

envisaged that a central laboratory could then be responsible for the regular preparation of the radioactive probe for use by regional laboratories for the routine indexing of sunblotch and exocortis diseases.

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LIBRARY AND INFORMATION SERVICES FOR PLANT PROPAGATORS

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In the course of their occupations may people, particularly those who are self-employed or who are associated with small businesses, experience a need for information or technical expertise which they are unable to readily satisfy. Scientific and technical information exists today in greater quantity than ever before, and the store grows rapidly. However, the very mass of available literature can create added difficulties in locating and

acquiring the particular piece of information required.

Libraries as avenues of information. Library services at local, state and national government level are one of the most important — and often one of the most overlooked — avenues of assistance open to the private citizen seeking information. Some I.P.P.S. members are connected with institutions or bodies which maintain research libraries, so that they have access to library and information services supportive of their needs. For those without direct access to such services, the first point of contact in seeking information will usually be a municipal or state library. Australia has a highly developed inter-library loan system, and a local public library has resources far beyond that of its own collections which can be tapped to obtain needed books or documents. Supporting the services of municipal libraries within each state are the State Libraries, funded by their respective governments to acquire, maintain, and make available to residents of the state, books, periodicals, and other library-type materials.

Services offered by the State Libraries do vary among states but, in general terms, they all maintain readers' services, reference or research departments whose function it is to deal with enquiries and to assist the enquirer to procure the documents containing his needed information. Behind the State Libraries in the government funded public sphere stands the National Library of Australia, located in Canberra but extending its services across the Commonwealth. The National Library houses three specialist libraries: the Australian National Social Sciences Library, the Australian National Humanities Library, and the one of the most concern to plant propagators, the Australian National Scientific and Technological Library, or ANSTEL. ANSTEL operates a national lending service which states its policy as being "to ensure the prompt supply of any known scientific or technical document to any organization requesting it. . . . Document means book, journal article, technical report, conference paper, thesis, standard, patent, or any other form of library material or copy thereof . . ." The term 'organization' includes other libraries, of course, and it will almost always be through other libraries that the services and collections are made available to the individual enquirer.

Locating information. The phrase "known scientific or technical document" opens up a rather more complex problem than that of actually obtaining a document once its existence is known. For very often the enquirer does not know which documents, indeed if any, contain the information he wants. This is particularly the case if it is new or recent information which is sought. Knowledge or expertise which has become widely known or established is fairly readily found in textbooks, and these can usually be purchased or acquired on loan from libraries without

much difficulty. But the latest information or technology is usually to be found in non-book materials of the type mentioned in the ANSTEL statement. Identifying the existence of this literature can be a problem. Information on techniques and scientific data applicable to plant propagation may be found in two or three specialist periodicals, and in a rather greater number of periodicals devoted to the nursery trade industry generally. But it is also scattered over a very large number of other periodicals non-specific to plant propagation. How is this information to be retrieved? Again, the answer is through libraries. As mentioned already, the readers' services or reference departments of State Libraries or large municipal and regional libraries, provide a range of services to members of the public without occupational access to private library services. Services offered by State Libraries include literature searches and the preparation of bibliographies on particular subjects, as well as provision of the actual documents.

It may be of interest to the library user to know something of the methods by which libraries and information services do identify and locate information from the mass of scientific and technical literature in existence. Traditionally, articles or documents relevant to an enquiry have been identified through publications often confined to quite a narrow subject field such as horticulture or plant breeding, or their scope may be wider, to take in the whole of agriculture, or biology, or chemistry. Whether wide or narrow in subject coverage, an abstracting journal attempts to provide abstracts or summaries of all articles or papers, and sometimes other kinds of documents such as patents or technical reports, recently published and which fall within the stated scope of the abstracting journal. As well as a summary, the author, title and bibliographic details of the original article are also given. Indexing journals fulfill much the same function as abstracting journals, except that only the bibliographic citation is given, and not an abstract also. One would thus consult "Horticultural Abstracts" to obtain details of articles on grapevine propagation, or "Bibliography of Agriculture" to trace literature on the culture of glasshouse crops in polythene bags.

