reaction, whether unequivocal (homodrome) or equivocal (antidrome) requires short strong currents for its manifestation. I have therefore always used induction shocks and condenser discharges, as stated even in the extremely brief Turin abstract quoted by Dr. Tompa.

I shall be surprised if Dr. Tompa does not repeat the experiments, and from the courteous tone of his account of the matter I think it probable that he will withdraw his stricture on my work when he has witnessed for himself the clear and indubitable results of the experiments.

Can Carbon Dioxide be "Vitalised"?

THERE has long been present in my mind an idea to which I have hitherto hardly dared give expression. The query forming the above heading amounts to the raising of the question whether the carbon dioxide which is exhaled as a product of animal or vegetable vital processes differs in any way from the carbon dioxide of "inorganic" origin formed, let us say, from carbon by combustion in oxygen. The answer will probably be in the negative, since, on theoretical (stereochemical) grounds, an asymmetric structure is not possible in the case of this molecule. Nevertheless, it might be worth while to cross-examine nature on this point. It is, in fact, possible that the experiment may have been already tried with negative results, and that is why I venture into print, since I have been unable to find any record. Two ways occur to me for submitting the question to the test of experiment. Calling the carbon dioxide from the two sources "inorganic" and "organic" respectively for the sake of brevity, the "organic" gas might be obtained either from the brewer's vat or from a carbonate formed from the carbon dioxide of animal respiration. The rate of absorption of this gas might be carefully compared with the rate of absorption of a specimen of "inorganic" gas by a growing plant. This is a method which appeals to vegetable physiologists. The other method, which is more purely chemical, depends upon our being able to obtain some optically active compound sufficiently basic to absorb carbon dioxide. I cannot call to mind any such compound at the present moment, and from where I am writing I have no access to the usual sources of information. Given, however, an optically active base capable of forming a carbonate, would the gases from the two sources be absorbed at equal rates? Perhaps some of your readers may be able to dispose of these queries offhand. R. MELDOLA.

Easton Park Cottage, Dunmow, September 13.

Effect of a Lightning Flash.

DURING the storm on Wednesday, September 10, a house opposite my rooms in Fulham was struck by lightning at 4.40 p.m. Curiously enough, at the moment of the occurrence I was looking at the exact spot, and it may be of interest to record what occurred. A stack of brickwork about ten feet high capped with two red-pot chimneys about three feet high was struck, and a hole was made in the slates of the roof on the south side of the stack. One chimney was shattered. The flash was extremely brilliant and left a perfectly straight line of light on the retina; the length of the flash appeared to be twenty feet, but its upper part was lost in the diffused daylight. The flash was of several seconds' duration and was followed by a thin column of smoke; both these facts are due in my opinion to the fusion of the soot in the chimney. The flash itself was a mere line, otherwise the appearance of the whole strongly reminded me of a cordite discharge from a big gun. There was a loud report, and the circumstances left little doubt in my mind that the electrical discharge was upwards in direction.

C. DAVIES SHERBORN.

Bipedal Locomotion of a Ceylonese Lizard.

I HAVE frequently observed with interest the erect attitude assumed by the small Agamid lizard *Otocryptis bivittata*, Wiegm., when running rapidly, and have long suspected that the short front legs were not used at such times. But the rapidity with which the animal runs, and the nature of the ground which it usually frequents, have prevented very close observation. I have, however, recently fully satisfied myself that its action is truly bipedal. The lizard happens to be common in the Botanic Gardens here, and on several occasions one of them has crossed a smooth sanded road immediately in front of me. I have thus been able to see clearly that the anterior limbs are carried quite free from the ground, progress being effected solely by the long hind limbs.

It seems possible that the closely allied and similarly built lizard *Sitana ponticeriana*, Cuv., may have the same habit. Does the Indian species of Otocryptis (*O. beddomii*) progress in the same fashion?

At present the habit has been recorded only of one or more Australian lizards, notably the "frilled lizard" (*Chlamydosaurus kingi*), which has been very cleverly photographed in the erect attitude by Mr. Saville Kent. E. ERNEST GREEN.

Peradeniya, Ceylon, August.

A Series Related to Bernoulli's Numbers.

THE following seems to be a useful and interesting series:-

$$\frac{r}{r+1}=\frac{D_1}{r+1}+\frac{D_2}{\lfloor 2}+\frac{rD_3}{\lfloor 3}+\frac{r(r-1)D_4}{\lfloor 4}$$
$$+\ \ldots\ldots\ldots\ldots$$
$$+\frac{r(r-1)\ \ldots\ (r-p+3)D_p}{\lfloor p}+\ \ldots$$
$$+\frac{r(r-1)D_{r-2}}{\lfloor 4}+\frac{rD_{r-1}}{\lfloor 3}+\frac{D_r}{\lfloor 2},$$

where

$$D_r=1;$$
$$D_{r-1}=\tfrac{1}{2}=3B_1;$$
$$D_{r-3}=-\tfrac{1}{3}=5B_2;$$
$$D_{r-5}=\tfrac{1}{6}=7B_3;\ \&c.,$$

and generally for all odd values of $p>1$,

$$D_{r-p}=-\left\{(-1)^{\frac{p+1}{2}}\right\}(p+2)B_{\frac{p+1}{2}},$$

B_1, B_2, . . . being the numbers of Bernoulli.

Also

$$D_{r-2}=D_{r-4}=D_{r-6}=\ \ldots\ =0.$$

I have been trying since last year, without success, to ascertain whether this is a known series previously published. If it is, perhaps some of your readers will be good enough to supply a reference. J. R. SUTTON.

Kenilworth, Kimberley, August 7.

FREDERICK AUGUSTUS ABEL.

THE death of Sir Frederick Abel on Saturday, September 6, at the age of seventy-five, removes a conspicuous figure from the world of science and technology and brings to a close a long and useful public career. For some years he had been in failing health, but his sudden death, which came painlessly from cardiac failure following one of those attacks of shivering and rigor to which he had long been subject, was quite unexpected.

Frederick Augustus Abel was born in 1827, being the son of Mr. J. L. Abel, of Woolwich. The family, which appears to have been of Swedish origin, had already produced men notable in science, music and painting. Abel has given in the Hofmann memorial lecture, which he delivered to the Chemical Society in 1893, an amusing account of his unsuccessful attempts in the early 'forties to learn chemistry at the Polytechnic Institution of those days; and these recollections perhaps impelled him in the efforts he subsequently made to improve the quality of technical education in this country. In 1845, he entered the Royal College of Chemistry as one of Hofmann's first pupils, and was soon promoted to be an assistant, which he remained until 1851, when he was appointed professor of chemistry at the Royal Military Academy at Woolwich, succeeding Faraday in this position. In 1854, he became chemist to the War Office, a post which he held until 1888, when he retired under the regulations of the Civil Service. It was during this period of thirty-four years that he made his