

local authorities, and he, too, insisted that the new National Lending Library for Science and Technology would not dispense with the need for technical libraries in the municipal and county library systems.

In a stimulating paper of some general interest, Dr. J. Trenaman, liaison officer for further education, British Broadcasting Corporation, under the title "Libraries as a Social Force", described a survey of opinion towards broad educational ends, from which he concluded that about 55 per cent of those in the sample were at least receptive to new and even unwelcome ideas, while the remaining 45 per cent were resistant, at least to the extent of avoiding unaccustomed ideas or not being interested. This resistant sector had usually received only an elementary early education, whereas those who were

interested in education had had a fairly good early education, about half having been to a secondary school. They were interested in the more serious radio and television programmes and were also members of a library. There was an upper level of 25 per cent of the whole sample who had mostly received a grammar school education, with a keen interest in further learning and who would be the more serious readers in the libraries. Dr. Trenaman believes that the machinery of education as a whole operates selectively, and accordingly the chief responsibility for adult education rests upon the informal agencies, especially the public library service, the Press and the broadcasting authorities because they have an access denied to all other information agencies. He also emphasizes the profound and durable influence of our early education.

EFFECTS OF PLANT DECOMPOSITION PRODUCTS IN THE SOIL

THE inhibitive effects, on the germination of seeds and on seedling growth, of products from decomposing plant materials in soil have been examined by Z. A. Patrick and L. W. Koch (*Canad. J. Bot.*, 36, 621; 1958). Substances capable of inhibiting the respiration, germination and growth of tobacco seedlings were obtained after residues from timothy, corn, rye or tobacco plants had been allowed to decompose under appropriate conditions in the soil. Bio-assay tests, based on manometric methods, made it possible to determine some of the conditions under which the decomposition gave rise to phytotoxic by-products and to obtain rapidly an accurate measure of the degree of their toxicity.

Among the factors affecting the production of the toxic products, the species and stage of maturity of the plant material added, the water content and pH of the soil, and the length of the decomposition period, were the most important. Substances capable of reducing the respiration of tobacco seedlings by 50-90 per cent were consistently obtained when any of the plant residues examined had been decomposing for 15-25 days under conditions of high soil moisture and a pH value of the soil solution below 5.5. Timothy yielded substances with the highest toxic activity, followed by corn, then rye, and finally, tobacco. Aqueous extracts of unamended soil or of macerated

tissues, prepared either before decomposition or when decomposition was inhibited by autoclaving, were not toxic. The toxic substances, obtained by water extraction, showed an inhibiting effect on respiration of tobacco seedlings after an exposure of less than one hour and also induced darkening and necrosis of root cells. Some extracts affected the cells of the apical meristem most severely while others affected only the cells of the elongation region.

The toxic substances have not yet been identified, but they were relatively non-specific in their action, affecting several test plants in approximately the same manner. Many of them possessed antifungal activity. They were soluble in water, insoluble in petroleum ether, stable in acid, and most active in the pH range 4.5-5.8. They were precipitated by alkali and their activity was markedly reduced when they were readjusted to the acid-range. They were also stable to heat and did not lose their activity in storage at 1-3° C. provided they were covered by a layer of toluene. Because of their rapid production and their marked injurious effects on various plants, the authors consider that these toxins may be important under field conditions as the primary factor in some root rots and in predisposing plants to attack by organisms not normally regarded as being pathogenic.

THE NATIONAL INSTITUTE OF AGRICULTURAL BOTANY

THE report for 1957 of the National Institute of Agricultural Botany has recently been published*. The Trials Branch of the Institute has, as usual, carried out an extensive programme of work and the performance of a large number of varieties of the main agricultural and horticultural crops has been assessed. A very special requirement of sugar beet varieties is resistance to bolting, and the results are given of a special series of early-sown sugar beet trials designed to test resistance to premature flowering. The new variety from the Cambridge

Plant Breeding Institute, known as Cambro, gave less than 1 per cent of bolters compared with commercial varieties where the percentage varied from 5 to 20. The potato trials have included for the first time a number of foreign varieties from the Continent and North America. The work of the Seed Production Branch has continued to expand, and as well as administering the various field approval and seed certification schemes the Branch has intensified its inquiries into problems of seed production.

