

various organisations which were in operation before the days of County Councils, but to which these latter have felt it right to hold out a helping hand. To what extent these different bodies are carrying out the objects for which they were instituted, is a fair subject of inquiry.

In most cases evidence is forthcoming of two main lines of activity, which, though independent of each other, are nevertheless related. These are on the one hand the instruction of students, and on the other the prosecution of investigations which should prove of interest not only to students but to all who are engaged in agricultural pursuits. Under the first head there is not much room for novelty. The model which was set up when, more than fifty years ago, a small group of far-seeing men—the Prince Consort amongst them—unfurled upon the Cotswold Hills the banner of agricultural education, is the one that, consciously or unconsciously, has always been followed. In all attempts that have since been made to formulate a fairly comprehensive scheme of agricultural tuition, the germs of every system will be found in the curriculum of the Royal Agricultural College, Cirencester. Nevertheless, this curriculum, far from being stereotyped or crystallised, is and always has been susceptible of such modifications as are called for by the exigencies of the times, as was exemplified by the manner in which the dairying industry, at the time of its renaissance, received prompt and adequate recognition. Its permanence, indeed, is due to its elasticity. Many hundreds, perhaps thousands, of students are now receiving in agriculture a good type of technical instruction which a score of years ago could be obtained nowhere else in this country than at Cirencester.

It is to that section of their work in which institutions fostered by County Councils are brought more immediately under the notice of the general public that criticism may be usefully directed. Most agricultural colleges and schools, and probably the agricultural departments of all university colleges which possess them, are engaged in pursuits which may or may not deserve to be dignified by the name of research. In the majority of cases, however, the work is nothing else than demonstration, and it usually takes the form of differential manuring experiments upon various crops in the field. Periodically, reports are published embodying the results. These are noticed in our columns, but we are not often able to point to any work that rises above the level of demonstration, of the same type as the example fields and example crops that are conducted under Government auspices in France. In most instances the results can approximately be stated beforehand. If it is necessary to demonstrate in a number of localities the effects of nitrogen according as it is applied to a crop in the form of nitrate of soda or of sulphate of ammonia, or to show the different effects of basic slag, bones, and superphosphate of lime as sources of phosphorus—to cite these as simple illustrations—then, no doubt, these many-duplicated field experiments serve their purpose. Nevertheless, they do not alter the fact that the best experimental farm—the one that is capable of teaching the most useful lessons—is a farmer's own occupation, for in this case the conditions are known to him with, perhaps, a minuteness of detail that cannot be approached in connection with field experiments in which he is hardly likely to take more than a sort of academical interest. What have the County Councils, through the medium of the institutions to whose support they contribute, yet done towards teaching the farmer to read aright the lessons which he may learn all the year round in his own fields, and the capacity to make correct inferences from which would be invaluable to him?

It is noteworthy that, with hardly an exception, the work of these institutions is restricted to crops and cropping. The fascinating problems associated with animal nutrition have mostly failed to attract them. Perhaps

these are considered too difficult, possibly they may be thought too costly. In one or two cases the domain of bacteriology has been invaded, particularly in connection with dairying. A good illustration of the general character of the work undertaken is provided in the current report of the Board of Agriculture on the distribution of grants for agricultural education. In the financial year 1894-95 the Board distributed the sum of £7400 amongst seventeen institutions. It is not very obvious why these institutions and none others were selected, but it is a fact that all, or most of them, are also in receipt of County Council grants. It is stated that, in at least twenty counties of England and Wales, "demonstrations by experimental work in field plots are now undertaken," and *résumés* are given of the work recently done at the institutions which have received grants from the Board.

Altogether it would seem that, whilst the institutions under notice are undoubtedly useful as instruments of agricultural education, their value in other directions might be increased were their labour less diffuse. The boast that a given centre has more fields of demonstration scattered over a larger number of counties, and that its officials have travelled a greater aggregate of miles in the discharge of their duties, than in the case of any other centre, may be gratifying to local pride, but it is not a high object to aim at. There may possibly exist an ambition to make a centre a second Rothamsted, but it must be remembered that it is the "continued effort along a given line," associated with "the limited number of lines undertaken, although the work extends over fifty years," that has secured for Rothamsted its unique reputation. The warning has already gone forth officially to the United States agricultural experiment stations, that concentration of energy upon a few specific objects of investigation is preferable to the diffuse expenditure of force which has hitherto characterised many of the stations. There is no coordinated effort amongst our own institutions; each goes its own way, independent of, and practically ignoring, the others—unless, perchance, there be rivalry. A connecting link, possibly a controlling influence, is needed. Youth is on their side, and they have furnished many proofs that they are not lacking in energy. Quality rather than quantity, however, is the goal at which they should aim in the future conduct of their work.

