DEPARTMENT OF EXTERNAL AFFAIRS

# MANAGEMENT SEMINAR

# FOR

# SENIOR OFFICERS

# SUMMARY RECORD

**APRIL 21 to APRIL 24, 1966**

DEPARTMENT OF EXTERNAL AFFAIRS

# MANAGEMENT SEMINAR

## FOR

## SENIOR OFFICERS

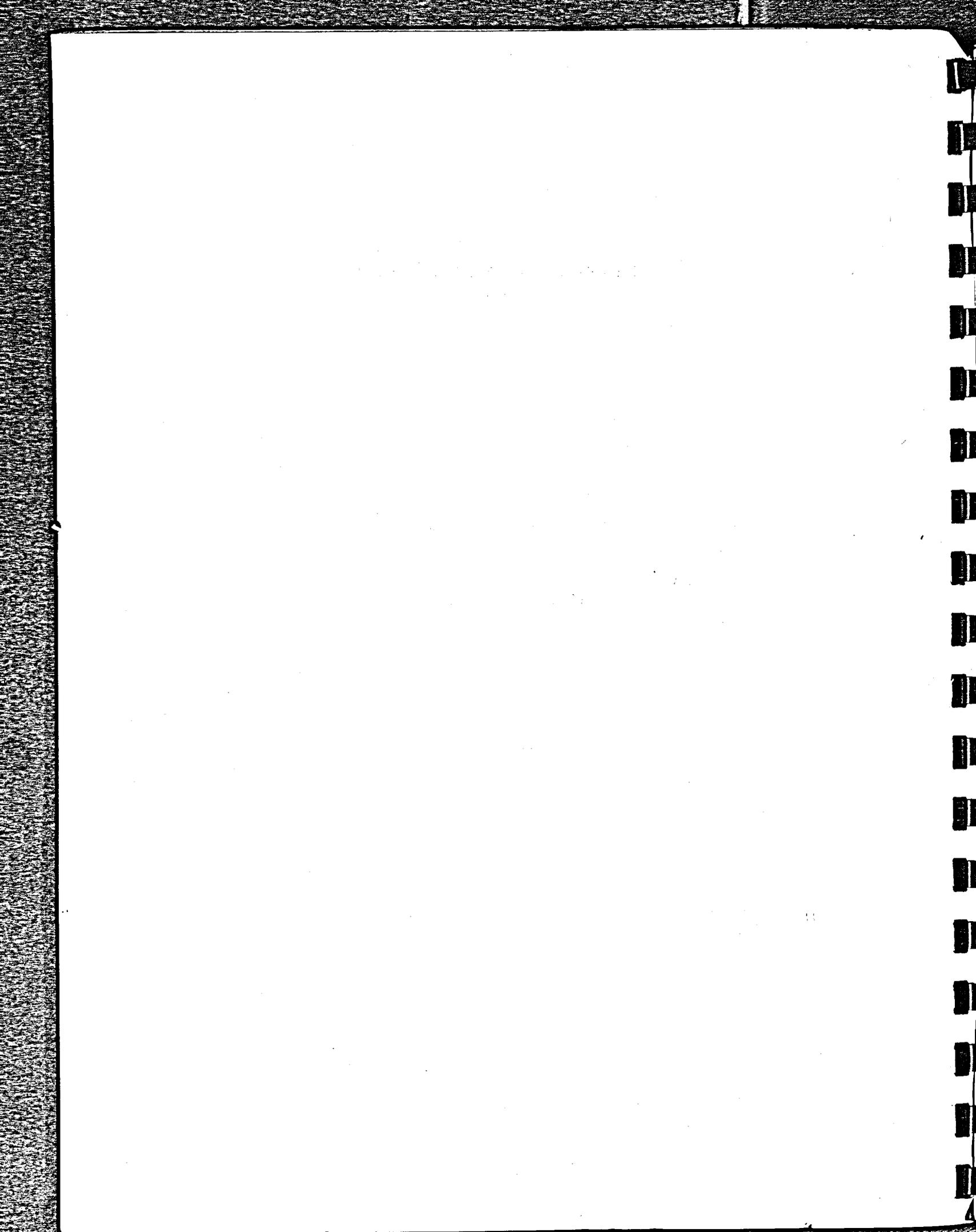### SUMMARY RECORD

Seigniory Club
Montebello, P.Q.

April 21 to April 24, 1966

MANAGEMENT SEMINAR FOR SENIOR OFFICERS

DEPARTMENT OF EXTERNAL AFFAIRS

Seigniory Club - Montebello, P.Q.        April 21 to April 24
                                                    1966

INTRODUCTION

A three-day management seminar for senior officers
was held at the Seigniory Club, Montebello, Quebec on April
21 to April 24, 1966. The seminar was organized essentially
for the purpose of enabling senior officers of the Department
of External Affairs to become better informed on current
trends and developments in the Canadian Government. Senior
Officers of Trade and Commerce, External Aid Office and the
Treasury Board also participated. The theme of the seminar
was "The Management of a Foreign Service in the Changing
Public Service of Canada". The main areas of interest were
Management Concepts, Financial Administration, Personnel
Management, Collective Bargaining and Modern Equipment.

The Department was fortunate in arranging for the
participation as speakers of a number of outstanding senior
executives from Government and private business. This
summary record is intended to provide participants with
comprehensive notes on the information that was made available
in the speeches and in the discussion period comments. In
most cases the full text is included; in some instances the
statements are supplemented by additional reference material
subsequently made available.

The Department is grateful to the speakers who
generously devoted their time to the seminar discussions and
subsequently undertook the extra work of editing their texts
for inclusion in this summary record.

# PARTICIPANTS

## External Affairs

| | |
|---|---|
| M. Cadieux | Under-Secretary |
| R. E. Collins | Asst. Under-Secretary |
| B. M. Williams | Asst. Under-Secretary |
| W. H. Barton | United Nations Division |
| T. L. Carter | African and Middle East Division |
| D. M. Cornett | Disarmament Division |
| D' I. Fortier | Press and Liaison Division |
| J. George | European Division |
| E. H. Gilmour | Consular Division |
| M. E. Grant | Supplies and Properties Division |
| C. Hardy | Personnel Operations Division |
| J. A. Irwin | Administrative Services Division |
| B. A. Keith | Administrative Improvement Unit |
| J. C. Langley | Economic Division |
| A. J. Matheson | Finance Division |
| J. J. McCardle | Defence Liaison (2) Division |
| J. S. Nutt | Defence Liaison (1) Division |
| A. J. Pick | Latin American Division |
| L.A.D. Stephens | Inspection Service |
| F. M. Tovell | Personnel Services Division |
| A. de W. Mathewson | Canadian Embassy - Washington |

## Trade and Commerce

| | |
|---|---|
| A. P. Bissonnet | Trade Commissioner Service |
| G. F. Osbaldeston | Trade Commissioner Service |
| K. F. Osmond | Trade Commissioner Service |
| F. R. Rousseau | Trade Commissioner Service |

## External Aid Office

| | |
|---|---|
| D. R. McLellan | Finance and Admin. Division |

## Treasury Board Staff

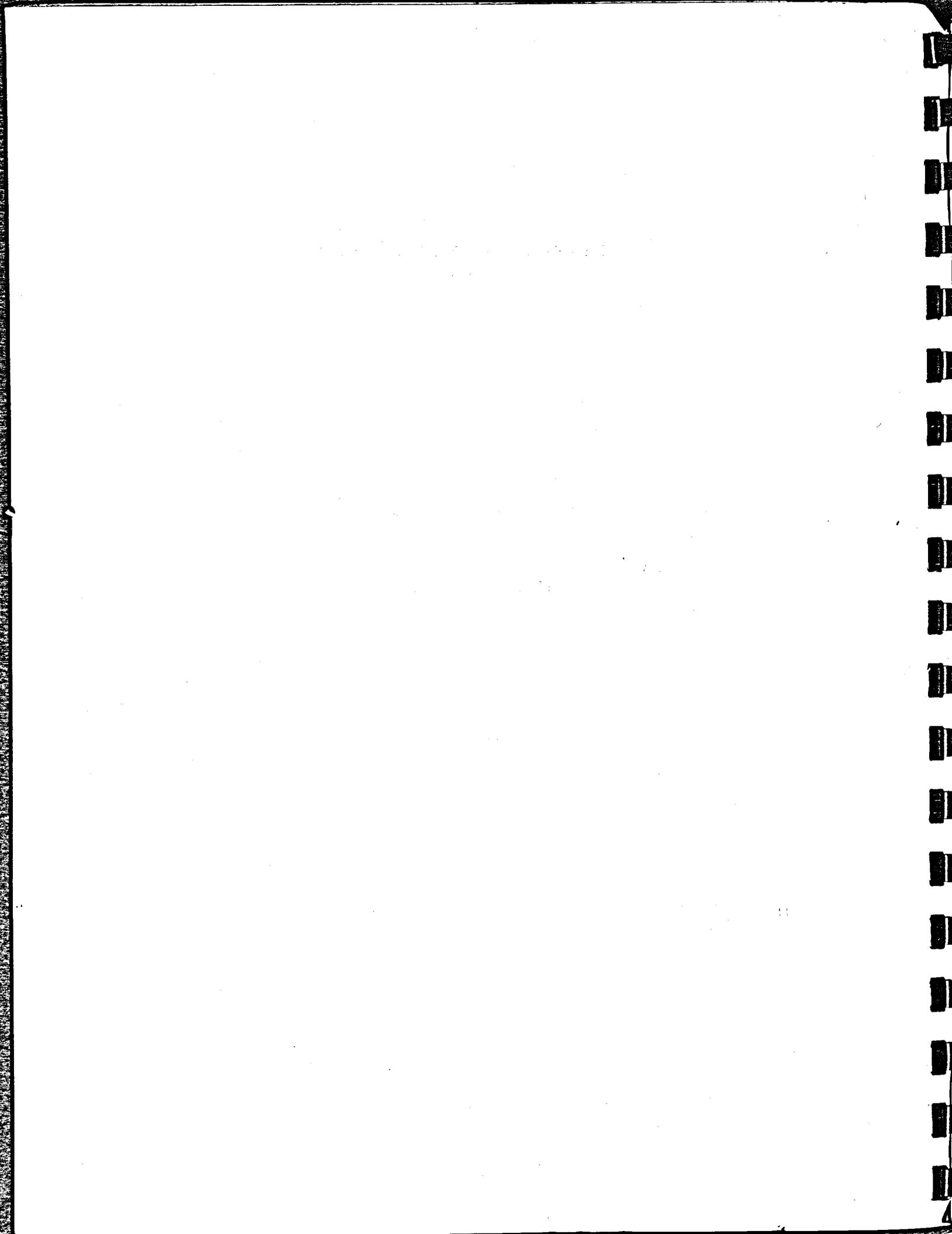| | |
|---|---|
| T. H. Bennett | T.B. Secretariat |
| A. T. Wickham | T.B. Secretariat |

