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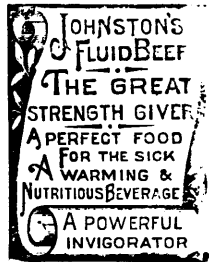
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Electric Pumping in Collieries.—The application of electricity to underground pumping has enabled Mr. F. Brain to give particulars which prove that this is a method of transmitting energy capable of wide and economical application. The electrical pumping plant, which the author describes, has been put in to deal with the main feeder of water in the deep working of the Trafalgar colliery, Forest of Dean. The pump and motor are placed at a distance of 1650 yards from the bottom of the shafts and water has to be forced by this pump to a vertical height of 300 feet to the pit bottom. The pump, a double 9 inch plunger with 10-inch stroke, is driven by the motor running at 650 revolutions per minute to 25 revolutions of the pump. Trials gave for the engine 29.49 indicated horse power to 10.36 actual horse-power of water lifted. The actual proportion of power given off by the steam engine used to lift water is therefore 35 per cent. The first cost of the plant was £644, the pump (£130) and pipes not being included. The cost of pumping 114 gallons per minute with this machinery, through 1300 yards of 7-inch pipes rising 300 feet vertically, is £7 17s. for one week's pumping, twenty-two hours per day, or in other words 0.02d. per horse-power, or 1.8d. per 1,000 gallons of water raised. When not required for pumping, the power available is used to drive a small fan underground.

Premature Explosions of Gunpowder.
—W. H. Williams, writing to the London *Mining Journal* says: "I have had a very extended experience with blasting by gunpowder in mines, and from careful daily observation I found that one cause of premature explosion resulted from charging the bore hole with naked powder, loose grains of the powder rest on their way down on the projecting and irregular sides of the bore, and when the stemming was done a bit of grit in the tamping, striking, or giving off a spark would convey fire to the powder charge by these loose grains of powder, and a premature explosion would be brought about. The other cause was that the naked powder filled up a greater part of the bore hole when first run in than it would occupy when stemmed, consequently the metal stemming bar, being of small diameter than the bore hole it went down in the powder charge, leaving a lining of the explosive some distance up its sides, forming really a hole lined with powder. Stemming then goes on, and a bit of grit or other exciting cause producing a spark, the powder charge is exploded prematurely. I have known charges of powder go down 3 and even 5 inches when rammed or stemmed below the point they stood at when loosely run into the bore hole. To remedy these very dangerous and sometimes fatal occurrences I first had every powder charge placed in a good case (cartridge) and gently but firmly pressed to the bottom of the bore hole. placing on top of these a small woollen wad about three inches long made of pump ring lagging (called engine shaggy). This wadding was a strip about 4 inches long and 3 inches wide tied tightly in the middle and allowing both ends to spread out something like a figure 8 flattened top and bottom. This went down on the cartridge and not only would it brush down all loose grit but spread out all over the unequal sides of the bore hole and set up a perfect non-conducting separation between the material used for stemming or ramming, and the powder in the bottom of the bore hole.

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