THE ECLIPSE OF THE SUN.

THE bad news which we published last week regarding the almost general failure of the eclipse observations is tempered by the telegrams which have since been received regarding the weather in Novaya Zemlya and in Siberia.

A telegram from Hammerfest reports success at the former station, though details are yet lacking. As this expedition was organised at the last moment, very little has been said about the instruments to be employed. It may be stated, therefore, that Sir G. Baden-Powell took with him Dr. Stone, of the Radcliffe Observatory, who proposed to make spectroscopic observations, and Mr. Shackleton, one of the computers employed at the Solar Physics Observatory, South Kensington, who observed the eclipse of 1893 in Brazil. Mr. Shackleton was provided by Mr. Norman Lockyer with a powerful prismatic camera with two 3-inch prisms of 60°, and careful testings gave great hopes of its performance.

It was, therefore, to be employed chiefly in investigating the special spectrum of the corona found on the photographs of 1893. As a subsidiary instrument, a telescope of four inches aperture and somewhat long focal length was also arranged to photograph the corona. Both instruments were to be fed with light by a Foucault siderostat.

It is hardly necessary to remark that these instruments are capable of furnishing results of the highest value to solar physicists. We therefore note with satisfaction the still later Reuter telegram from Hammerfest, dated August 17 :

Sir George Baden-Powell's yacht *Otaria* has arrived here all well with the members of the British Eclipse Expedition. The party made excellent and valuable observations of the eclipse in Novaya Zemlya. The corona and spectrum were clearly visible, and very satisfactory photographs were taken.

The following telegrams from Russia inform us that one of the parties from Pulkowa, including the excellent spectroscopist Belopolsky, has also been successful.

St. Petersburg, August 15.

According to a telegram from Tiumen, in Western Siberia, the solar eclipse was very successfully observed at that place, and one particularly good photograph was taken. Some stars even are visible.

August 16.

A despatch from Khabarovka, which is the residence of the Governor-General of the maritime territory in the extreme east, states that the astronomical observations of the eclipse taken in the village of Orlovski, on the river Amur, were thoroughly successful. The weather was fine during the eclipse. The astronomers, MM. Belopolsky, Vitram, and Orbinsky, have returned to Khabarovka.

August 18.

A telegram from Khabarovka gives further details of the astronomical observations of the solar eclipse taken on the Amur. The sky at the time was overcast, but during totality the corona and several stars of the first magnitude were distinctly visible through the telescope. The darkness was not complete. Six photographs were taken illustrating the different phases of the eclipse.

We referred last week to the partial success on the west coast of Norway. Mr. John Dover has communicated a letter to Tuesday's *Times*, from which we make the following extract :—

It was thought that the best view would be obtained from a village, Brevik, about twenty miles south-east of Bodø. Leaving Bodø on Saturday evening by steamboat, we passed through the "Saltstrøm" at low tide, and waited near to watch [the waters rushing into the fiord as the tide rose. We then proceeded to the village of Brevik, where we landed at two o'clock on Sunday morning. A climb of about twenty minutes brought us to a suitable elevation above the fiord of about 250 feet from whence there was an uninterrupted view to the north-east and east for some miles. Only one small cloud was visible, and that in the west; otherwise the sky was quite clear. There was a perfect sunrise at 3.14 on Sunday morning. The partial eclipse began at 4.1 a.m. The total eclipse began at 4.54, and lasted for 92 secs. At Vadsö the totality would have been 105 secs. The partial eclipse ceased at 5.51. At 4° 54' 45", the middle of the eclipse, the sun being completely hidden, the corona around it assumed a distinct form. The corona to north-east was about the length of the sun's diameter and very distinct. On the western edge the corona was about two-thirds the length of the sun's diameter, while to the south-east it was about half a diameter. To the north the corona was very slight indeed, being about one-tenth of a diameter. On the south-western edge of the sun appeared a large red spot which was visible until the totality of the eclipse had quite ceased. A Dutch professor near me observed two small spots on the eastern side, but these escaped my notice. I glanced away from my telescope for a moment to see if any stars were visible, and observed Jupiter and Venus. Mercury and Regulus were also seen by others present. The colour of the moon in front of the sun seemed of a dull grey, while the corona around the sun was of a light cream colour. The sky to north and east appeared of a pale orange colour, while to the west it was of light yellow shade. Two photographers—one from Flensburg, Schleswig, the other an amateur from Oxford—were at work, so that I hope a good photograph of the eclipse may be produced. My great regret was that I did not see any one present with thoroughly good scientific instruments.