Seminar Co-ordinator - M. B. Caron
Assistant Co-ordinator - R. C. Stansfield

# TABLE OF CONTENTS

THEME - The Management of a Foreign Service in the Changing Public Service of Canada

THE NEW MANAGEMENT CONCEPT

for

THE PUBLIC SERVICE OF CANADA

*by*
*Dr. G. F. Davidson,*
*Secretary,*
*Treasury Board.*

– Biographical Notes –

Dr. Davidson was appointed Secretary of the Treasury Board
in May, 1964. In this capacity he advises his Minister and
the Treasury Board on matters relating to the management of
the Public Service and generally to responsibilities
assigned to the Board under the Financial Administration Act.

He is also Director of the Bureau of Government Organization,
concerned with implementation of the recommendations of the
Glassco Commission.

He was Deputy Minister of Citizenship and Immigration from
April, 1960 to February, 1963, and he served as Deputy
Minister of Welfare in National Health and Welfare from
November, 1944 to April, 1960.

From 1946 to 1958 Dr. Davidson served in various capacities
as a member of Canadian delegations to the UN Social
Commission, ECOSOC and General Assembly, and in 1958 he
served as President of the Economic and Social Council.
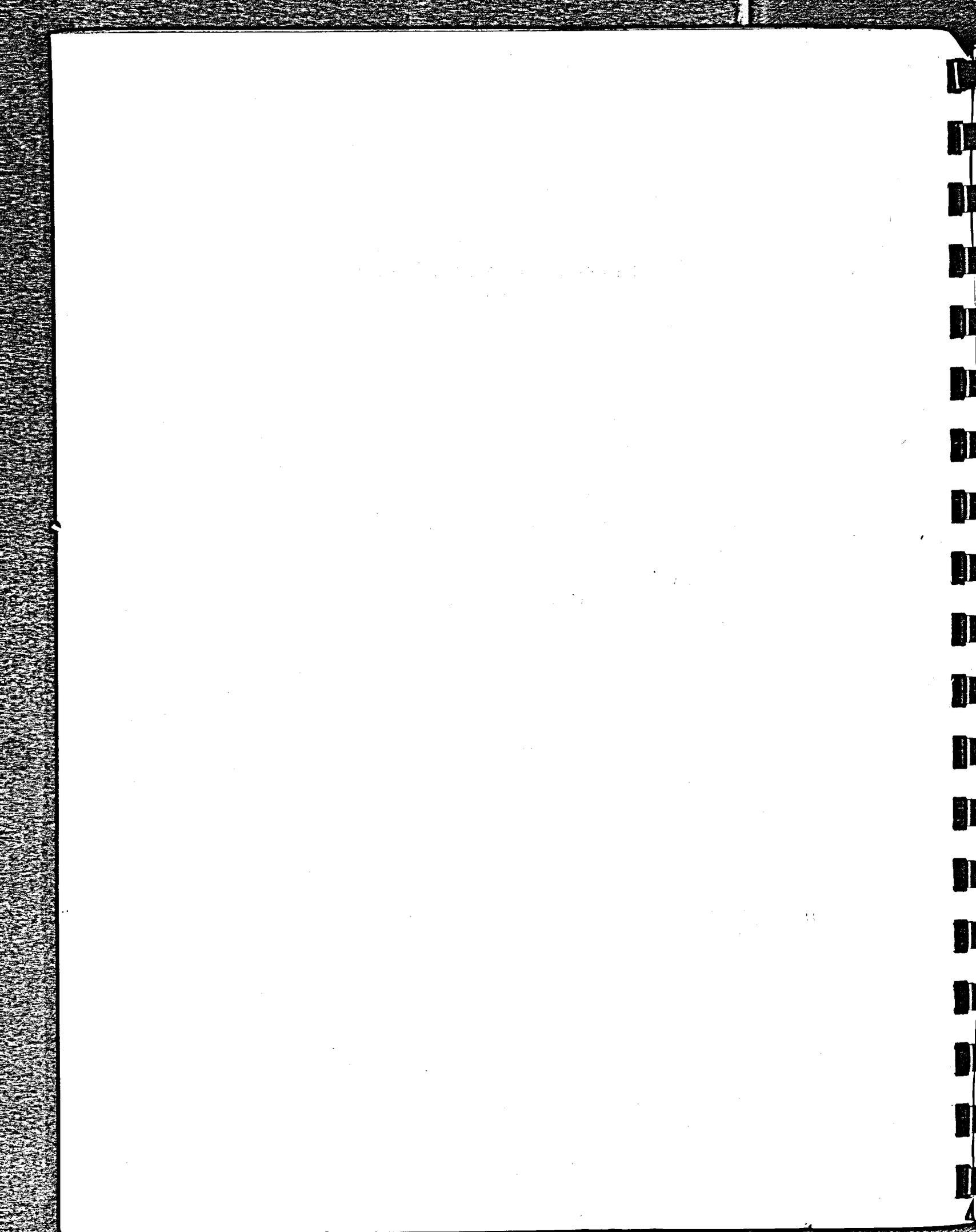
## THE NEW MANAGEMENT CONCEPT  FOR THE PUBLIC SERVICE OF CANADA

by Dr. G.F. Davidson,
Secretary of the Treasury Board

Important changes are taking place in the Public Service of Canada. There are three forces at work in the government bureaucracy, all of them stimulating, unsettling and provocative of change. These are:

(a)  The managerial revolution that was triggered by the Glassco Commission;

(b)  The requirements of collective bargaining which have been accepted in principle by the government and which require a great deal of reclassification and conversion work in all departments;

(c)  The need of making progress in the development of a bilingual and bi-cultural public service.

These forces and factors, each one of them powerful in its own right, are each in their own way giving new shape and direction to the public service of which we are a part.

I would like to suggest to you what are some of the changing concepts of management in the public service, what are the trends and developments in our new philosophy of management and what are the implications of these changes for all of us here. In so doing, I would like to provide a background against which you can view the more detailed and technical information that will be provided in later sessions.

### Government vs. Business Management

In contemplating the new philosophy of management in the public service, we should try to define what is management in government. One must realize that government management is not the same as business management, although the differences must not be made the excuse for setting aside business-like concepts in the conduct of government affairs. Management is <u>not</u> synonymous with government. To manage is <u>not</u> to govern. Management is a process carried on within the framework of the government.   The

G.F. Davidson

government is a peculiar political entity structured in its own way and with its own special motivations. The government is responsible to the larger political entity of Parliament and it, in turn, to the people who are the ultimate judges of the way in which the nation's affairs are managed. We exercise managerial responsibility within the government context. This framework of democratically elected government -- a form of social organization quite unlike that of business -- provides us with the opportunity to exercise our managerial functions.

To say that government is not like business does not however mean that government -- and management processes in government -- should not be carried on in a business-like manner. Our task is to adopt wherever it is sensible, practicable and possible to do so, sound managerial concepts which have been tested and proved in the world of business management. Some of these concepts and methods applicable to management process in the business world may not prove to be adaptable to the political world in which government is carried out; others may have to be modified or changed to meet the peculiar requirements of the special world in which we operate. The great proportion of business management concepts and methods will be found in the vast majority of circumstances to be just as applicable to the world of government as to the world of business.

## Definition of Management

If a single-word definition is to be given, management can be summed up in the word "control". This control is not used in the negative sense in which we tend to think of it in the public service. It is control in the positive sense in which we think of the pilot of an aircraft or the captain of a ship ensuring that his navigation will be such as to bring him to the right destination at the right time. It is a positive, desirable and acceptable kind of control based upon a system and not on the whim of an individual. It is based upon objective rather than subjective evaluation. In each situation, the complex factors involved are controlled and manipulated to achieve the desired results. It is control based on objective standards and requirements. It is control in the sense of self-control, of self-discipline.

In defining management in broader terms, one can regard it as the mobilization and deployment of three elements -- money, manpower and material -- to achieve a known objective.

Whether the management processes are good or bad can be determined by three tests:

(a)  Are these elements used in an economical way?

G.F. Davidson

(b)  Are they employed effectively?

(c)  Are the known objectives achieved?

## Characteristics of Management in the Past

On the basis of experience it can be said that in the past, management processes have often been deficient in several respects. The objectives of government departments have been poorly defined; as a result policies have been inadequate and defective, often subjectively determined.

The process of planning has reflected the insufficiencies of definition of objectives and policies. The result of this chain of inadequacy has been unreliable manpower budgets and cost estimates, and uncertain and inadequate administration together with non-existent means of measuring performance. Communication has been poor within the government system. If a central agency or a department lacks clear-cut objectives, they are unable to communicate their objectives effectively to others. The tendency in these circumstances has been to hold authority at the centre. There has been a highly centralized management and administrative structure. Central management has been preoccupied with details and too largely responsible for detailed decision-making, much of which under proper arrangements could be better delegated to local centres of responsibility closer to the actual operation. This system has been marked by use of instinct in guiding decisions; subjective assessment of values and needs; and a lack of confidence in the ability of managers of successive lower levels to make the right decision.

A main objective of the government organization has been the avoidance of sin and wrong-doing. The control agencies — Treasury Board, Comptroller of the Treasury and Civil Service Commission — have concentrated on preventive measures. The endeavour has been to ensure that wrong things don't happen instead of ensuring that the right things do happen. There has been a network of protection to ensure that no single mistake would get through.

