(2) These laboratories throughout the country are engaged on work of the greatest importance both for civilian medical practice and for the maintenance of the health of the Navy and Army.

(3) The Food Controller is authorising laboratories duly licensed by the Home Office under Act 39 and 40 Victoria, cap. 77, to obtain supplies of any rationed article on production to the supplier of a certificate signed on behalf of a laboratory to the effect that they are necessary for the purposes described above. In due course special order forms will be issued to such laboratories for this purpose. Committees should also assist such laboratories in obtaining necessary supplies of unrationed foodstuffs in case they experience difficulty in securing them.

(4) A statutory order will shortly be issued by the Ministry of Food exempting from the provisions of the Food Controller's orders the use of grain and other foodstuffs in any such licensed laboratories for the maintenance of animals or for the preparation of laboratory materials.

THE PALMS OF SEYCHELLES AND THE MASCARENES.

SINCE the publication, just forty years ago, of Dr. I. B. Balfour's elaboration of the palms in J. G. Baker's "Flora of Mauritius and Seychelles," there has been considerable botanical activity in the islands of the Indian Ocean. Cordemoy's "Flore de l'Ile de la Réunion" appeared in 1895, and many novelties have been discovered, especially in Mahé, and published; but no addition has been made to the number of genera and species of palms inhabiting this insular region. Nevertheless, a number of interesting facts have come to light, partly through Prof. Stanley Gardiner's published notes, partly through various collectors' notes, and especially through Mr P. R. Dupont's direct communications. Mr. Dupont, it should be explained, has been for many years curator of the Botanic Station at Mahé, and has thoroughly explored that island and more or less the rest of the Seychelles group, famous for its peculiar palms. The following table shows the composition and distribution of all the palms of the islands of the western Indian Ocean, excluding those of Madagascar :—

Distribution of the palms of Seychelles and the Mascarenes—Genera and Species		Seychelles	Rodriguez	Bourbon	Mauritius
Lodoicea sechellarum	Borasseæ	×			
Latania commersonii	Borasseæ			×	×
,, *loddigesii*	Borasseæ				×
,, *verschaffeltii*	Borasseæ		×		
Hyophorbe indica	Arecæ			×	×
,, *amaricaulis*...	Arecæ				×
,, *verschaffeltii*	Arecæ		×		
Dictyosperma alba	Arecæ		×	×	×
Acanthophoenix rubra	Arecæ			×	×
,, *crinita*	Arecæ			×	×
,, *nobilis*	Arecæ	×			
Nephrosperma vanhoutteana	Arecæ	×			
Roscheria melanochaetes	Arecæ	×			
Verschaffeltia splendida	Arecæ	×			
Stevensonia grandifolia	Arecæ	×			
		6	3	5	7

With possible exceptions in Madagascar, the genera named in this table are restricted in their natural distribution to the islands and groups of islands named, and the Seychelles species and two out of three of the Rodriguez species are endemic, while the five Bourbon species are common to that island and Mauritius. Lodoicea and Latania are dicœcious, and belong to the tribe Borasseæ, which is restricted to the African region in a broad sense, and comprises only two other genera, namely, Borassus, the palmyra, and Hyphæne, to which the characteristic branching palms of Africa belong. The rest of the genera in the table are all referred to the large, and generally dispersed, tribe Areceæ. Palms constitute the most striking feature in the vegetation of Seychelles, especially of the principal island, Mahé, where five out of the six species were formerly more or less abundant, and still persist in plenty. Lodoicea, the coco de mer, or double coconut, does not occur in a wild state in Mahé. Travellers have differed in opinion as to in which of the islands it is really indigenous, but trustworthy evidence points to Praslin, Curieuse, and Round Islands. A statement to this effect, by J. Harrison, appears in the *Botanical Magazine* for 1827, in the text to plates 2734–38. There is the further statement that this palm was "growing in thousands close to each other, and the sexes intermingled." Mr. Dupont communicates independent testimony to the existence of local evidence confirming this record. In favourable situations the double coconut attains a height of 100 ft., or occasionally even more.

Little is on record of the general distribution in the islands of the palms of Seychelles; but Dupont furnishes the following particulars of their altitudinal distribution in Mahé :—

Nephrosperma	0–300 m.	Acanthophœnix	0–750 m.
Stevensonia	150–600 ,,	Verschaffeltia	150–750 ,,
Roscheria	600–900 ,,		

He also distinguishes three zones of the predominating palms in Mahé :—

Zone of *Stevensonia grandifolia*	...	150–300 m.
Zone of *Verschaffeltia splendida*	...	300–600 ,,
Zone of *Roscheria melanochaetes*	...	600–900 ,,

These palms constitute a striking feature in the vegetation of Seychelles, especially that of Mahé, where they are associated with other singular endemic types belonging to various families. In stature and foliage they conspicuously overtop most of the other trees, with an average height of the five species of 45 to 65 ft., and extreme heights of *Acanthophoenix nobilis* of 80 to 120 ft., and of the magnificent *Verschaffeltia splendida* of 80 ft. All these palms are, or have been, in cultivation in the United Kingdom, but are rarely seen on account of their large dimensions and heat requirements. But characteristic paintings of all these palms are to be seen in the Seychelles section of the north gallery at Kew, together with many other of the endemic types of the archipelago. It may be worth mentioning here that some confusion has arisen in consequence of the local misuse of the terms male and female of the double coconut. This palm is really dicœcious, and the large fruit is usually either two- or three-lobed, the two-lobed being named female and the three-lobed male! The presence of so many endemic palms in a small insular flora is almost unique in the geographical distribution of plants. Lord Howe Island, situated about 300 miles off the coast of New South Wales, presents the nearest approach to a parallel, supporting, as it does, four endemic palms belonging to three different genera, two of which are peculiar to the island. The profusion and elegance of these palms excite the admiration of all who see them Of the Howe palms, *Kentia belmoreana* is one of the very best for

dwelling-room decoration, the writer having kept a plant in excellent condition for twenty-six years.