The report covers the first full season of operation of the national scheme for the comprehensive certification of herbage seeds. In launching a scheme covering 25,000 acres in its first season, the

* National Institute of Agricultural Botany. Thirty-eighth Report and Accounts, 1957. Pp. 56. (Cambridge: National Institute of Agricultural Botany, 1958.)

certifying authority needed, and was fortunate to receive, the full and willing co-operation of all participants. Some 824 growers and 93 merchants took part in the production of 53,500 cwt. of British certified seed. With the co-operation of the Seeds Branch of the Ministry of Agriculture, Fisheries and Food, check samples were drawn from most lots of certified seed and have been tested and then grown in plots for verification purposes. The Official Seed Testing Station received a very similar number of samples in the year under review compared with the previous year, but the proportion of cereals to clovers and root and vegetable samples was much greater

because of the very different weather conditions experienced in the two years. The number of samples of each variety of cereal received for testing is some indication of the relative popularity in the country as a whole, and this information is summarized in a table. A notable feature is the disappearance from the list of four old-established varieties, Square-head's Master, Wilma, Holdfast and Minister. Among the barley varieties, the proportion of Proctor has further increased. The report refers to a number of building developments, including extension to the main building, a cold store and a new glass house.

THE COLOMBO PLAN

THE sixth annual report* of the Consultative Committee for the Colombo Plan for co-operative economic development in south and south-east Asia, as usual, is in three parts. The first includes a general review of economic progress in the area and of the task ahead; the second summarizes the position in individual countries; and the third directs attention to some contributions to economic development made under the Plan and summarizes the contribution of technical assistance in particular.

Further progress in economic development in the area is recorded and the growth of *per capita* real income appears to have been maintained in spite of balance of payment difficulties and increased internal inflationary pressures. Agricultural production, as well as industrial and mining output, in general, showed an upward trend, but exports did not keep pace with the expansion of imports; prices of some of the main products of the Colombo Plan countries fluctuated, and as a result of these fluctuations and of higher prices of imports, the terms of trade worsened for many countries in the region.

Several countries in the region have now approved development plans, and all are evolving programmes designed to accelerate development. Experience in 1957, however, has emphasized the risk that the pace of development may outrun the availability of resources, and consequently the implementation of development plans should permit re-phasing to match the resources available. Once again, the report stresses the desirability for the countries of the area to pursue policies which serve to attract capital, domestic and external, into development projects and to assure the effective utilization of such capital. A pointed reference is made to the need for consideration of such factors as apprehensions as to the security of investment, difficulties with administrative and financial procedures and restrictions, and uncertainties about the incidence and weight of taxation, all of which could offset the attractions of the region.

Again, the problems of the different countries vary considerably, and accordingly the methods of meeting their needs vary widely also. This is brought out particularly in technical assistance, where some countries need help mainly in the shape of highly qualified missions specially equipped to deal with the

planning or implementation of major projects, while others seek quite simple skills. It is important that technical assistance should fit the individual needs of each country, and continuing care is required to ensure that technical resources are not wasted. Continual reference is made in the report to the search by the countries of the area for additional resources, more capital, more equipment, and more managerial and technical skill. Although there are signs of strain in some of the more highly developed as well as in the less-industrialized countries, the situation is not regarded as discouraging, because there are signs that the urgent tasks of development and the raising of living standards are being tackled with speed and energy.

Since 1950, training has been extended to about 13,000 trainees from countries of the area, while about 6,000 experts have been provided by Colombo Plan members and United Nations agencies. Australia alone has contributed £3,440,019 to technical assistance, and during 1956-57 spent £5 million on capital and technical assistance, including £200,000 on technical equipment. Another 439 trainees were received and sixty new appointments of technical experts were made, bringing the total in the field in June to sixty-six. Canada's contribution to capital projects and technical assistance amounts to 196.7 million dollars, of which 34.4 million will be for 1957-58, and more than 4 million dollars (1.4 million dollars in 1956-57) on technical assistance. Since 1951, 712 fellows and scholars have been trained in Canada, and 201 of these were still there in June 1957, while 100 experts have been sent abroad, of whom 35 are at present carrying out assignments in seven centres. New Zealand's contribution for capital and technical assistance will amount to £7 million by June 1958, expenditure on technical assistance totalling £744,000 by June 30, 1957, under which training had been provided for 459 persons (148 in 1956-57) and 72 New Zealand experts provided (16 in 1956-57).

The United Kingdom has since 1951 made available to countries in the area, by way of grants, loans, credits and technical assistance, £92 million, including £2.7 million for technical co-operation up to June 30, 1957, with forward commitments of £1,275,000. Of this, £862,540 has been for research and training equipment, with further commitments of another £786,895. By June 1957, 1,582 trainees had been taken, including 333 from non-Commonwealth countries, and in collaboration with the United Kingdom

* Colombo Plan for Co-operative Economic Development in South and South-East Asia. Sixth Annual Report of the Consultative Committee, Saigon, Viet Nam, October 1957. Pp. 186. (Cmd. 315.) (London: H.M. Stationery Office, 1958.) 6s. net.