That the system had been too highly centralized is borne out by the fact that by 1962 the Treasury Board had come to deal with 16,000 submissions a year, and the Comptroller of the Treasury had to give approval to some 5,000,000 cheques a month for which, in accordance with the law, his staff had to verify that expenditure was in order.

Likewise, in the personnel field, the Civil Service Commission has served as a staffing agency and has concerned itself with thousands of promotions, transfers, recruitment, selection and indeed countless detailed personnel functions. Many of these functions could equally well have been performed by departments.

G.F. Davidson

## Shift in Emphasis

The new shift in emphasis is not toward total liberty, license and anarchy. A new system of control is being developed. The policies will be determined at the centre of the organization. The management and administration of these policies will be delegated to departments. Thus, the responsibilities of the central agencies will be to provide policies, principles, guidelines and directives.

Real delegation under proper management control should continue down the line to departments, branches, units and field offices. It implies that departmental managers trust their own people and will carry out further delegation of the authority they have received.

## Safe-guards

The central agencies need to determine how they should monitor performance. They must develop follow-up procedures to determine whether departments have kept within the policies and guidelines that have been laid down. Decisions must be made on what form of outside management audits should be adopted and what action to take if departments have not lived up to their responsibilities. It must be determined what degree of accountability can be required of officers of departments. In the past the main preoccupation has been to stay out of trouble with the Auditor General. In the future the endeavour should be to meet the objectives of a carefully prepared programme.

## DISCUSSION

(The following information was provided in answer to questions.)

## External Affairs Objectives

It is probably more difficult to formulate precise objectives and to assess performance in the conduct of foreign policy than in some other fields. It would be a mistake however to assume that the Department of External Affairs cannot formulate objectives at all. There must be a reason for the existence of missions abroad and the formulation of objectives and policies can start from that reason. Presumably the missions can be divided into two groups -- those which the Department considers fully justified and those which the Department regards as of marginal value. The Department can then make judgements on the staff and resources that should be available to each mission.

G.F. Davidson

For the second list of the marginal missions, the Department could programme a minimum assignment of staff and resources. There must be some criteria as to the size, shape and bulk of investment in the various offices abroad. This kind of decision is part of the process of management.

## Formulation of Policy

Policy formation in its broadest sense is still a matter for Cabinet decision on the basis of recommendations made by departments. However, the reference to policies and guidelines in the speaker's main presentation related to the policy to be followed in the management process. The central agencies have a responsibility to ensure consistency and to provide a framework of policy within which departments can operate. This must be flexible enough to give meaningful alternatives to departments in the decision-making process. Directives must be built up on the experience of managers in individual departments.

## Final Responsibility

While final responsibility rested with Cabinet, this did not relieve civil servants from the duty of providing a full and factual basis on which decision could be made. We must put to Ministers an objective assessment of the situation. If they ignore the objective assessment and make politically-based decisions we cannot help it, but at least we have done our duty.

## Implications of a Wrong Decision

It was recognized that in some circumstances an individual might come in for criticism for a decision which he had made in the light of the then existing circumstances but which had proven in retrospect to be wrong. The speaker said that it was inconceivable that there would not be some kind of monitoring system or management audit from outside. However, the central agency realized also that for the good of the government service, it must get away from the excessively cautious attitude that results from trying to achieve perfection and trying to avoid sin. The question to be asked was whether a particular decision was made within the framework of policy laid down or made outside that policy. If a local manager consistently made decisions which conflicted with the policy instructions that had been provided by the central agency, then a process of correction would have to be taken to avoid repetition of the same mistakes. If he resisted correction, some form of accountability and sanctions would have to be applied. It was, however, unrealistic to start

G.F. Davidson

blaming every individual for every mistake. Attention should be paid less to individual errors and more to the broad policy and implementation procedures of the Department.

## Bureaucratic Rigidities

The speaker said that bureaucratic rigidities had arisen for all departments because of the accounting system, particularly the standard objects of expenditure. If it was intended to switch to programme budgets which would include manpower budgeting, this would give each local manager the maximum flexibility. He would have power to switch his manpower and financial resources to meet his needs.

He said that he assumed that each foreign mission could be given a budget which the mission itself had helped to build up. If the total allocation for the mission for a 12-month period was lower than had been requested, it would be the responsibility of the mission Chief to recast his budget and to achieve as much as possible of his programme in the framework of the lessened financial support he was given. By a system of management reporting, he would keep headquarters informed on progress. If he was running over his allotment, then a decision would be made centrally at the next higher echelon to see what shifts of resources were needed or what abandonment of objectives was appropriate to enable him to stay within his budget. If the Department as a whole needed further resources, then it would have to come to the Treasury Board.

He said that because of the lack of precise objectives, standards and criteria, External Affairs would undoubtedly face difficulties in regard to situations which could not be predicted ahead of time. However, with 83 missions this meant that there would be 83 programme budgets and by the law of averages they would not all run into difficulties with the same kind of expenditures at the same time. Transfer of authority for expenditures could be made between them.

## Advantages of Programme Budgeting

The speaker said that it was possible that External Affairs would decide that there were no advantages in a regime of programme budgeting for missions and that the head of mission already had sufficient flexibility. He said that he would be surprised, however, if the Department came to that conclusion.

G.F. Davidson

## Trusteeship

The Deputy Minister becomes a trustee to the Government of Canada in respect of personnel management and financial management policies in the same way that he is now a trustee for policy in his major field of substantive activity. There needed to be a totally different concept of relationships and responsibilities within departments and between departments and central agencies. The self-control mechanism within the Department would replace the external control system that had existed until now. The Treasury Board was now moving rapidly to delegation of authority to those departments which were willing and able to accept responsibility. It had been hampered by the fact that much of the legislation was written under the old regime and did not permit this kind of delegation. However, the hope is that the legislation will be changed as quickly as possible.

## Policy Directives

The speaker said that policy manuals tend to get thicker and thicker to cover all situations. He said the problem was to devise policy directives that were not cluttered up with detail but that would provide a framework flexible enough to give meaningful opportunity for decision-making on a basis of reasonable alternatives.

## Delegation of Authority

The speaker said that the Treasury Board wished to see the maximum degree of delegation of responsibility and decision-making within the framework of policy directives. This did not mean abandonment of control. It meant structuring of a new management system. Once the Treasury Board could succeed in creating in departments a management system with the staffs properly trained and supplied with needed facilities, then the Treasury Board would endeavour to ensure that there was maximum delegation to those departments. It needed, however, to develop new concepts of management within departments and also to formulate effective guidelines for them. There also needed to be sufficient personnel for financial management and personnel management, people who were attuned to the new concepts. He said that some departments were not ready or eager to take on the additional authority that could be delegated to them. They found it comfortable to be hemmed in by the existing restrictions.

G.F. Davidson

## Rapidity of Change

The speaker said the only way the Treasury Board could move in implementing the new concepts was department by department. It would have to be a matter of Treasury Board judgement as to when a department was ready and when it had the capacity to accept and discharge delegated authority. The Treasury Board itself had to develop the capacity to delegate responsibility. In other words, the Treasury Board had to have its own concepts of monitoring and assessment fully developed at the same time the departments were willing and capable of taking on responsibility.

G.F. Davidson

# THE NEW ROLE

## of

## THE TREASURY BOARD

*by*
*D. R. Yeomans,*
*Assistant Secretary,*
*Treasury Board.*

### – Biographical Notes –

Mr. Yeomans' association with the Federal Government
commenced in 1961 when he was made available by Urwick,
Currie Limited to the Royal Commission on Government
Organization.  He served the Glassco Commission as
Director of the Organization Research Group and later he
accepted a post as Senior Adviser, Bureau of Government
Organization in the Privy Council Office.  He was appointed
Assistant to the Secretary of the Treasury Board in 1964,
and in December, 1965, assumed his present role as Assistant
Secretary, Treasury Board, in which capacity he is chiefly
concerned with management improvement.

