ject that the discovery of this phenomenon of predetermination has shattered almost all accepted beliefs about the fibre of cotton, and has at the same time coordinated the old data afresh into a straightforward story. The practical applicability of the results is slight, since every boll passes through a different life-history, on account of the continuous fruiting of the plant.

In 1913 a series of daily pickings was made from a group of pure-strain plants growing in field-crop conditions, over a period of ninety days, with parallel records of flowering, etc. The examination of these having been delayed by unavoidable circumstances, the present note has been prepared. It should be noted that this last material is unique in the history of long-staple cotton.

These results were obtained incidentally during my tenure of the post of botanist to the Khedivial Agricultural Society, and to the Egyptian Government at the Giza Cotton Experiment Station, 1904–13.

W. LAWRENCE BALLS.

NEW ZEALAND SURVEY.[1]

THE report before us gives a full account of the work of the Department of Lands and Survey, New Zealand, for the year ending March 31, 1913. As in previous years, not only surveying, but also the direction of the magnetic observatory falls within its purview. Most of the work dealt with in the report has been undertaken in connection with cadastral requirements, and the higher grade work, which is termed "standard" survey, is in great request in town and suburban holdings, where land that could probably have been purchased sixty or seventy years ago for a mere trifle is now reported as having a value of 1200*l.* a foot. Under such conditions work of the highest precision is essential, but the new secondary triangulation is as yet available for a small part of the country only. This triangulation is the equivalent of second order triangulation, since the triangular error is kept below 6″, and is usually considerably less. This is as much as can be expected from the instrument used, a 10-in. vernier theodolite, and the Conference of Surveyors-General supported the New Zealand Survey in the opinion that a modern instrument of higher class was indispensable. A standard bar of nickel-steel 10 links long has been obtained from the Société Genevoise, Geneva, as well as a comparator from the Cambridge Instrument Company for use with it. Both of these have been examined and verified at the National Physical Laboratory. Four bases, from 5·2 to 11·5 miles in length, have been measured since 1909, but only two are as yet part of the finally accepted triangulation.

In the magnetic observatory a new set of Eschenhagen-Toepfer magnetographs were received at the end of 1912, and were installed at Amberley, thirty-four miles north of Christchurch.

Considerable assistance was given to the officers and scientific staff of the British Antarctic (*Terra Nova*) expedition, who took magnetic observations and determinations of gravity as controls to the work carried out in the Antarctic. The report also publishes ten seismograms of those recorded during the year by the Milne seismograph. Maps showing the progress of the work and extracts from Conference of the Surveyors-General of the Commonwealth of Australia, which was held at Melbourne in May, 1912, complete a report which is of much interest, and contains a record of much valuable work. H. G. L.

[1] Report on the Survey Operations for the Year 1912–13. Department of Lands and Survey, New Zealand. By James Mackenzie, Surveyor General Pp. 77+6 maps+5 diagrams. (Wellington, 1913.)

THE ENCOURAGEMENT OF RESEARCH BY THE CARNEGIE INSTITUTION OF WASHINGTON.

THE Year Book for 1913 of the Carnegie Institution of Washington is now available. The information provided in its 336 pages shows convincingly that there has been no relaxation of effort on the part of the trustees of the institution to administer wisely the funds placed at their disposal for the encouragement of scientific research, and that the results arrived at by the men of science who have received assistance are as promising and as full of interest as in previous years.

The following list shows the amounts of the grants made for the present year and the purposes to which they are being devoted :—

	£
Administration	10,000
Publication	12,000
Division of Publications	2,000
Departments of Research	137,929
Anthropology	4,000
Embryology	5,380
Minor Grants	18,980
Index Medicus	2,500
Insurance Fund	5,000
Reserve Fund	50,000
Exhibit at Panama-Pacific International Exposition	2,000
	£249,789

The next table shows the departments of scientific investigation to which the larger grants were made by the trustees for the financial year 1912-13, and the amounts allotted from these grants by the executive committee during the year :—

	£
Department of Botanical Research ...	7,601
Department of Experimental Evolution	19,028
Geophysical Laboratory	15,600
Department of Historical Research ...	5,920
Department of Marine Biology ...	6,378
Department of Meridian Astrometry...	5,036
Nutrition Laboratory	9,310
Division of Publications (office expenses	1,800
Solar Observatory	33,126
Department of Terrestrial Magnetism	42,053
Researches in Anthropology	1,400
Researches in Embryology	3,000
	£150,252

The following extracts from the *résumé* of the investigations of the year included in the report of the president of the institution, Dr. R. S. Woodward, will give some indication of the work which has been initiated and encouraged :—

All the departments of research of the institution are now well-defined organisations, each of them independent of and more or less isolated from the others, and each of them devoted to a field which, while in some cases related to, does not encroach upon, the fields of others. Each of them possesses a degree of autonomy which calls for a corresponding degree of freedom in the character of their annual reports and accounts of progress.

Studies of the Salton Sea, carried on during the past seven years by the department of botanical research in collaboration with a number of contributing specialists, have been brought together during the year in a volume now in the press under the title "The Salton Sea : A Study of the Geography, the Geology, the Floristics, and the Ecology of a Desert Basin."