

short but rapid oscillations, and a uniform current of air is maintained, the rate of circulation being controlled either by regulating the suction, or varying the amount of mercury.

To ensure regularity of action, a bottle of about 250 c.c. capacity is connected between the circulating pump and the suction pump. The diameter of the lower exit of the valve should be about 2 mm.

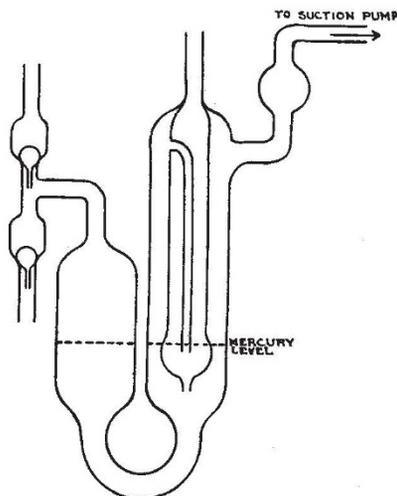


FIG. 1.

This pump has the following advantages: (1) It is one compact unit without any separate parts; (2) it gives a regular current which can be controlled within sufficiently wide limits; (3) once started, it is not liable accidentally to stop working.

FAZAL-UD-DIN.  
SHER SINGH MANGAT.

Chemical Laboratories,  
Punjab Agricultural College,  
Lyallpur.

<sup>1</sup> *New Phytologist*, 29, 285; 1930.

### Andrew Crosse: Electrical Pioneer

It is remarkable that the "Encyclopedia Britannica" makes only the merest mention in an article entitled "Electricity" of a man to whom Henry M. Noad dedicated his book "Lectures on Electricity" (George Knight and Sons, Foster Lane, London, 1844) in the following words:

"To Andrew Crosse, Esq., of Broomfield, near Taunton, Somersetshire, to whose indefatigable industry for a long period of years, electrical science is indebted for so rich an accumulation of valuable facts: the interesting results of whose electro-chemical researches have taught us the value of patient enquiry: and whose liberal, open, and communicative spirit is not less remarkable than his enthusiastic love of science."

Much of Crosse's work is outlined in "Memorials of Andrew Crosse" (Longman, Brown, Green, Longmans and Robert, London, 1857) by his widow Cornelia A. H. Crosse. This book also gives a detailed biography, and in it are many of the poems he wrote. On page 54 is a quotation from Singer's "Elements of Electricity and Electro-chemistry" (published in 1814), said to be the first printing of his name in connexion with science. Singer refers to Crosse as

"a most active and intelligent electrician", and refers to his electrical exploration of the atmosphere with a copper wire originally a mile and a quarter long, later shortened to about 1,800 feet. With this and its associated apparatus, Crosse demonstrated the presence of positively, and of negatively, charged areas in thunder clouds, and suddenly located in a driving fog a huge 'pocket' of electricity which kept up between the separated terminals an "uninterrupted stream of explosions" lasting "for upwards of five hours".

Among the many things done by this comparatively little-known investigator may be mentioned the following: He treated the poor with his static electric machines "for paralysis and rheumatism, and in almost every case the effect was highly beneficial". He made extensive experiments on the effect of electrical currents on crystallisation and on the growth of plants. In 1816 he predicted "that by means of electrical agency we shall be able to communicate our thoughts instantaneously with the uttermost ends of the earth". He patented the extraction of metals from their ores by electricity, and also the electrical purification of water ("Memorials", p. 218, 221). "I have succeeded in dissolving largely, pure silver in distilled water, by electric action on a solid mass of it" (p. 237).

"The American Cyclopaedia" (D. Appleton and Co., New York and London, 1874) in an article on Crosse (vol. 5, p. 515) states: "As he worked alone and never published the results of his discoveries, they were unknown to the scientific world until the meeting of the British Association for the Advancement of Science in Bristol in 1836, when he was induced to explain them publicly. The announcement excited unusual interest, and Mr. Crosse was complimented by eminent scientific men."

Born on June 17, 1784, he died on July 6, 1855, in the room where he was born; and he is buried where his ancestors had been laid for more than two centuries. My attention was directed to Crosse and his work by Mr. W. L. Lemecke, of Franklin, Pa., who kindly loaned me the books on Crosse referred to above.

JEROME ALEXANDER.

50 East 41st Street,  
New York City.

### Coastal Erosion of 'Coral Rock'

IN Lieut.-Col. R. B. Seymour Sewell's interesting article on "The John Murray Expedition to the Arabian Sea"<sup>1</sup>, Fig. 1 pictures an undercut coastline of 'coral rock' at Chumbi Island, and this is said to have been "eroded and undercut by wave action".

In some apparently similar coastlines on islands in the Red Sea<sup>2</sup> I concluded that the undercutting was due to a combination of solution of the rock by sea-water and destruction by boring organisms, and certainly not to wave action. It would be of interest to know whether the detailed evidence from Chumbi Island does, or does not, agree with this.

W. A. MACFADYEN.

Iraq Geological Department,  
Baghdad.  
June 1.

<sup>1</sup> NATURE, 133, 669, May 5, 1934.

<sup>2</sup> Geogr. J., 75, 27-34; 1930.