Mr. Yeomans, who is a professional engineer and a registered
industrial accountant was a management consultant with
Urwick, Currie from 1958 to 1962.  He held a succession of
engineering positions with Canadian Comstock Co. from 1949
to 1958 and prior to that was with Eastern Steel Products.
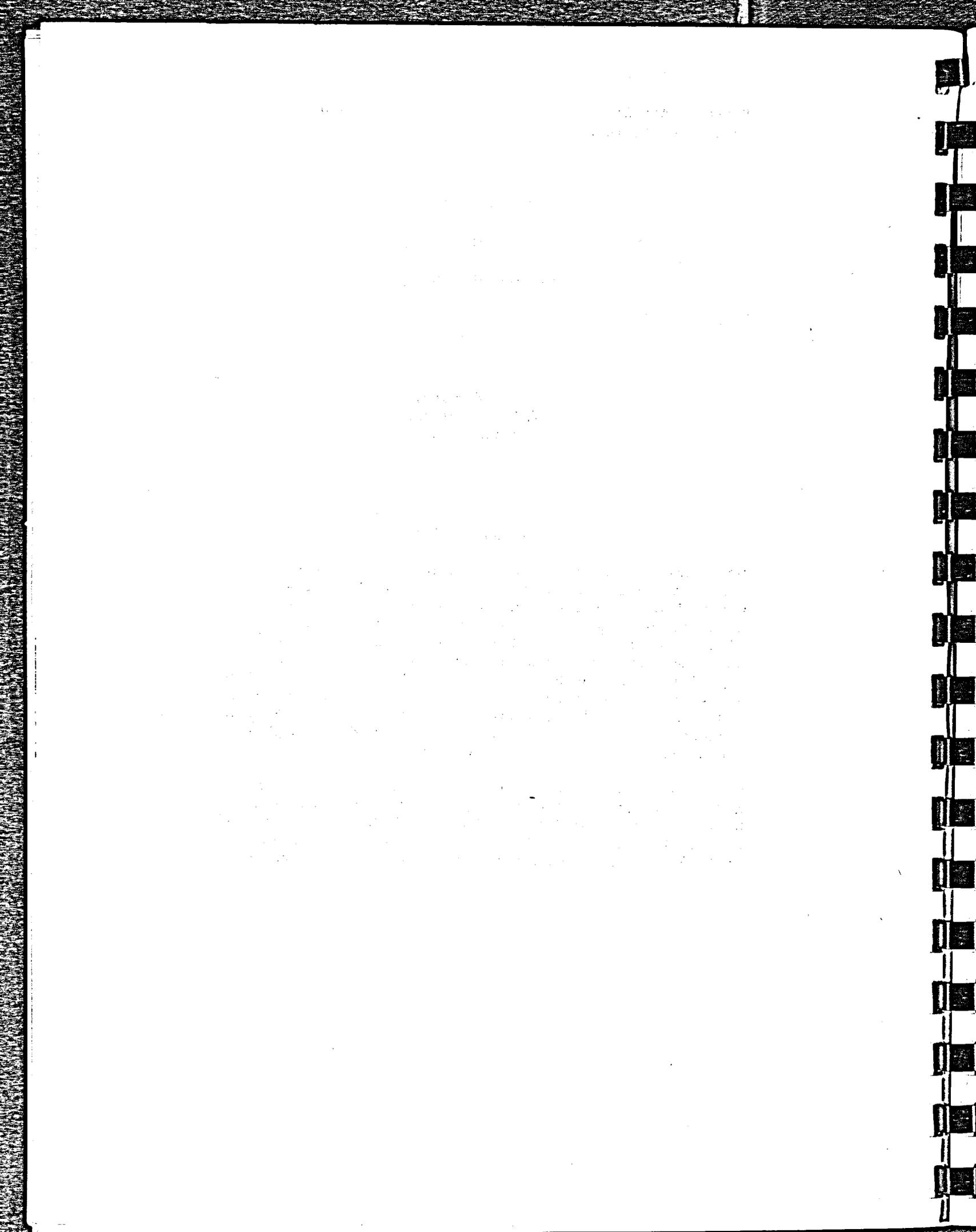
THE NEW ROLE OF THE TREASURY BOARD
by D. R. Yeomans
Assistant Secretary of the Treasury Board


        The Secretary of the Treasury Board has reviewed the Glassco
proposals with emphasis on the key management recommendations of Volume I
and he has described the new concepts that underlie the management process
in the Public Service.  In this second speech, it is logical to indicate
how the Treasury Board Secretariat has been reorganized in response to
the Glassco recommendations, how the staff is now functioning, and what
has been done about the proposals on financial management and paperwork
management.  Mr. Irwin will continue this logical sequence with his talk
on financial management in the Department of External Affairs.

Treasury Board Secretariat

        In January 1964, the Prime Minister announced the reorganization
of Government responsibilities and indicated the intention to create the
position of President of the Treasury Board.  Mr. McIlraith, who was at
that time President of the Privy Council, was asked to assume the position
of Vice-Chairman of the Treasury Board and in effect he became a de facto
chairman.  This move went a long way toward compliance with a major
recommendation of the Glassco Commission that the Treasury Board be regarded
as a separate department with its own Minister, and that this Minister have
no departmental responsibilities.  Subsequently, Mr. Benson was asked to
assume the role of Vice-Chairman of the Treasury Board.  Unlike Mr. McIlraith,
he has other responsibilities in his capacity as Minister of National Revenue.
However, he does serve as the de facto Chairman of the Treasury Board, except
on the rare occasions when the Minister of Finance appears at the Board on
some matter of particular interest and broad financial policy.

        In May 1964, Dr. Davidson was appointed Secretary of the Treasury
Board.  On the occasion of his appointment, the Prime Minister reiterated
that the Treasury Board would be a separate department with its own
Minister.  A draft bill has been prepared for this purpose.  Although
legislation has not been passed to give statutory effect to these changes,
it is still the Government's publicly stated intention to do so, and for
all practical purposes the Treasury Board is operating on this basis.


                                                        D. R. Yeomans

## Developments Since May 1964

A number of important developments have taken place since the appointment of Dr. Davidson in May 1964. A major organization study was undertaken and, in addition, all administrative processes of the Secretariat were reviewed by the Management Analysis Division of the Civil Service Commission. In October 1964, the Treasury Board adopted the present organization structure for the Secretariat and steps were taken toward implementation. This development is still going on. It is of interest that in November 1964 a ten-day work study was done on the minute-by-minute activities of the Secretary and, as a result, a number of changes were made in the practices and procedures relating to his office as a means of reducing the demands that were made upon his time.

Late in 1964, general agreement was reached on the basic organization and on allocation of responsibilities between the Secretary and Assistant Under-Secretaries. Detailed statements of duties were developed at those and other levels. The basic plan, which is represented in the organization chart that has been made available, is still in effect to-day.

## Principles of Reorganization

It may be of interest to consider the principles that have governed the reorganization of the Treasury Board Secretariat.

(a)  To minimize the administrative load on the Secretary. He has a heavy external workload, servicing the requirements of the six Ministers who are on the Treasury Board and also dealing with the Deputy Ministers of other departments. It was necessary to reduce his internal administrative load to the greatest extent possible.

(b)  To define the relationship between the three branches. There has been criticism in the past about confusion that existed between the three branches in dealing with submissions. There were no mandatory requirements for consultation. Under the new arrangements, the Programme Branch is regarded as the one carrying out the line or operational function and the others are regarded as serving in a staff or advisory capacity. An effort was made to define clearly their inter-relationships and the method of coordination that should prevail.

D.R. Yeomans

(c) <u>To maintain clear lines of communication with departments.</u>
It was considered desirable to have lines of communication
with departments that were simple and subject to a minimum
of duplication.  The situation had been reached where
departments were not sure with whom they should deal in
respect to their submissions.  In some departments, relations
with the Treasury Board Secretariat had become a special
profession.  It was decided that programme officers would
serve as the principal channel of communication with each
department.  For External Affairs, the programme officer
is Mr. A. T. Wickham.  The role of the programme officer
is fully described in the Organization Manual of the
Treasury Board.  The administrative systems that have been
developed in the Treasury Board Secretariat assist him in
fulfilling this role.

(d) <u>To reduce the hierarchial levels in the Secretariat.</u>
There had previously been five levels of authority between
the Treasury Board and the departments, i.e., Secretary,
Assistant Secretary, Director, Group Chief, and Programme
Officer.  Under the new organization plan, the level of
Group Chief has been eliminated entirely and the role of
the Assistant Secretaries has been considerably strengthened.
The result has been to reduce substantially the number of
"filters" through which submissions must pass in order to
reach the Treasury Board.  The Assistant Secretaries now
present almost all of the cases to the Treasury Board and
this has reduced the load on the Secretary by eliminating
the need to brief him on all matters going before the Board.

(e) <u>To achieve a clear assignment of responsibility.</u>
A need was felt to coordinate the development of policy,
and also to ensure consistency in the implementation of
policy.  There were arguments for organizing the Treasury
Board staff according to the function they performed and
other arguments for organizing them according to the
departments they served.  It was decided to develop a
combination of both.  Thus the Personnel Policy Branch and
the Management Improvement Branch are both organized on the
basis of the expert knowledge and specialized skills required.
The Programme Branch is organized according to the departments
served.  In this way, the best use is made of the knowledge of
the experts but also the Treasury Board has available at all
times a staff member who has a detailed knowledge of the
operation requirements of any single department.

D. R. Yeomans

# TREASURY BOARD SECRETARIAT

## ORGANIZATION CHART

D.R. Yeomans

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                              ┌──────────────┐
                              │  SECRETARY   │
                              └──────────────┘
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| ASSISTANT SECRETARY PERSONNEL POLICY BRANCH | ASSISTANT SECRETARY PROGRAM BRANCH | ASSISTANT SECRETARY MANAGEMENT IMPROVEMENT BRANCH |

| CENTRAL DATA PROCESSING SERVICE BUREAU | ADMINISTRATION AND PERSONNEL BRANCH | SENIOR ADVISER BUREAU OF GOVERNMENT ORGANIZATION |

| PLANNING GROUP | OPERATING POLICY GROUP | MANAGEMENT IMPROVEMENT POLICY DIVISION | SPECIAL STUDIES DIVISION | LAND, CONTRACTS, MISCELLANEOUS DIVISION | PERFORMANCE ANALYSIS CO-ORDINATOR | RESEARCH DIVISION |

| FINANCE, COMMERCE AND GOVERNMENT DIVISION | DEFENCE DIVISION | NATURAL RESOURCES AND SCIENTIFIC RESEARCH DIVISION | SOCIAL & SPECIAL SERVICES DIVISION | TRANSPORTATION WORKS AND TELECOMMUNICATIONS DIVISION | ESTIMATES AND SUPPLY PROCEDURES DIVISION |

*DECEMBER 1, 1965.*

## Organization Chart - T. B. Secretariat

(The speaker drew attention to the organization chart and provided comments on the various elements in the organization.)

(a) Data Processing Bureau. This Bureau is not really part of the Secretariat. It is located with the Treasury Board Secretariat temporarily as a means of helping it develop its organization and acquire its staff. It is likely that responsibility for it will be placed elsewhere when it is fully developed. The formation of a Data Processing Bureau was a direct result of a Glassco Commission recommendation. Mr. K. J. Radford was appointed director in September 1964. The Bureau served initially as a broker for the surplus computer capacity of the Government. However, a study showed that by mid-1966 there would be no more surplus capacity. A feasibility study indicated the need of a multi-programming and multi-processing computer of substantial capacity and, in December 1965, the Treasury Board authorized the rental of an I.B.M. 360 computer Model 65 which will go into operation in September 1966. This is a computing utility that will be available to all departments. They will be able to hook up on a direct-by-line link coming on to the main frame without human intervention and get results direct-by-line in the same manner. Computer time will be available to departments on a repayment basis.