We shall publish next week a letter received from Mr.

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Norman Lockyer, containing an account of the preparations he made to observe the eclipse on the Island of Kiö, assisted by the officers and men of H.M.S. *Volage*. Sir Robert Ball contributes to Wednesday's *Times* a long letter on the observing parties and stations at Vadsö and in the neighbourhood, and Dr. Rambaut makes a similar contribution to the *Daily Chronicle* of the same day. We must also mention that the correspondent of the *Daily Telegraph* gives some interesting notes on the characteristics of the shadow.

NOTES.

THE current number of the *Comptes rendus* of the Paris Academy of Sciences contains a statement, by M. Berthelot, with reference to the present condition of the scheme to erect a monument to Lavoisier by international subscription. A Committee to take this matter in hand was formed, in 1894, of members of the Institute of France, and representatives of the French Government, of the Municipal Council of Paris, and of various scientific bodies. A special Committee was nominated to obtain subscriptions, and the result of their appeal has now been made known by the publication of a list of subscribers in a fasciculus issued with the *Comptes rendus*. The amount already received is 47,553 francs (nearly £2000), and subscriptions are still coming in. The Emperor of Russia has authorised the opening of a subscription list in Russia, and has headed the list with a sum of two thousand roubles (£313). The French Minister of Public Instruction will give six thousand francs (£240), and the City of Paris £400. Alsace has contributed 2475 francs (nearly £100) to the fund, Germany about £160, England £130, Austria-Hungary £100, Belgium £24, United States £20, Greece £7, Italy £40, Mexico £4, Netherlands £40, Portugal £24, Roumania £14, Servia £40, Norway and Sweden £80, Switzerland £34. The construction of the monument has been entrusted to M. Barraix.

A STRONG and representative Committee is being formed in connection with the proposal to inaugurate a memorial to commemorate the inception and extension of submarine telegraphy. Amongst many other influential persons who have agreed to act are :—Viscount Peel, Lord Kelvin, Lord Selborne, the Lord Chief Justice, Mr. Joseph Chamberlain, Sir Richard Webster, Lord George Hamilton, Sir Juland Danvers, Sir Samuel Canning, Sir Eyre Shaw, Sir John Robinson, Admiral Sir Henry J. C. D. Hay, Admiral Sir Anthony Hoskins, Mr. Hubert Herkomer, Mr. Herbert de Reuter, Mr. J. C. Lamb, Mr. W. H. Preece, Dr. John Hopkinson (President of the Institution of Electrical Engineers), Dr. Alexander Muirhead, Mr. Alexander Siemens, and Mr. W. S. Silver. An executive will no doubt be formed from the larger Committee, and the *Electrician* makes a suggestion for their consideration. The introduction and extension of telegraphy are almost exactly coincidental with Her Majesty's reign—the magnetic needle telegraph having been patented by Cooke and Wheatstone on June 12, 1837, and the first telegraph line from Paddington to West Drayton being constructed in 1838–9. The suggestion of our contemporary is that the memorial in question should be inaugurated at the time of the celebration of the sixtieth anniversary of the Queen's reign, on or about June 20 next.

THE fourth meeting of the International Congress of Hydrology, Climatology, and Geology will be held at Clermont-Ferrand, Puy de Dôme, from September 28 to October 4.

IT is announced in *Science* that, if certain conditions are fulfilled by the City of Chicago, the Field Columbian Museum is to receive two million dollars as an endowment fund from Marshall Field, the founder of the Institute.