problems faced in External Affairs. The majority involve the use of computers for indexing and retrieval of finite documents such as an article in a periodical, a particular scientific paper or a legal judgment. The techniques developed in these cases do have some limited application but do not go nearly far enough because the problem in the Department is to handle files undergoing the continuous accretion of papers dealing with complex subject matter. Computer methods which work quite well in many commercial enterprises or in Government departments whose operations tend to generate large numbers of "case" files are not generally applicable.

148.   An examination was therefore made of systems in organizations with a similar function to External Affairs. These were different enough to allow useful comparisons and to suggest alternative approaches, yet similar enough to show that the fundamental needs were the same in each case. The key problem centred on the quality and depth of indexing needed, and raised two important questions:

      * To what extent is machine assistance in the indexing task desirable, practical or feasible?

      * What calibre of people are required to handle both the indexing (whether machine-assisted or not) and the retrieval aspects of the system?

While some degree of difference is evident in answers to the first question, there is unanimity in the answer to the second.

149.   It was a general conclusion in the organizations visited that the size and complexity of the task of storing, identifying and retrieving substantive information necessitated machine assistance since the traditional manual methods were proving unable to cope with the increasing demands made upon them.

150.   In Germany there appeared to be no conceptual differentiation made between the manipulative capabilities of the machine which could be harnessed, and the patent inability of the machine to make abstract analyses and draw conclusions from complex material. Paradoxically, the Germans had perhaps the most efficient and advanced on-line computer encryption and decryption communications procedures. At the same level of system development as the Germans but conceptually more in tune with the more advanced Swiss and Americans, the British Foreign Office would like to utilize machine support but is inhibited from so doing by physical security problems inherent in the occupation of a number of different buildings. Within a planning time frame of five years it is expected that the eventual move to one specific building or other steps will be taken to overcome the difficulty.

151.   The rest of the group, the Swiss, the United States and the European Economic Community have approached the problem head-on with varying degrees of success. Although no visit was made a report has been received from Canberra outlining a very ambitious plan being embarked upon by the Australians.

152.   The U.S. State Department has advanced furthest along the road to implementation and acceptance, though admitting to problems in this latter area and in the technical approach selected. Considerable resources are being brought to bear with the employment of two IBM 370/158 computers, along with much other equipment. Eighty-one per cent of departmental traffic is by telegram (higher than in External Affairs), all of which has been kept in computer-controlled storage since July, 1973. With the inevitably rising volume there is now some