LETTERS TO THE EDITOR.

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The Advancement of Science.

SOME weeks ago Sir Oliver Lodge directed attention to the congestion of work in Section A of the British Association at Leicester. Last week Dr. Chree remarked upon the comparative neglect on our part of such scientific subjects as terrestrial magnetism and the local variations of gravity, which cannot be pursued adequately within the walls of a laboratory, but depend upon observations "in the field." In the meantime, NATURE has noted Dr. Mill's protest against the scanty opportunity for the discussion of meteorological subjects at Leicester.

My own experience at Leicester supports Dr. Mill's protest. I do not refer to what happened to my own paper. I have no complaint to make against the officers of the section, who, with the rest of us, were victims of an unworkable system. I refer to the proceedings with regard to the papers by Mr. Petavel and his fellow-workers at Manchester on the investigation of the upper air.

Since the meeting, I have learned that the results of the work of the international week at Manchester (the last week in July) were of remarkable interest as showing in an exceptional manner all the characteristic features of the variation of temperature in the atmosphere up to a height of 20 kilometres. The papers were among a large number on the programme for Tuesday, August 6. When I left the section at three o'clock to attend a conference as the delegate of Section A, they had not been reached. When I returned at half-past four I was told that the proceedings of the section for the year had already been concluded, with the usual votes of thanks. Whether the papers had been read in the interval or withdrawn I do not know, nor is it of much consequence. If the only time to be found for a subject of such general interest is after three o'clock on Tuesday afternoon, it is clear that some change is required.

The sectional proceedings on Tuesday opened with a discussion upon new methods of treating observations, an important practical matter for the observational sciences. In the circumstances, it was evidently desirable that the opening paper should be printed *in extenso*; but the recorder pointed out to me, and quite rightly, that such a proposition could not be entertained by the British Association, because the committee of Section A had adjourned for the year on the previous day.

These things do not make for the advancement of science.

I wish, however, to take up the point raised by Dr. Chree, and to emphasise the fact, already too obvious to those who have to do with such things, that subjects like terrestrial magnetism, seismology, atmospheric electricity, and the physics of the globe generally, without any reference to meteorology in particular, suffer very seriously in this country from the congestion of work in Section A.

On the one side, work is done of which the scientific public know little or nothing. Atmospheric electricity is a flourishing study on the Continent; seismology is now the subject of an international organisation with Government support; terrestrial magnetism has called for expenditure on a large scale for an establishment to replace Kew as the normal observatory. It is desirable that the association should know what is going on in such matters.

There are, moreover, a number of departments of Government the work of which has at least its scientific side. Papers of scientific interest could probably be obtained for the asking, from a number of competent workers, by an energetic president or secretary, animated by the meritorious wish to use the meeting of the association to bring the scientific staff of the various departments into touch with the scientific public; but the officials in charge of such work have not the advantage of academic long vacations. The time spent at the British Association must be taken either from short leave or from duty. The matter must, therefore, be treated in a business-like way, which in present circumstances is impossible.

It would be absurd, for example, for a secretary or an organising committee to ask, let us say, the hydrographer of the Navy for a paper on submarine centres of magnetic disturbance, or the Astronomer Royal for a paper on magnetic storms and sun-spots, or any other aspect of the magnetic or meteorological work of the Royal Observatory. There is the paralysing consciousness that the time for reading the papers would have to be looked for in a general scramble between three and half-past four on Tuesday afternoon. What is true with regard to these distinguished public servants is equally true with regard to distinguished foreign workers in science.

There is provision in the constitution of the association for asking competent persons to prepare reports upon recent progress in particular branches of science. The provision is, unfortunately, a dead letter in the subjects mentioned. One reason at least is obvious—there is no time to listen to such reports, however valuable they might be.

It is time that we recognised that the attempt to include in one section with mathematics subjects like laboratory physics, in which workers are many and in constant intercommunication, and subjects like terrestrial magnetism, atmospheric electricity, and other branches of geophysics, in which workers are few and widely scattered, is disastrous for the one class of subjects; and, judging by the way in which a discussion upon so important a subject as the measurement of temperature by radiation was received at Leicester, it is not too successful for the other class.

Some years ago there used to be a subsection for the outdoor subjects, with the not very euphonious title of "Astronomy and Cosmical Physics"—perhaps astronomy and geophysics might be better. It has disappeared—not on account of any want of success while it lasted. It was simply omitted from the South African arrangements. The circumstances which called it into existence have now become more pressing. Laboratory physics has become more radio-active, and the other subjects have extended their operations. The temporary expedient of a special subsection is not now adequate. One special secretary at least is required in the interest of those branches of geophysics which are not covered by astronomy. The occasional treatment of such subjects in a presidential address would be of real advantage to science in this country.

I ask, therefore, the hospitality of the columns of NATURE in order to appeal, in the name of the advancement of science, for the establishment of an independent section of the British Association which shall have sufficient time at its disposal to promote the advancement, not only of meteorology, but also of such subjects as terrestrial magnetism, atmospheric electricity, seismology, and geophysics generally. The briefest consideration of the changes which have taken place since Section A was initiated will show that such an appeal is not unreasonable.

W. N. SHAW.

October 12.

On Correlation and the Methods of Modern Statistics.

I REGRET that the pressure of work associated with the opening of a new session did not permit of my replying to Mr. Hinks last week. His letter (October 3) is so far satisfactory that it gives evidence that one professional astronomer realises the existence of stellar correlation; but Mr. Hinks will have to advance much beyond "scatter diagrams" before he can hope to get much profit out of modern methods. Further, may I suggest that he would be more just to both Miss Gibson and myself if (1) he read her paper carefully, and (2) he did not suppose that, because we approach the subject from a different standpoint from himself, we are of necessity both very ignorant and very foolish?

At the expense of reiteration, I must again refer to one or two facts. There are, in my opinion, three points of much interest in Miss Gibson's memoir:—

(*a*) The correlation of magnitude and parallax is shown to be low; what correlation exists is shown to depend