made for itself the necessary space.

The daily inspections of the winding gear, prescribed by the regulations of the German Government, were duly made, without revealing any unusual wear in the pulley flange; but such wear would be difficult to discover when, as in the present case, the rope groove is very deep, while inspection is rendered more difficult by the fact of the pulleys being covered with lubricating material. At several collieries in this district it is the practice to drill small holes in the flanges, so as to permit of easily measuring their thickness; and the case under notice shows that this practice is to be recommended for general adoption.

Scanning a Prospectus.

Mr. Hartley Withers' article, "How to Scan a Prospectus," in the *Cornhill Magazine* for the current month, is full of hard facts and good advice. He shows very clearly that the application of the joint stock system to industrial enterprise has up to the present chiefly benefitted the company promoter at the expense of society in general, and that "the joint stock failures have been so numerous in proportion to the successes, that many men say in their haste that all new companies are swindles." The majority of the prospectuses which come before the public in connection with new joint stock concerns, are denounced as examples of audacious impudence, and as giving lamentably emphatic evidence of public gullibility. "They," says Mr. Withers, "seldom give one-half of the information which anyone in his sense would require before investing in a new company, and yet it must be inferred that they do not display or conceal their charms in vain. Unless they succeeded in attracting subscriptions why should promoters waste money in covering the pages of the press with advertisements?" How true is all this! Yet investors have the remedy for the existing state of affairs in their own hands. "If," says our author, "the public would only give a little attention to the matter of prospectuses, and decide as to what they ought to state and in what manner, and resolve never to be beguiled by one which did not fulfil all the canons of an irreducible standard, there would be a change for the better at once. But instead of doing so, the public prefer to dub all company promoters thieves, and then to encourage them to be so by its own laziness. It looks at the estimated yield to shareholders without troubling about the basis on which the estimate is founded, and perhaps reads the names ot the directors, and if these are sufficiently ornamental it is enough. Any one who bought a house, or even a pair of shoes, on such terms would be considered a fit subject for medical examination, and yet one would have thought that such a matter as buying an interest in a new company required no less care and consideration." Mr. Withers divides prospectuses into several classes, and analyses each of these in scientific fashion. Of course much of what is said has been said before by other writers, but this notwithstanding the article is exceptionally well written, and we recommend our readers to carefully peruse it. The following extract is to our thinking particularly entertaining: "The mining prospectus is useful sometimes as showing what should be avoided. Most of them contain little but the glorification of the properties which adjoin the mine that is to be acquired by a privileged public. The regularity of the reefs, the consistently high grade of the ore, and the low rate of working expenses in the next-door neighbor, are brought forward as incontestable arguments, that the same satisfactory conditions will be found to prevail on the new company's side of the boundary. Thus crudely stated, the contention is exposed in all its illogical absurdity; but variations of the same weak syllogism in a more insidious form are often found in industrial prospectuses."