brought to the surface a fresh lot of seed which, though having lain buried in the soil for a quarter of a century, has retained its germinating capacity.

JOHN PARKIN.

The Gill, Brayton, Cumberland,
September 9

Rock-disintegration by Salts.

THE reference in NATURE for September 19, p. 50, to Mr. J. T. Jutson's paper dealing with the influence of the crystallisation of soluble salts in promoting the weathering of rocks reminds me of Il Fungo, an isolated mushroom-shaped rock opposite Lacco Almeno, on the north shore of Ischia. Formed of porous volcanic tuff, the sea-water rapidly ascends by capillarity, and, being evaporated, large crystals of salt are produced on the face of the rock. As these natural processes are most active over an area about midway between the sea and the summit, the sides there are being hollowed out very rapidly, large flakes of rock constantly falling.

In 1892 the late Dr. Johnston-Lavis gave me a photograph of, and much valuable information respecting, this rock. C. CARUS-WILSON.

September 20.

GERMAN INDUSTRY AND THE WAR.

I.

A RECENT issue of the Bulletin de la Société d'Encouragement pour l'Industrie Nationale[1]—the French counterpart of our Journal of the Society of Arts—contains two interesting and important articles on the present and future influence of the war on German industry, written by MM. Jaureguy, Froment, and Stephen, which make known a number of facts concerning the means by which Germany has attempted, with more or less success, to evade efforts to isolate her during the war. In spite of the rigour of the blockade to which she has been subjected, there can be little doubt that, thanks to the knowledge, skill, and ingenuity of her chemists and engineers, encouraged and aided financially by the State, she has hitherto managed to provide herself with the means of carrying on the war—not only as regards munitions, in which she has been eminently successful, but also in regard to the alimentation of her people, in which, of course, owing to the complexity of the problem and to natural conditions beyond her control, her success has been less conspicuous. The new industries which have been created, and the great development of those already in existence, would, apparently, enable Germany to prosecute the war almost indefinitely. The determining factors will be the exhaustion of her man-power and the gradual weakening of her *moral*. Both these causes are beginning to tell, and it is abundantly evident from a variety of signs that the Higher Command is realising that the rot has set in. Junkerdom is now fighting only for its existence. The steady and persistent pressure of the Allies will accelerate the advent of the inevitable *débâcle*. The end will come when the remnants of the German armies are driven back to the Rhine.

[1] Bulletin de la Société d'Encouragement pour l'Industrie Nationale, 129, 416. (Paris, 1918.)

In the meantime it is instructive to note what Germany is doing in her efforts to stave off the disaster which assuredly awaits her. It is always wise to learn from your enemies when you can, and Germany has much to teach us concerning the manner in which Science may be made subservient to War and to the conditions which war produces.

We have already dwelt, on former occasions, on the importance of the nitrogen problem in the war, and have given some account, in the light of such information as was available, of the methods by which Germany has attempted to solve it. The communication before us contains a number of statistical statements respecting the development and present position of the several synthetic processes of utilising atmospheric nitrogen which are of interest at this present juncture. It appears that the Birkeland-Eyde process, which in 1913 furnished Germany with some 5000 tons of calcium nitrate from the Norwegian factories still worked to a limited extent in Saxony, where a manufactory was established before the war at Muldenstein, employing lignite as a source of power. Ostwald's process of oxidising ammonia catalytically—or rather the Frank-Caro modification of it—is in operation at Spandau, Höchst, Griesheim, and at works belonging to the Badische Aniline Company. Kayser, at Spandau, employs apparatus capable of oxidising 370 kilos. of ammonia in twenty-four hours with a yield of from 90 to 95 per cent. The Badische Company makes use of plant constructed by the Berlin-Anhaltische Maschinenbau, oxidising about 750 kilos. of ammonia in twenty-four hours. The heat furnished by the reaction suffices to maintain the catalyser at a constant temperature of 700° C. The main catalytic agent is said to be one of the oxides of the iron group containing bismuth or one of its salts. During 1915 some thirty installations of this system were erected, each capable of oxidising more than 12 million kilos. of ammonia annually. In the more recent forms of the apparatus the yield has been increased to 17 million kilos. Before the war the main source of supply of ammonia was from coke-ovens and from the gasworks, which in the aggregate furnished about 500,000 tons of sulphate of ammonia, of which agriculture absorbed 450,000 tons.

The Haber process of combining nitrogen, obtained by the fractional distillation of liquid air, with hydrogen procured by the electrolysis of water, as worked out by Bosch and Mittasch, chemists of the Badische Company, was already in operation before the war, but has now been greatly extended. The factory at Oppau has been much enlarged at the Government expense, and other factories have been erected. The capital of the Badische Company has been increased from 14 to 90 million marks. The firms of Bayer, Meister Lucius, Casella, Weiler-Termeer, Kalle, and the Griesheim-Elektron Company have also augmented their capital, and are work-

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