which the pendulum frame is tilted, the numbers contained in column 5.

Unfortunately, between August 30 and September 4, the record is incomplete, some fifty hours having been lost by the photographic paper repeatedly running so much to one side as to stop the clock. This difficulty, it is hoped, has now been overcome.

THOMAS HEATH.

Royal Observatory, Edinburgh, October 26.

Whirlwind on "Rydal Water."

SOME friends and myself were staying at Lowwood Hotel, Windermere, for a few days, and on Friday, October 16, we were walking by "Rydal Water," on the opposite side from the road, when we noticed a very curious and most unusual effect on the water, caused by a sudden very heavy squall of wind, which seemed to come from two directions at one time, creating a "whirlwind," and raising the water and spray on the lake fully 100 feet high or more. There were eight or ten of these disturbances during the time we stayed (probably about twenty minutes), and I was fortunate enough to have my hand-camera with me and to photograph the largest of them, which came sweeping down the lake towards the island (near the

Whirlwind on "Rydal Water," and smaller one in distance, October 16.

centre), and finally broke on the shore with a boom like a cannon, which threw the debris, &c., at the side into the air quite 40 feet high. I have seen small whirlwinds strike on various lakes, but never anything of the magnitude of this. Thinking the incident might be of interest to you, I send you a photograph to make what use of you like.

Had a small boat or ordinary Windermere yacht been caught in one of these whirlwinds, she must have been swamped.

HENRY J. C. ANDERSON.

Rodono, Great Crosby, near Liverpool, October.

The "G" Section of the British Association.

PERHAPS I may be allowed to make a few remarks concerning the above Section, and the strictures passed on October 22 upon its work, by the writer of the report in your columns. The writer is not singular in his criticisms, for others representing the scientific and practical sides of engineering also speak from time to time in a disparaging way, both of the subjects themselves, which are dealt with under the head of Mechanical Science at these annual gatherings, and of the methods of dealing with them.

I am not in any way concerned in defending the present state of things, but I would point out that no one yet seems to have

suggested any really better general plan of carrying on the business of the Section. The writer in your columns indicates, for instance, that the week should be devoted to discussions such as that upon the fracture of railway rails, or the report on tidal influences. While admitting the value of these two communications, and others of a similar kind, there appear to be serious objections to limiting the work of the Section entirely to such matters, which work, I venture to think, your reporter entirely mistakes in its relation to technical societies. These societies, such as the Institutions of Mechanical Engineers, of Naval Architects, of Electrical Engineers, of Mining Engineers, and the Iron and Steel Institute, specialise their work, and deal often in a different way with quite different subjects. Now the British Association affords a common meeting ground for all interested in these and other branches of applied science, and, indeed, for many who may not have any special knowledge of any branch at all. Hence papers, or even lectures, upon which discussion is admitted and invited, dealing with dock works (which surely it is quibbling to exclude from the range of mechanical science), electric railways, the Tower Bridge, waterworks, not to say of armour and ordnance, of wreck-raising, of motor-carriages, &c.—in all of which an account was given of progress in applied science—seem to form an important part of the work of the Section. Indeed, those authors who took the trouble to prepare illustrations, lantern slides, and models to make their subject clear and interesting, or even, if you like, "popular," deserve the hearty thanks of those present.

It might perhaps be a good thing to make some division in the day, so that the scientific papers and discussions which, to be frank, frequently empty the room, might be taken early before a certain hour, after which papers of a more popular character might be announced for reading and discussion.

As for trade articles, it might be fairly argued that new inventions not coming under that head—even scientific instruments, for example—have generally no value or interest at all; and the Committee of the Section seem always to try and ascertain, before accepting a communication of this sort, if there is sufficient novelty and scientific interest to warrant its acceptance; and in this matter, the "morality" of the Section need not be higher than that of technical societies. Indeed, if advertisement were a ban to acceptance, a good many of the authors themselves at most of the Sections would be hopelessly rejected. The "touting circular" referred to, if indeed it can be called such, was given out by one of the secretaries to only a portion of the meeting, and the remaining copies withheld when his attention was called to the contents. It is scarcely right to intimate that this sort of thing ever occurs except as a rare accident.