(b) Administration and Personnel Branch. This is a small branch which looks after the needs in these fields of both the Treasury Board Secretariat and the Department of Finance. It is sufficiently well organized that it can handle the requirements of both departments. Its most important endeavour has been the effort made to reduce the time taken for submissions to go through the Treasury Board. We realize that the submissions often involve operational decisions on which departments depend for implementation of their responsibilities. At one stage, it took an average of thirty-two working days for submissions on personnel policy matters to go through the Treasury Board process and be returned to departments. A radically new system has been designed, and departments have cooperated by using standard forms. The bulk of submissions are now back in departmental hands on the day following the Treasury Board meeting at which they were considered. It is hoped that

D. R. Yeomans

when legislation is passed on the functions of the
Treasury Board, the President of the Treasury Board will
have authority to act on behalf of the Board itself.  In
these circumstances, it will be possible to have some
60% of the submissions dealt with and sent back to
departments as decisions within two working days.

(c)  <u>Bureau of Government Organization</u>.  Dr. Davidson was in
charge of the Bureau of Government Organization at the
time he was appointed Secretary of the Treasury Board,
and he has carried this responsibility with him.  It is
now, in effect, a one-man bureau with Jim Driscoll carrying
out the responsibilities of overseeing the implementation
of the Glassco Commission recommendations.

(d)  <u>Personnel Policy Branch</u>.  The speaker indicated that since
the Seminar would be devoting a full day to personnel
management, and since the Assistant Secretary (Personnel)
would be a speaker, he would not provide details of the
work of the Personnel Policy Branch.  He indicated that it
had, however, been split in two with one part keeping the
traffic moving under the existing regulations, and the
other designing a new structure to implement the Treasury
Board's role in the new approach to the management of
personnel in the Public Service.  He said the new organization
had been designed in detail and would be submitted to the
Treasury Board shortly.

(e)  <u>Programme Branch</u>.  As indicated earlier, it was decided that
a principle job of the Programme Branch would be to serve
client departments.  A Programme Officer is designated for
each department and agency.  He analyses departmental
requirements and prepares recommendations on departmental
programmes, submissions and reports, making use as necessary
of the relevant specialist advice available to him through
the other branches and through outside sources.  The
importance of the role of the Programme Officer has been
considerably increased.  The Programme Officers are grouped
in divisions of approximately five officers plus a director.
So far as is possible, departments are grouped together by
like functions.  Each division in the Programme Branch is
also responsible for certain functions.  By way of example,
programme division 1 which is concerned with some twelve
departments and agencies, including External Affairs, is

D.R. Yeomans

also responsible for functional work relating to expenditure analysis and to overseas operations. The problem of co-ordinating policy development by specialist officers and policy application by programme officers is complex and won't be solved easily, but the T.B. Secretariat is making considerable progress.
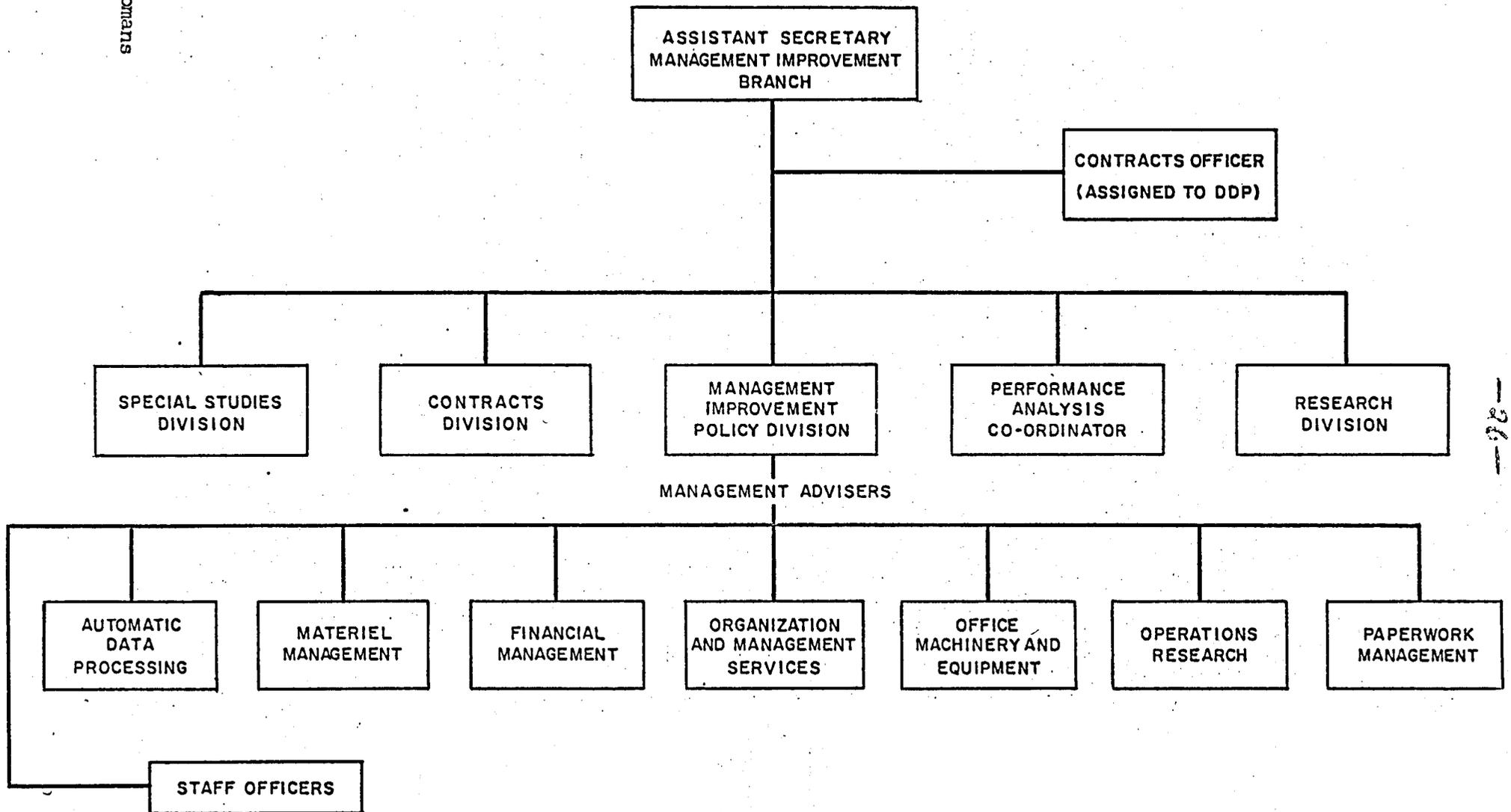
(f) Management Improvement Branch. The formation of a Management Improvement Branch in the Treasury Board Secretariat was undertaken as a direct result of Glassco Commission recommendations. The one division in this Branch which is different in nature from the others is the Contracts Division. It is there primarily to even up the workload of the three Assistant Secretaries. All the other divisions are related directly to the improvement of management in the Public Service. In general, the Management Improvement Branch is staffed with specialists who try to ensure that the best in technical advances and new ideas are available to departments.

Organization Chart - Management Improvement Branch

(The speaker provided detailed information about each of the divisions under the Management Improvement Branch, which he directs, and indicated the nature of the current work being done)

(a) Management Improvement Policy Division. This is the heart of the Branch. It is not a consulting service in itself, but it helps ensure that the advisory services of the government are made available. It brings specialized knowledge in a number of fields of management to bear on government problems. Each section of this division is responsible for the formulation of government policy for a certain area of technical study. These sections include such fields of responsibility as automatic data processing, materiel management, financial management, organization and management services, office machinery and equipment, operations research, and paperwork management. The officers in these sections must be on the frontier of their subject area and must be able to advise the government on the manpower needs in each special field if the government is to make maximum use of such capabilities and also on ways in which departments can best use the techniques involved. In addition to its direct consultation with departments, the division keeps in touch with the various technical groups in the Federal Institute of Management and regularly refers technical statements to the groups for comment before incorporating them in submissions to the Treasury Board.

D.R. Yeomans

# MANAGEMENT IMPROVEMENT BRANCH
## TREASURY BOARD SECRETARIAT

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                    ┌─────────────────────────┐
                    │  ASSISTANT SECRETARY    │
                    │ MANAGEMENT IMPROVEMENT   │
                    │        BRANCH            │
                    └─────────────────────────┘
                              │
                              │         ┌─────────────────────┐
                              ├─────────│  CONTRACTS OFFICER   │
                              │         │  (ASSIGNED TO DDP)   │
                              │         └─────────────────────┘
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| SPECIAL STUDIES DIVISION | CONTRACTS DIVISION | MANAGEMENT IMPROVEMENT POLICY DIVISION | PERFORMANCE ANALYSIS CO-ORDINATOR | RESEARCH DIVISION |

MANAGEMENT ADVISERS

| AUTOMATIC DATA PROCESSING | MATERIEL MANAGEMENT | FINANCIAL MANAGEMENT | ORGANIZATION AND MANAGEMENT SERVICES | OFFICE MACHINERY AND EQUIPMENT | OPERATIONS RESEARCH | PAPERWORK MANAGEMENT |

STAFF OFFICERS

(b) The Research Division. This Division is concerned with
fundamental and specific research on methods or techniques
designed to improve management, including fiscal and cost
controls, budgeting accounting, and operational control
systems of departments and of the government as a whole.
It keeps abreast of developments in managerial theories,
systems procedures, methods and techniques and assesses
their application in relation to government operations.
It issues reports and abstracts on new developments for
the benefit of Treasury Board staff and interested
government officials. It keeps in touch with organizations
both within and outside the government service to ensure
that it is familiar with other management-oriented research
and development programmes. It also maintains a management
information unit consisting of two officers who screen
much of the technical literature and consult with business
and other governments to obtain new ideas. They are like
an early warning radar system. They ascertained that the
government was spending $3,000,000 a year checking travel
claims, but was achieving an annual saving by this process
of only $400,000. A concentrated attack has been mounted
on this problem by the Special Studies Division. It involves
a study of the regulations and also an examination of the
method of processing. The hope is that this requirement can
be handled by some application of electronic data processing.

(c) Special Studies Division. This Division consists of only
one officer and his secretary. It is empowered to form
study teams as necessary, drawing on other sections of
the Treasury Board Secretariat, on departments and outside
consultants. It then prepares appropriate terms of refer-
ence, sets target dates and monitors the results.

