

- (c.) To use existing University laboratories as far as possible in the meantime, but to separate the finance of all testing-work done in them from the general finance of the college.
- (d.) To include Dr. Maclaurin's laboratory and staff in the new organisation, and to remove his laboratory to the new site on convenient opportunity.
- (e.) To place the whole responsibility for testing and investigatory work into materials and scientific instruments, apparatus, &c., the establishment of constants and standards, on the new central organization, which should appoint a special committee for the purpose, including representatives of the railways, the hydro-electric service, the Post Office, the Public Works Department, as well as independent men of science. The cost of routine tests conducted for administrative Departments of State should be paid for by those Departments, otherwise they will be tempted to use less care than is desirable over expenditure on this kind of work; but any investigations or researches necessary to or arising out of the tests should be borne on the vote of the new organization. It would be the duty of the supervising committee to prepare a programme of work, with estimates of costs, for each coming year, showing whether it will be done in the central or in provincial laboratories. The new central organization and the Government will then know how much this service is expected to cost and by whom it is being incurred. The accounts to be yearly rendered will be comparable with the estimates, and furnish a guide for future estimating.

40. In connection with these recommendations attention is called to the memorandum prepared by Professor Sir Ernest Rutherford, O.M., P.R.S. (*cf.* Appendix A, Section (9)), from which it will be seen that the principles he lays down are in conformity with these proposals, and in particular his recommendation that the University colleges should not be forced to undertake test work. If the cost of doing this work and any fees received are kept distinct from the college accounts it will be possible to provide a staff for it who are not part of the teaching corps of the college, should this be desirable, as it probably will be. On the other hand, when the bulk of the test work done begins to encroach upon the use of plant and accommodation needed for teaching and research purposes, a clear indication will be given that the time has come to transfer the test work to the central laboratories in Wellington, and it will be possible to make the transfer without affecting the financial interests of the teachers.

41. The establishment of an organization of this kind will undoubtedly assist the manufacturers, as is pointed out in Dr. Marsden's report, and it will be possible, no doubt, to undertake a certain amount of investigatory work for groups of firms or single businesses, so far as the needs of the Government permit, provided the full cost is borne by the firm or firms for whom the work is done. Care will, however, be needed in laying down conditions as to the availability of results, but in this matter my Department will be able to render useful assistance and advice, if required.

42. Dr. Marsden's report gives in some detail the scope of the work such a laboratory should undertake, and estimates the initial capital cost of the new central establishment at £20,000, and the additional salary cost at about £1,600 a year. But these figures should be reviewed by a committee to be set up immediately, and by the new central organization to which the committee would be attached, after a careful survey of the available provisions in the provinces and the cost of rearranging the finance of the test work done in the colleges. Meantime I desire to endorse his recommendation that the physicist selected for appointment, who will certainly be required, should be sent to the National Physical Laboratory for one year's training and experience.

The Geological Survey, Meteorological Office and Hector Observatory.

43. If a single scientific authority is desirable for the control of test work and investigation, this is no less the case with the Geological Survey, which costs at present nearly £6,000 a year; the Meteorological Office, which costs nearly £5,000 a year (largely expended on telegrams); the Hector Observatory, at present under the Department of Internal Affairs, which costs about £1,400 a year; and the Magnetic Survey, under the Department of Lands and Survey, which costs about £1,000 a year.

44. There is at present no authority competent to review the programmes of work undertaken by these services or to judge of their relative claims upon the State for support. A properly constituted scientific organization would be able to judge their claims with sympathy and discernment, and be in the position to recommend expenditure on them comparable to their relative importance to the nation, within the means available for the scientific services as a whole.

45. But, apart altogether from these administrative and financial considerations, it is very important that a service like the Geological Survey, upon the work of which the successful mineral development of the country must ultimately depend, should be entirely removed from the administrative or police duties of ordinary Departments, for its findings must be beyond suspicion of any interests, either regulative, political, or financial. It is no less important that the meteorological service should be brought into close touch with the need for scientific help in agriculture, no less than is obviously the case with the marine, naval, military, and air services. It should serve all alike, and will best do so if it is attached specifically to none of them, but is subject to the criticism and inspiration of competent scientific judgment. Even the Magnetic Survey and the Astronomical Observatory will gain in usefulness and reality if their activities are brought into the common flow of scientific thought, as they will be if placed under a scientific rather than a lay control.