In connection with the insular distribution of palms, it may be added that New Zealand, the Kermadec Islands, Norfolk Island, Juan Fernandez, and Bermuda each possess one species of palm, which seems to indicate a very ancient vegetation. The coconut is left out of consideration here, because Mr. O. F. Cook seems to have proved beyond doubt that it is of American origin, and that it owes its present distribution almost entirely to human agency.

W. BOTTING HEMSLEY.

NATIONAL LABORATORIES AND INDUSTRIAL DEVELOPMENT.[1]

I.

A NATIONAL INDUSTRIAL RESEARCH LABORATORY.

SOME seventeen years ago I spoke in this room on "The Aims of the National Physical Laboratory." I endeavoured to make clear the reasons for its establishment and to indicate some of the work we hoped to accomplish. I concluded:—"It has been my wish to state in general terms the aim of the laboratory to make the advances of physical science more readily available for the nation, and then to illustrate the way in which it is intended to attain these aims. I trust I may have shown that the National Physical Laboratory is an institution which may deservedly claim the cordial suppor' of all who are interested in real progress."

Much has happened since then; how far we can assert that we have made good is for others to say. At any rate, our growth and the generous aid we have been given by many valued friends are evidence that the support for which I asked has not been wanting. And now that another great change in our position is about to take place and, as I trust, a wider sphere of usefulness is offered to us, it is not unfitting to put on record something of what has been done and to indicate, though it must only be in general terms, plans for the future. "Plans for the future": to-day it is hard to plan; one thought only fills all our minds, and every effort is needed to secure that victory without which future plans are useless.

Let me commence, then, with a few statistics as to growth and work. In 1901 the staff consisted of three scientific assistants working in some small rooms at the Kew Observatory, and the former observatory staff; the income was perhaps 5000*l*. When I lectured last arrangements were in progress for moving the laboratory to Bushy House, Teddington. To-day—or rather from April 1, 1918—we shall be organised in eight different departments, each with its own superintendent and a large staff of scientific assistants and observers. The staff now numbers well above 500 persons, of whom about 180 are women. The expenditure during the current financial year will be considerably above 100,000*l*.

As to finance, it may be of interest to give some figures. The ordinary expenditure—excluding sums spent on capital account—increased from 5479*l*. in 1900 to 38,003*l*. in 1913–14, the total income from January, 1900, to March 31, 1914, being 282,545*l*. The sources of this income were distributed thus:—

Treasury grants to the laboratory ...	£80,500
Treasury grants for aeronautics ...	20,182
Receipts for work done	166,633
Donations	15,230
	£282,545

[1] Abridged from two lectures delivered at the Royal Institution on February 26 and March 5 by Sir R. T. Glazebrook, C.B., F.R.S.

During the same period the capital expenditure was 156,198*l*., provided thus:—

From Treasury grants	£75,941
From private donations	55,967
Provided out of income	24,290
	£156,198

The enormous growth in expenditure from 38,000*l*. in 1913–14 to more than 100,000*l*. this year is, of course, due to the war.

During this period the ultimate control of the laboratory has rested in all particulars with the president and council of the Royal Society. They have been responsible for the finances of the institution. Any loss—I am glad to say there has been no loss—would have fallen on the funds of the society; the laboratory, in spite of its name "National," has really been a private concern of the Royal Society, supported most cordially throughout by six of the leading technical societies, and dependent for part of its income on a grant-in-aid from the Treasury, but in the main from the receipts from fees.

From April 1 of this year there is to be a change. The scientific control of the laboratory is still to be exercised by the president and council of the Royal Society; the property of the laboratory is to be vested in the Imperial Trust for the Encouragement of Scientific and Industrial Research—it is now vested in the Royal Society. The income of the laboratory, including receipts from fees, is to be vested in, and is to be under the control of, the Committee of the Privy Council for Scientific and Industrial Research. The laboratory will be managed by an Executive Committee appointed as heretofore, and containing representatives of the great technical societies. In this manner it is hoped to secure financial stability and to retain at the same time the great benefits which have come from the close connection with the Royal Society.

In the future, as in the past, the laboratory will endeavour to discharge two functions; it will be a laboratory of industrial research, and a national testing institution or proving house. To-day we deal with the laboratory of industrial research.

Industrial research—what is it? In recent years much has been written on this subject; the idea of a laboratory devoted to industrial research is by no means novel, and the steps by which ordinarily a scientific discovery develops into a manufacturing process are generally recognised. First and foremost we have the research student impelled by his thirst for knowledge; his desire to penetrate ever deeper into the mysteries of Nature; he does not work with the deliberate intention of making something of service to humanity. Faraday's discoveries of electromagnetic laws, made in this building, were at first as useless as the new-born babe, but had within them that power and potency which have transformed the industry of the world. Röntgen, when he discovered X-rays, or J. J. Thomson, when he tracked down ions and corpuscles in the manner he has often demonstrated here, thought little of their application to surgery and the countless benefits they have brought to suffering humanity.

There must be institutions where research work is carried on for its own sake, where—to apply Sir J. J. Thomson's recent remark—men may make discoveries which may revolutionise and not merely reform the world, where they may train students in those fundamental laws and principles which must be at the root of every successful endeavour to apply science to industry. But there is a wide gap between such homes of science and the works of the manufacturer, and it is to fill this that laboratories of industrial research are needed.