Computerised searching. Conventional manual methods of searching the scientific and technical literature for information on particular topics have, however, been revolutionised in recent years by the application of computer technology to the storage and retrieval of information. Machine-readable bibliographic data bases have been set up to record the existence of information, and these can be searched by computers located in the United States or elsewhere under instruction from librarians or information specialists within Australia having access to a suitable computer terminal.

Some, although not all, of these computerised data bases correspond to the familiar abstracting or indexing journals. A number of data bases have been constructed within Australia, and are available for on-line computer searching as well as in a microfiche or printed copy format. These include the 'Australian Science and Technology Index' which covers all scientific and technical serial literature published within Australia, and 'CSIRO Index', which indexes all work published by CSIRO scientists. Most of the really large data bases however originate from the United States. They are accessible to us for on-line searching through Telecom's international data transmission services, MIDAS, which enables computer terminals in Australia to communicate interactively with the computers of the U.S.-based information services such as Lockheed's DIALOG or Systems Development Corporation's ORBIT, at an hourly communications charge levied by Telecom at \$A12 per hour.

Citations of articles on a particular topic are retrieved by selecting an appropriate data base and expressing the search question as a number of concepts or terms in defined relationships. Each command or instruction is entered on a terminal keyboard and then transmitted to the computer for processing. The system responds by displaying the results of each command, enabling the searcher to proceed to the next command or to modify the search depending on the results received. A searcher keying in, separately, the truncated terms "almond?" and "propagat?" will obtain a computer response indicating the number of citations retrieved on each of those terms. If a command to combine these two sets using the "and" operator is then given, the searcher will receive a response showing the number of articles dealing with the propagation of almond trees. If there are only a small number of citations the searcher may command that these be immediately displayed or printed on the computer terminal. If necessary, a search may be narrowed by the use of search options additional to subject descriptors, such as author or journal names, publication dates, language of text and so on. If more than a few citations have been retrieved an instruction may be given that the results be printed off-line by the host computer. In this case the printed output is airmailed to the searcher, arriving in Australia within five or six days.

A typical computer search incurs direct costs of between \$5 and \$20. The cost components are a Telecom charge of 20¢ per minute, an online connect time charge payable to the host system, which varies according to the data base searched, and a charge for each citation printed. This, too, varies according to the data base searched. By charging enquirers only a sufficient amount to recoup the direct costs involved, the CSIRO Information Service located in East Melbourne is enabled to provide

Australian industry and the public with a computer search service in the fields of science and technology, including agriculture. CSIRO also offers computerised current awareness services which can provide an enquirer with a regular listing of up-to-date literature on a particular topic, on greenhouse management, for example, or fruit tree rootstocks.

The information and library services outlined in this paper are an important national resource. They can and should be exploited by the plant propagator who wishes to keep abreast of the latest technology in his field or to enlarge his knowledge of any aspect of plant science.

THE ROLE OF EDUCATION IN GAINING RECOGNITION FOR THE PLANT PROPAGATOR

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The first thing we must recognize is that the people we employ in the 1980's must be different from the people we employed in the 1950's or 60's. Even those of us who had advanced training and education, have learnt much of our present expertise by experience, often from the boss. We have had 20, 30, 40 years of experience.

I am impatient. When I employ someone, whether it be a gardener a clerk or a lecturer, I don't want to wait 20 years for him to get experience. I want him to be able to do the job NOW. I can hear some of you saying that there is no substitute for experience. Think of the most difficult technique that you can do. How did you learn it? My guess is that for most of you, you may have read about it somewhere and then by trial and error, by a lot of experience, you have mastered the technique. Now looking back, couldn't you teach it to someone else a lot quicker? You could tell him what he needs to know, show him the little short cuts that you can take and the ones you can't. Sure it will take experience — but less than what it took you.

That's what we want from education — to get people to a particular level in a particular type of work in a shorter time and with cost efficiency. Cost efficiency is getting the most training for the least amount of finance, and it is going to be the single most important factor in education and training institutions in 1980.

Whether we like it or not, the two most important factors in the status given by the community to any occupation is the level