H. S. HELE-SHAW.

Walker Engineering Laboratories, University College, Liverpool, October 26.

P.S.—Mr. Johnson, of Derby, is mentioned in mistake for Mr. R. E. Johnston, Engineer of the Joint London and North-Western and Great Western Railways.

Suggested Reef Boring at the Bermuda Islands.

THE issue of NATURE containing the notice of the failure of the Royal Society boring expedition has just reached me, so I hasten to call attention to the great value of the Bermudas as a permanent home for a scientific station, and where borings might be readily conducted at any convenient time. A glance at the map will show that the fauna of the deep sea, of coral reefs, the avifauna of the ocean, and a complex meteorology, may all be studied at one and the same station, and in close proximity to New York and Halifax.

Could the Smithsonian Institution or the Royal Society be induced to take the matter up, it would seem to be an easy matter to organise a station, as the funds required are not large.

The town of St. George's very probably would give a dock with house attached, and possibly the colony a small sum annually. If the Universities of America would take an interest in the matter, the enterprise might be immediately pushed along

I should like to see in *NATURE* the views of some scientific men on this matter, both of Britain and America.

The question is certainly of great importance to scientific inquirers in nearly all branches of scientific endeavour, and it is to be hoped abler minds than mine may lay hold of the enterprise.

W. K. MORRISON.

Devonshire, Bermuda Islands, October 15.

Siemens' Domestic Gas Fire.

DR. POLE's letter on the Siemens' Domestic Fire drew my attention to the inquiry on the subject which Mr. Foster addressed to you in his letter published in *NATURE* of September 17.

I have had one of these fires in my office at the Society of Arts for some years. It was put in under Sir William Siemens' own superintendence, about the time when he described the grate in *NATURE*, so it must have been at the end of 1880 or the beginning of 1881. For a long time I used it with coke in the manner intended by the inventor; but practically I have found it more convenient to use ordinary coal, although it is doubtless less economical.

As Dr. Pole points out, the convenience of having gas ready to be turned on whenever the fire gets low or goes out, is very great; and in cases where a rather wasteful consumption of gas can be prevented, or is not considered of great importance, there can be no doubt but that the fitting of a few gas jets to an ordinary grate is a very great convenience. There is also a good deal of trouble saved in the lighting of the fire, as no paper or wood is required; the grate is simply filled with coal, and the gas turned on and lighted. The fire, I should say, burns up at least as rapidly as when lighted in the ordinary way.

If any of your readers are interested in the question, they are very welcome to see the grate at work whenever they like to call here.

H. T. WOOD.

Society of Arts, John Street, Adelphi, London, W.C.,
November 2.

Diselectrification by Phosphorus.

IN the course of some experiments made a few weeks ago, upon the discharge of electricity by air which had been traversed by X-rays, it occurred to me to try whether similar action would be exerted by air in which phosphorus was being oxidised. I found that a gold-leaf (Dutch metal) electroscope was quickly discharged when a stick of phosphorus was held near it. A small metal crucible was afterwards connected with the electroscope, and a clean slice of phosphorus half an inch in diameter was supported within it at a distance of about half an inch from its sides and bottom. The electroscope was completely discharged in six seconds, the action being more rapid than that of a burning strip of nitrate of lead touch-paper one inch in width.

It might be found convenient to attach a lump of phosphorus instead of a fuse to the nozzle of a water-dropping collector in times of severe frost.

I do not remember to have met with a previous record of this observation. It is of interest in connection with the note on slow oxidation, in *NATURE* of October 29 (p. 631).

SHELFORD BIDWELL.

The Departure of Swallows.

