

would so seriously cripple one of its most valuable institutions, and so discourage an activity which produces results not only of the greatest value to science, but to the practical interests of the colony. The affiliated societies themselves contribute, we believe, 1,275*l.* annually to support the work of the Institute, the whole of which is spent in keeping up valuable museums and laboratories, and an interest in science in nine centres of population in New Zealand. Without the annual volume, we fear it is impossible to get members to keep up their subscriptions, and thus the organisation of the Institute, which has stood the test of twelve years, given universal satisfaction at home and abroad, and reflected the greatest credit on the colony, is in danger of breaking up and possibly expiring altogether. This would be little less than a calamity to the colony. Not a penny of the 500*l.* is spent in salaries; the editing, drawing of illustrations, and all else is a mere labour of love. The names of von Haast, Hector, Hutton, and others, are known to men of science all over the world. Dr. Hector especially has acquired a high reputation for his activity, zeal, and the results he has obtained. It is greatly owing to him that New Zealand has done for science far more than any colony of its age. The Institute itself is a model of organisation. The grant of the annual 500*l.* was a wise step worthy of general imitation, and its sudden extinction is a cruel blow to science. We can scarcely believe that New Zealand is capable of persisting in carrying out so shabby and short-sighted a policy, a policy of which any country should be ashamed. We trust that later news will show that there has been some misunderstanding, or that the Government has thought better of it, and continued a grant that could not possibly be better spent.

ALBERT J. MYER

THE young science of meteorology has sustained another heavy loss in the death of General Myer, of the Signal Service of the United States, at Buffalo, New York, on August 24, in the fifty-second year of his age. In 1854 he entered the United States army as an assistant surgeon, was assigned to special duty in the Signal Service in 1858, and in 1860 was made chief signal officer of the army, a position he held till his death.

The distinguished services rendered by General Myer to meteorology may be considered as having been made chiefly during the last ten years. Americans claim for the late Prof. Henry, of the Smithsonian Institution, the honour of having originated, upwards of thirty years ago, the idea of using the telegraph for conveying information regarding coming changes of weather. But it was reserved to General Myer, as respects the United States, to translate the idea into the action of every-day life, in devising, developing, and extending a system of telegrams and reports for the benefit of commerce and agriculture, which as regards the completeness of its organisation, the thoroughness with which it is worked, and its effective success, stands out as a model system of weather telegraphy. Three large weather maps are prepared and issued daily, along with three daily forecasts of the weather, which the telegraph at once sends through all the towns, villages, and hamlets of the States; and no time is lost, on the expiry of each month, in preparing and widely circulating a Weather Review, accompanied with maps showing the storm tracks, the geographical distribution of the atmospheric pressure, temperature and rainfall for the month; together with occasional weather-maps of the highest importance in their bearing on the meteorology of America, Europe, and the rest of the northern hemisphere.

The other great service rendered by General Myer to practical science is the system of international meteorology established by him, one of the important outcomes of which is the series of United States weather-maps

now appearing in NATURE, showing the meteorology of the globe for each month. When the scheme was first proposed to the Meteorological Congress at Vienna, in 1873, it was difficult to regard it in any other light than as an impracticable, if not wholly visionary, proposal; but the feeling quickly changed as General Myer unfolded the details of its practical working, and explained that what he required from his brother meteorologists, in addition to their approval of the scheme, was one daily observation at a selected few of their stations, he being authorised by the American Government to say that they would undertake the expense of collecting and discussing the observations.

As our readers are aware, the scheme in General Myer's hands has been a pre-eminent success; and a body of facts is being thereby amassed, destined to furnish the key to the larger problems of meteorology, a science which, from the complex intricacies it presents, requires more than any other science a whole hemisphere at least as its basis of observation. Perhaps the most important of the practical questions which will thus fall to be dealt with are those abnormal distributions of the mass of the earth's atmosphere, short continued or more permanent, from which arise great storms or devastating tornadoes, excessive heat or cold, fine seasons or their opposites, and long-continued rains or droughts, so terrible for the famines which attend them. The explanation of these anomalies will doubtless be the immediate precursor of an intelligent and practically successful forecasting of the character of coming seasons.

This magnificent work General Myer could not have accomplished unless he had been backed by the moral and material assistance so generously and readily accorded him by his Government. With a settled conviction that this national work, if undertaken at all, should be carried out in a spirit and manner worthy of the great Republic, the Government of the United States relegated the work to the Signal Service of the War Department, with an annual vote from the Exchequer, which, while not too large for the work to be done, no Government on this side the Atlantic has yet thought of emulating.

While writing this brief notice of General Myer's work, we have been repeatedly reminded of the name of Leverrier—probably because, though widely different in many ways, both rendered services to meteorology to a great extent identical, both possessed the rare genius of organising and the resolute will that easily sets obstacles aside, both secured the support of their respective Governments, both were animated by large views of the capabilities and requirements of the science, and both were successful in an eminent degree in largely extending the sphere of its operations.

PHYSICS WITHOUT APPARATUS¹

V.

THE Science of Electricity may be regarded in several different aspects. Firstly, there is the study of the simple phenomena such as schoolboys delight to see: the attractions and repulsions of rubbed bodies, the sparks, the shocks, the heating of wires, and rotation of diminutive electric engines. Secondly, there is the exact measurement of electrical quantities, and the verifying of the great laws of the science, involving exact manipulation and standard instruments. Thirdly, there is the technical study of the applications of the science, the details of telegraphic apparatus, the necessities of construction and maintenance, the management of electric lights, and other branches of electrical engineering. Lastly, comes the high mathematical theory cultivated only by the few.

Of the practical portions of this vast mine of scientific wealth, the greater part is only to be reached by the aid

¹ Continued from p. 440.