(d) SIMPAC. The Management Improvement Branch has been authorized
to create a small group whose job it will be to tie all these
things together from a systems point of view. This effort
goes under the name of "SIMPAC": a System of Integrated
Management Planning and Control. This system will tie
together the managerial information needs of Treasury Board
and the departments with the economic information needs of
the Department of Finance. It is a long-range task but one
on which we have at least made a beginning.

Having described the work of the Management Improvement Branch, I
might sum up by saying that about half of its efforts are devoted to carrying
on continuing obligations and the other half to the development of new regula-
tions and procedures that will be of benefit to the Treasury Board and to
departments. It has, for instance, devoted serious attention to the problem
of routine submissions. We estimate that approximately 80% of submissions
coming to the Treasury Board are on routine matters that should not be dealt
with by the Treasury Board at all. We are constantly exploring ways in which
the authority for decision in such cases can be delegated to departments.

D. R. Yeomans

## Financial Management

In the realm of financial management, as in other areas, the Glassco Commission recommendations are being rapidly implemented. There are thirty-four major recommendations in Volume 1 of the Glassco Report concerned with financial management, personnel management, and a plan for management. All but five of these are being implemented. Of the remaining five, two relate to the duties of the Comptroller of the Treasury and it is hoped that in time these can be carried forward as well.

What has the Treasury Board Secretariat done on implementation of the financial management recommendations?

Initially, from November 1963 to June 1964, studies were undertaken by management consultants to test the validity of the Glassco recommendations. Urwick, Currie made a study of the Department of Transport; Peat Marwick Mitchell of Northern Affairs; Price Waterhouse of Agriculture; and Woods Gordon of Veterans Affairs. The studies were completed in June 1964 and all four departments were asked to proceed with pilot projects.

Subsequently, three other departments came in for study—Public Works, Health and Welfare, and Citizenship and Immigration. In Citizenship and Immigration, particularly, the consultants moved into the implementation stage and achieved quite spectacular results. Certain principles began to emerge with profound effects on the relationships between departments and the Treasury Board.

Once the basic concepts were firm, the Treasury Board agreed (August 1965) that seven departments should move toward programme budgeting. The new Estimates Manual being prepared with the help of Urwick, Currie will be available for use in connection with the estimates of 1967-68.

The Glassco Commission recommended that estimates and general planning be developed on the basis of a five-year forecast of requirements for each department. This recommendation was accepted and this principle has been incorporated in the financial processes.

Previously, a standard procedure had prevailed. First a Treasury Board "call letter" was sent to all departments notifying them that it was estimates time again and urging them to be virtuous. The departments then asked for much more money than was available. A bargaining process between Treasury Board staff and departmental officials ensued out of which emerged the level of the estimates to be recommended to the Treasury Board.

D.R. Yeomans

In 1964, after the appointment of Dr. Davidson, the character of this process began to change. In the "call letter" issued in that year, target figures were included for the first time. Departments at least had something to guide them. Most departments submitted proposals at levels within the prescribed limits and their estimates were approved without further consultation.

In 1965, the procedure again improved. The target figures were better designed and were based, to some extent at least, on long-range forecasts prepared by departments. As a result, the estimates procedure in the autumn was much easier to carry out.

In 1966, another important advance has been made. The Treasury Board is asking departments to expand the previous mid-year review of five-year forecasts into a more detailed and formalized Programme Review. Departments will be asked to put together, for each of their programmes, an outline of their requirements for the subsequent five-year period and to substantiate these programmes with a good deal of information of a cost/benefit nature. The Treasury Board will examine the departmental programmes against the existing government priorities and the expected financial situation for the five-year period.

In the second phase of the financial procedure, which will take place in the autumn, the main estimates, structured by responsibility centres, will be reviewed in the light of the programme planning that took place at the earlier stage. This is a very condensed summary of the process. Detailed information will be made available to departments in a letter that is going forward and also in statements and manuals that are under preparation. In brief, the Spring Review will be identified with programme development and the Fall Review with the actual estimates figures. The Spring Review will be of much greater importance than the Fall Review and will force departments to do a greater amount of long-range planning than heretofore. The Treasury Board will be pressing departmental officials much more vigorously in the future for "costed" plans and will not be content with a projection of past expenditures.

D. R. Yeomans

## DISCUSSION

(The following information was provided in answers to questions.)

### Administrative Load on Departments

The speaker said the Treasury Board had not undertaken to schedule the various responsibilities to be imposed on departments as a result of developments in financial planning and other requirements. He said there was a vast job of development to be done. The Treasury Board Secretariat was encouraging those departments that wanted to move ahead to do so. The stage might be reached where the central agency did press departments to make greater progress but that stage was certainly some time off yet. In the introduction of management techniques, the importance the Deputy Head gives to the drive for progress will depend on the nature of the department and the degree of difficulty encountered in implementing the new concepts.

### Operations Research

In reply to a request for a definition of this term, it was indicated that one could regard it as the application of systematic and quantitative methods to decision making in government and industry, particularly those that had been dealt with subjectively; as not quantifiable. While the use of modern mathematical techniques was very important, this was secondary to the main process which was a matter of enumerating priorities and looking at each systematically.

### Five-Year Plans

There should be no implication that five-year plans must hold firm for the full five-year period. In fact, the plan would be out of date early in the period but this was not a reason to do no planning. In a process of planning, the department would have stated its objectives and, most important, would have formulated alternatives and priorities. New developments meant changed priorities. The department would be in a position to re-deploy its forces. The plan would change, but because of the plan and the background work that had gone into it, the department would be making choices between meaningful alternatives. The important thing was that the alternatives would have been set out and the department would have costed these alternatives in advance and could readily make the change and assess the budget implications.

D.R. Yeomans

NEW CONCEPTS

of

FINANCIAL MANAGEMENT

*by*
*P.H. Irwin,*
*Urwick, Currie Limited.*

The text given on the following pages consolidates informa-
tion contained in a speech given by Mr. P.H. Irwin of Urwick,
Currie Limited (Management Consultants) at the External
Affairs Management Seminar, Montebello, P.Q., on April 22,
1966, together with basic information provided in a reference
paper prepared by Mr. Irwin for use on the same occasion. It
has been somewhat revised in the light of subsequent develop-
ments in order to provide a full picture of the new plan for
financial management in the Canadian Government. The text
has been approved by Mr. Irwin in its present form.

- Biographical Notes -

Mr. Irwin has undertaken several management consultant
engagements with the Canadian Government. He is currently
participating in an assignment to revise the Treasury Board
Estimates Manual. During 1965, he was Project Director of
the Financial and Personnel Management Study in the Depart-
ment of Citizenship and Immigration. In 1964, he supervised
the work of the Urwick, Currie consultants who made a study
of the administrative requirements of External Affairs. He
is a Chartered Accountant and became a partner of McDonald
Currie & Co. in 1951, a Senior Consultant of Urwick, Currie
Limited in 1955, and was appointed a Resident Partner,
Quebec District of Urwick, Currie in 1961. He is a graduate
of the Urwick, Currie Management Centre in England and of the
Advanced Management Programme at Harvard University.

NEW CONCEPTS OF FINANCIAL MANAGEMENT

by P.H. Irwin,

Urwick, Currie Limited

## External Affairs Budget

In examining the new concepts of financial management it may be useful to review a few basic facts about the External Affairs budget and about the existing financial system.  It is of interest to look at the main estimates of the Department of External Affairs for 1966-67, both to have in our minds a clear impression of the extent and nature of the Department's expenditures and also to review the standard objects under which expenditures are now made.

A condensed summary of the Main Estimates for 1966-67 is given in the following pages, together with comparable figures for the two previous years.  As will be seen, the total cost of running the Department itself is estimated at $37,668,000.  To this is added a further $27,180,100 in grants and assessments, largely for international organizations, bringing the total budget to $64,848,100.

Other estimates presented to Parliament by the Secretary of State for External Affairs are the costs of external aid, totalling $84,100,000 in grants to countries on the road to development and an amount of $1,660,200 for administration of the External Aid Office, bringing the total External Aid budget to $85,760,200.  Also included in the External Affairs estimates is an amount for special loan assistance through the External Aid Office of $50,000,000; the costs of the International Joint Commission of $392,000 and an amount for special advances to international organizations of $29,400.  The grand total of External Affairs estimates for 1966-67 comes to $201,029,700.

## Explanation of Terms

There are certain terms which are frequently used in connection with the existing financial system.  They are probably familiar to you but it might be useful if I mentioned them here.

Votes - A vote is a grouping of costs of items of a similar nature or common purpose for inclusion in estimates submitted to Parliament. Votes are of three kinds (and External Affairs prepares estimates under all three):

P.H. Irwin.