"E. P." mentions in *NATURE* of October 22, a date, somewhere about October 20, I presume, which he considers is an unusual one for swallows. Now, though the bulk of the swallows have left by this time, it is by no means unusual to see them later on in the year. In 1894 I saw swallows in Kent, in the neighbourhood of Tonbridge, on October 20, 21, 25 and 27, and the last one on November 11; it was flitting about a village in a bewildered sort of way, with a crowd of village boys throwing mud and clods of earth at it.

The same year a flock of martins stayed near some buildings from October 28 to November 16; by this time many of them had died of cold.

The latest swallows I have seen this year I saw on October 23, near the same buildings.

J. BROWN.

Tonbridge, Kent.

I BEG to send you the following extracts from my journal respecting the late appearance of the swallows.

1855, December.—It is worthy of record that several swallows

were seen in this locality towards the end of November and during the first week of this month. I have ascertained that they were seen in other counties at the end of November; it must not be considered, therefore, as a merely local or solitary instance of the late appearance of these birds.

1863, October.—A few swallows were seen flying above the church on the 24th, and again on the 31st.

1867, November.—Some swallows were observed flying about during the last week.

These observations were made at Uckfield.

C. LEESON PRINCE.

The Observatory, Crowborough Hill, Sussex, October 26.

A Mechanical Problem.

THE mechanical problem proposed by your correspondent, "Cromerite," in the last issue of *NATURE* (October 29), is practically answered by the so-called "jumping beans" that are now being exhibited and sold in many parts of London. In this case a hard, rigid seed is seen to travel about in a series of small jerks, being slightly lifted from the ground at each movement. Upon dissection the seed is found to be hollow, the original contents having been devoured by a coleopterous larva—a soft fleshy maggot—which now partially occupies the cavity, and by its spasmodic movements causes the strange antics of the natural box in which it is enclosed. The walls of the seed appear to be quite rigid and inelastic.

E. E. GREEN.

November 1.

HERTZ'S MISCELLANEOUS PAPERS.¹

ANYTHING written by Hertz is of interest; and these papers are of interest, not only on this account, but also on account of their suggestiveness. It is always a question as to the desirability of republishing and translating papers published some years ago. Most valuable papers of ten years' standing have produced their effect. Their vitality has been transmitted to and reproduced in subsequent work, but what the scientific world requires is advance rather than revision. The work of pioneers is, however, largely an exception to this rule. They are generally in advance of their times, and much of their work is of value long after it was done. Such an one was Hertz. Most of his papers are suggestive of questions which still require answers, and they all breathe a spirit that, as he says himself of Helmholtz's work, evokes "the same elevation and wonder as in beholding a pure work of art." His papers are not mere enumerations of observations, nor mathematical gymnastics. Each has a definite purpose and an artistic unity. A life-giving idea pervades it. It is no mere dry bones, but an organic whole that lives for a purpose, and does some work for science.

Prof. Lenard has earned much gratitude for his Introduction. It gives a charming picture of Hertz, of his simplicity, his devotion to science, his loving regard for his parents. There is just enough added to the very well-selected letters to give the reader a continuous view of Hertz's work, and enable him to follow its development, and hence feel an interest in it and sympathy with the worker, thus fulfilling the best ideal of the biographer.

One of Hertz's first investigations was as to the kinetic energy of an electric current. The question is still of great interest. It is known that the magnetic induction that accompanies an electric current behaves exactly as if it were a mass moving with inertia. This is the inertia of magnetic induction. Hertz was, however, looking for a different inertia. He looked at the subject from the flow of electricity point of view. He thought that there might be some phenomenon corresponding to an inertia of the electric charges, which upon this theory are supposed to be flowing in opposite directions through a conductor. He supposed that these might have some inertia

¹ "Miscellaneous Papers." By Heinrich Hertz. With an Introduction by Prof. Philipp Lenard. Translated by D. E. Jones and G. A. Schott. Pp. 364. (London and New York: Macmillan and Co., Ltd. 1896.