## SUMMARY OF ESTIMATES ON BASIS OF (I) ADMINISTRATION, CAPITAL AND OTHER COSTS AND (II) STANDARD OBJECTS

| | | Submitted 1966-67 $ | Approved 1965-66 $ | Change $ | % | Actual Expenditure 1964-65 $ |
|---|---|---|---|---|---|---|
| **EXTERNAL AFFAIRS** | | | | | | |
| **Administration** | | | | | | |
| Salaries | ( 1) | 15,041,000 | 13,777,500 | 1,263,500 | 9.2 | 12,409,153 |
| Allowances | ( 2) | 6,372,000 | 5,782,000 | 590,000 | 10.2 | 5,169,917 |
| Professional | ( 4) | 315,000 | 193,700 | 121,300 | 62.6 | 152,422 |
| Travel | ( 5) | 3,445,000 | 2,447,750 | 997,250 | 40.7 | 2,618,539 |
| Freight | ( 6) | 171,000 | 125,500 | 45,500 | 36.3 | 123,121 |
| Postage | ( 7) | 259,100 | 233,050 | 26,050 | 11.2 | 206,928 |
| Telephones | ( 8) | 3,026,000 | 2,995,000 | 31,000 | 1.0 | 2,841,424 |
| Publications | ( 9) | 289,000 | 258,000 | 31,000 | 12.0 | 174,363 |
| Adverstising | (10) | 142,000 | 97,000 | 45,000 | 46.4 | 59,047 |
| Stationery | (11) | 1,154,100 | 1,039,000 | 115,100 | 11.1 | 860,524 |
| Materials | (12) | 348,500 | 275,000 | 73,500 | 26.7 | 283,130 |
| Repairs - Buildings | (14) | 551,000 | 415,000 | 136,000 | 32.8 | 358,726 |
| Rentals - Buildings | (15) | 1,110,000 | 1,013,000 | 97,000 | 9.6 | 953,204 |
| Repairs - Equipment | (17) | 305,800 | 273,000 | 32,800 | 12.0 | 234,546 |
| Rentals - Equipment | (18) | 5,000 | 5,000 | - | - | 239 |
| Utilities | (19) | 545,000 | 444,500 | 100,500 | 22.6 | 438,844 |
| Pensions | (21) | 168,000 | 141,774 | 26,226 | 18.5 | 112,753 |
| Sundries | (22) | 1,697,700 | 1,735,900 | 38,200 | - 2.2 | 714,844 |
| | | 34,945,200 | 31,251,674 | 3,693,526 | 11.8 | 27,711,724 |
| Recoveries | (34) | - 95,700 | - 77,000 | - 18,700 | - 24.3 | - 101,220 |
| | | 34,849,500 | 31,174,674 | 3,674,826 | 11.8 | 27,610,504 |
| **Capital** | | | | | | |
| Buildings | (13) | 1,540,000 | 859,000 | 681,000 | 79.3 | 698,218 |
| Equipment | (16) | 1,278,500 | 1,255,000 | 23,500 | 1.9 | 881,451 |
| | | 37,668,000 | 33,288,674 | 4,379,326 | 13.2 | 29,190,173 |
| **Other** | | | | | | |
| Grants, Contributions, Assessments, etc. | (20) | 27,180,100 | 30,318,250 | -3,138,150 | - 10.4 | 20,461,255 |
| **Total External Affairs** | | 64,848,100 | 63,606,924 | 1,241,176 | 2.8 | 49,651,428 |
| **EXTERNAL AID OFFICE** | | | | | | |
| **Administration** | | | | | | |
| Salaries | ( 1) | 1,501,000 | 1,119,050 | 381,950 | 34.1 | 766,029 |
| Professional | ( 4) | 7,800 | 7,800 | - | - | 5,060 |
| Travel | ( 5) | 50,400 | 50,400 | - | - | 21,754 |
| Freight | ( 6) | 200 | 150 | -500 | 33.3 | 114 |
| Telephones | ( 8) | 14,800 | 14,800 | - | - | 8,051 |
| Publications | ( 9) | 15,000 | 16,500 | - 1,500 | -9.1 | 2,915 |
| Advertising | (10) | 4,000 | 2,500 | 1,500 | 60.0 | 2,224 |
| Stationery | (11) | 53,000 | 32,400 | 20,600 | 63.6 | 36,600 |
| Sundries | (22) | 14,000 | 8,000 | 6,000 | 75.0 | 9,544 |
| | | 1,660,200 | 1,251,600 | 408,600 | 32.6 | 852,291 |
| **Other** | | | | | | |
| Grants, etc. | (20) | 84,100,000 | 90,600,000 | -6,500,000 | - 7.2 | 80,556,407 |
| **Total External Aid** | | 85,760,200 | 91,851,600 | -6,091,400 | - 6.6 | 81,408,698 |

## SUMMARY OF ESTIMATES ON BASIS OF (I) ADMINISTRATION, CAPITAL AND OTHER COSTS AND (II) STANDARD OBJECTS (CONT'D)

| | | Submitted 1966-67 $ | Approved 1965-66 $ | Change $ | Change % | Actual Expenditure 1964-65 $ |
|---|---|---|---|---|---|---|
| **INTERNATIONAL JOINT COMMISSION** | | | | | | |
| *Administration* | | | | | | |
| Salaries | ( 1) | 110,500 | 105,500 | 5,000 | 4.7 | 101,326 |
| Professional | ( 4) | 257,500 | 52,000 | 205,500 | 395.2 | 10,695 |
| Travel | ( 5) | 15,000 | 15,000 | - | - | 9,733 |
| Postage | ( 7) | 100 | 100 | - | - | 25 |
| Telephones | ( 8) | 2,000 | 1,500 | 500 | 33.3 | 2,193 |
| Advertising | (10) | 3,000 | 3,000 | - | - | 726 |
| Stationery | (11) | 3,000 | 1,500 | 1,500 | 100.0 | 1,310 |
| Sundries | (22) | 900 | 900 | - | - | 240 |
| Total I.J.C. | | 392,000 | 179,500 | 212,500 | 118.4 | 126,248 |

### LOANS, INVESTMENTS AND ADVANCES

| | Submitted 1966-67 | Approved 1965-66 | Change | Change % | Actual Expenditure 1964-65 |
|---|---|---|---|---|---|
| **EXTERNAL AFFAIRS** | | | | | |
| Additional advance to Working Capital Fund of the World Health Organization | 29,400 | | 29,400 | | |
| Loans to Governments of Countries other than Members of NATO to provide Defence Support Assistance | | 20,000,000 | -20,000,000 | | |
| Loans to Government of India to finance the purchase in Canada of Aircraft and Associated Spare Parts | | 444,300 | - 444,300 | | |
| Total External Affairs | 29,400 | 20,444,300 | -20,414,900 | | |
| **EXTERNAL AID OFFICE** | | | | | |
| Special loan assistance for developing countries, for economic, educational, and technical projects | 50,000,000 | 50,000,000 | | | |
| Total External Aid | 50,000,000 | 50,000,000 | | | |

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(a)  administration

(b)  capital costs

(c)  contributions

Standard Objects - These are the specific kinds of expenditure made to carry out the particular purposes represented by votes. In the External Affairs budget there are, for example, 22 standard objects under the administration vote, in the form of salaries, allowances, travel, etc.

## Existing System of Financial Management

We can refer to the existing system and the new system of financial management although these terms are not strictly correct, since we are in a transition period in which elements of both systems are operative.

The sequence of the existing system may be described as follows:

1.  A Five-Year Forecast - The Department informs the Treasury Board of its anticipated requirements for a five-year period.

2.  Estimates Target - An upper limit of estimates is made known to the Department by the Treasury Board.

3.  Mid-Year Review - The Department examines its needs for the next fiscal year, particularly in relation to personnel.

4.  Main Estimates - The Department prepares detailed estimates of its financial requirements for the ensuing fiscal year. (In External Affairs this is done after information is obtained from all divisions and posts.)

5.  Review of Estimates - The Treasury Board officials and departmental officials together examine the proposed estimates in detail. Treasury Board officials often find it necessary to scale down the estimates in accordance with the limits of available resources.

6.  Submission to Parliament - The departmental estimates are published in the Blue Book and submitted to Parliament by individual ministers. In some instances (including External Affairs) the estimates are referred to a parliamentary committee for detailed study. When the estimates are approved by Parliament, departments are able to spend the amounts indicated, subject to certain controls of the Treasury Board.

7.  Allotment of Funds - Under this process, authority to spend money is established. These authorities are issued by the Treasury Board to the Department, and with approval of the Treasury Board, authority is also delegated by the Deputy Minister to more junior levels.

P.H. Irwin

8. <u>Commitment of Funds</u> - A system is maintained for the commitment of funds to ensure that funds are available for any proposed expenditure and that over-spending does not occur.

9. <u>Pre-Audit Procedure</u> - Before making payment the Chief Treasury Officer (Comptroller of the Treasury) checks to ensure that the charges are correct and that authority exists for the expenditure.

10. <u>Payment Procedure</u> - Some organizational units are authorized to make expenditures within certain limits. For example, the posts abroad are able to make purchases of local items. However, most payments are made by cheque through the office of the Comptroller of the Treasury.

11. <u>Reporting on Expenditures</u> - The amount actually spent is recorded and compared with the total alloted each month. This appears in the public accounts.

12. <u>Audit by the Auditor General</u> - The staff of the Auditor General carries on continuous work of auditing the accounts and, in an annual report, brings to the attention of Parliament any irregularities that appear to be serious.

13. <u>Lapsing Balances</u> - Any amount approved in a departmental budget which is not spent by the end of the fiscal year is no longer available. Money cannot be carried over from one year to the next without special parliamentary authority.

## Deficiencies of the Existing System

In examining the financial administration system in the Canadian Government, the Glassco Commission came to the conclusion that there were serious deficiencies. It said a major shortcoming was the lack of delegation of authority from the Treasury Board to departments and from senior management to successive lower levels in the departments themselves. The Commission considered that this was a fault that slowed down the decision-making process and hampered operations. It said there was inadequate planning for new needs in a rapidly changing world and little scope for innovation.

The Commission believed also that inadequate information was being made available to managers. The estimates were not in a form that helped them either to plan or to manage properly since standard objects did not reveal programme costs. Departmental management, as a result of the system, often focused its efforts on spending money to the full limit of departmental allotments instead of on getting the right job done at the right time.

P.H. Irwin.

It was the Commission's opinion that there was too much control at all levels. The system encouraged excessive checking of detailed information instead of the development of sound procedures. Generally there was a lack of good management techniques. In choosing managers, departments had given attention to professional skills of analysis or interpretation rather than to the ability to direct the work of other people in achieving results.

## New System of Financial Management

In the previous speech Mr. Yeomans dealt with the studies and pilot projects that have been undertaken since 1964 to test the validity and try out in practice the financial management concepts recommended by the Glassco Commission. I shall try to describe in a concise way what these concepts are.

The key concepts are those of programme budgeting and responsibility accounting. Under a programme budgeting system, a department's requirements for money and manpower are related in a direct way to departmental objectives and are examined on the basis of the plans and activities developed by the department to meet those objectives. A programme may be defined as a grouping of activities with a broad common objective. Operations are planned and financial requirements are estimated for each type of work done or service performed as part of a programme. By this means, the department arrives at a total cost for each programme. A department could have from one to five programmes providing the framework for its planning, budgeting and expenditures. Responsibility accounting is a concept that envisages delegation of authority accompanied by accountability for the results of the exercise of that authority. It signifies the assignment of financial responsibility to organizational units in such a way that the units have authority to make use of their resources within certain limits in the manner individual managers consider most likely to achieve results.

Programme budgeting and responsibility accounting are not synonymous. Each can be introduced separately but both are usually required for a financial management system to be fully effective. It may be helpful to examine each of these in greater detail.

## Programme Budgeting

We can look on programme budgeting as a method of preparing estimates which is designed to assist management in the decision-making process. It is an approach that focuses attention on government objectives rather than on the means by which they are attained. It assumes that plans to increase or alter the use of the resources available to the government can be properly made only when related to the government objectives. It further assumes that an assessment of performance in carrying out plans can best be made if these objectives are expressed wherever possible in quantitative or measurable terms.

P.H. Irwin

Thus, for programme budgeting to function properly, there are a number of essential prerequisities:

(a) The Government's aims and objectives must be stated as clearly and precisely as possible;

(b) all programmes and programme components to carry out these objectives must be explicitly identified;

(c) systems must be created to accumulate and report both financial costs and the data which reflects the degree of attainment of objectives.

Programme objectives can be set at more than one level. For example, the main programme can be justified in terms of broad social, economic or political objectives; sub-programmes can be justified in terms of services provided; activities can be justified in terms of work performed. The lower the level, the more likely it is that objectives can be expressed in quantitative terms. The objective of each component should be consistent with the objective of the programme of which it is part.

The first step in creating a programme budgeting system must be taken by senior management. The identification of government objectives and of the programme structures contributing to these objectives must take place at the top. Senior managers must endeavour to express in measurable terms the objectives of each subordinate unit responsible for a component of the programme.

## Responsibility Accounting

The budgeting system must recognize that more than one organizational unit will normally contribute to the execution of a programme. Accordingly, programme budgets must be broken down into responsibility budgets. Responsibility budgets are normally expressed in terms of objects of expenditure (type of expense - salaries, travel etc.) A manager at the lowest level of responsibility needs to know what resources he requires and where and when he can get them. The budgets of higher levels of responsibility encompass the total of subordinates' budgets in keeping with the principle of delegation of responsibility. If operational and financial responsibilities are to correspond, resources requested by each organizational unit should be justifiable in terms of the objectives assigned. Thus, responsibility budgets must follow or emerge from programme budgets. Each point in the organization where authority can be exercised in the use of resources, and an individual manager held accountable, can be made a centre of responsibility accounting.

P.H. Irwin.

## Organization for Financial Management

A system of responsibility accounting should match but not dictate the manner in which a department organizes itself to carry out its work. At the same time development of the system may disclose organizational anomalies which will require correction before it can operate effectively. If the organization is properly structured there will be no overlapping of management responsibilities, and accountability can be determined. If clear organizational lines are not established and adhered to, it will be impossible to formulate an effective responsibility reporting system. If a manager has more than one boss, he cannot be held accountable for the results of conflicting direction. Therefore, organizational relationships must be clarified before responsibility can be assigned and a responsibility reporting system initiated.

Situations will arise in which the manager of a responsibility centre has little opportunity to control spending. The greater proportion of his costs could represent commitments over which he has no authority and indeed over which he needs no authority in order to discharge his responsibilities. In such cases, there may be little responsibility accounting of expenditures. However, the advantages of participation by the manager in the preparation and evaluation of the plans for his unit should not be overlooked.

## Management Reports

If the new plan for financial management is to operate effectively, there must be better management reporting. By management reports we mean simply the up-to-date information that should be provided at each level in the system to assist managers in assessing results and exercising control. Management reports show progress against plans and indicate to the alert manager where corrective action should be taken. To be worthwhile and useful, these reports should satisfy certain basic criteria:

- Accuracy: The actual results achieved within the boundaries of the area or activity reported on must be recorded with sufficient accuracy to be truly representative of the situation for management control purposes;

- Accountability: the individual manager responsible for achieving results must be identified;

- Comparability: the actual results must be compared on a valid basis with planned objectives or standards;

- Promptness: the results must be reported to management in sufficient time for corrective action to be taken;

P.H. Irwin.

- Consistency: the presentation of results must be consistent for all levels of management and from one reporting period to another; and

- Simplicity: the results must be presented clearly and concisely without extraneous information or detail.

At the present time a great many managerial reports in the Government provide historical or statistical information that is of little use for control purposes. Managers are generally not being made aware of costs on a regular basis nor are these costs being compared with plans.

## Application to Departments

We have examined the general principles of the plan for financial management. Let us now look at what will be needed in each department throughout the year to implement this plan. The following are component parts of the system as it is expected to function:

1. Long-range Plan - Each department will develop a long-range plant to cover at least a five-year period. This will be revised annually. In preparing this plan, senior managers will take into consideration all the needs of the department and will cover programme components, resource requirements, the assumptions on which the plans are based and the priorities that should apply. The basic purpose of this plan is to determine what the department is supposed to do and how it will achieve the desired results.

2. Programme Review - In April of each year, departments will be requested to prepare proposals for the subsequent five-year period for each of the programmes in their long-range plan. The programme review will include indications of the funds and personnel required annually over the five-year period. It will also make some reference to performance indicators i.e., the ways in which performance can be evaluated and progress measured in each programme. The Programme Review Submission prepared by each department will be a senior management responsibility. It should be signed by the Minister. In time it will assume greater importance than the main estimates. This document will be examined by the Treasury Board. It will give the Board the opportunity to grant approval in principle for the long-term plans of the department and to set the upper limits of financial and personnel resources for each programme for the ensuing fiscal year. The programme review is designed to permit Treasury Board to consider the proposed plan of departments in the light of general government priorities and the total resources available.

3. Detailed Budgets - Departments will translate the approved plans and financial limits into goals for each centre of budgetary responsibility for the ensuing year. They will then prepare detailed work plans and estimate the specific resources required to carry out the assigned tasks. Managers at each level responsible for executing the work will participate in the preparation of the detailed budget.

P.H. Irwin.

4. <u>Main Estimates</u> - A submission will be made by each department in October, as at the present time, of its main estimates. This will be a summary of the department's budget for the ensuing fiscal year. It will show the manner in which the responsibility for carrying out approved plans is to be assigned and will identify resource requirements. Changes in plans and financial requirements in excess of the limits previously assigned by the Treasury Board on the basis of the programme review will be examined by the Treasury Board. After the estimates are approved by the Treasury Board, they will be submitted to Parliament in the usual way.

5. <u>Financial Controls</u> - Control procedures will exist which will ensure that funds are spent as intended by Parliament. These will necessitate the development of improved management reporting systems at all levels. It is possible that a considerably greater use of facilities of the Comptroller of the Treasury will be available on a service basis for this purpose.

<u>Application to External Affairs</u>

Generally the new concepts of financial management can be applied to the Department of External Affairs. They should in time enable the Department to plan its work more logically and achieve greater effectiveness in its operations.

A good deal of study will have to be devoted to the question of where responsibility centres should be established. This should be worked out on an orderly basis so that those in charge should have goals and the plans to attain them. They should also be held accountable. Responsibility should be divided but not shared. It will be necessary to identify the responsibility of each organizational unit for conducting its part of a programme.

It is important also for External Affairs to concern itself with performance indicators, i.e., the conditions that exist when a job is well done. Each department must determine for itself what indicators are meaningful as representing progress or achievement towards objectives. Performance indicators can help determine priorities and help in the evaluation of results. They can be both qualitative and quantitative. They might include the results expected, the level of service by amount and efficiency, the work units and the cost relationships.

Delegation of authority is important for External Affairs. It will be to the Department's interest to encourage the Treasury Board to delegate more authority to it. A good example of successful delegation was the transfer from the Treasury Board to the Department of authority for administering the educational allowances. It is understood that this authority has been exercised effectively by the Department with benefits in increased service and reduced administration. With regard to internal delegation of authority it is recognized that there is some doubt as to whether the Department should take its accounting processes right down to the post and make the Head of Post

P.H. Irwin

responsible for budgeting. Only some of the costs can be influenced by the head of post. Approximately eighty per cent are committed costs which are earmarked for certain purposes beyond the power of the Head of Post to decide. This is a question to be studied. While it may not be desirable to regard a post as a cost centre, the fact is that the Head of Post is doing a management job and it is important for the Department to have some way of measuring the results.

The Department is concerned about the extent to which unforseen emergencies take up its resources of manpower and money in unpredictable ways. However, External Affairs should regard itself as being in the crisis business, assuming that emergencies will arise, and planning the ways in which they can be met.

Certain questions arise to which the Department will need to find answers in applying the new concepts of financial management. I list some that are obvious:

- Does the lack of financial authority hamper the posts in any way in achieving their purposes?

- Would the exercise of greater authority at the posts save money?

- How are the posts held accountable for costs, for the use of resources and for results?

- Do departmental managers need more information?

- Does the present organization structure inhibit effective management?

The Department of External Affairs will have special problems in adjusting to the new concepts of financial management. However, I do believe that there is much to be gained, even though special modifications of the standard system will have to be made. The essential purpose is to permit a department to do a better job with the manpower and money at its disposal and I think there are important possibilities for progress open to all departments, including the Department of External Affairs.

## DISCUSSION PERIOD

(The following information was provided by the speaker in answer to questions)

Innovation - In expanding on this term, the speaker said that managers should bear in mind that they live in a rapidly changing world in which technological, social and economic developments occur continuously.

P.H. Irwin.

They were faced with the obsolescence of techniques and procedures.
They must continuously look ahead and identify the forces of change and
the kinds of change. Only in this way would they be able to adapt the
Department to the world in which it had to operate.

Load of Responsibility -- In commenting on the load imposed by
the new financial system, he said there would be new requirements but also
new advantages. Departments could perform more effectively. The key
was planning. Planning was part of the management process and the nearer
to the top the more one was involved in it. The programme review was
simply an orderly process of planning. It would be required of all
departments. Some departments were setting up a special organizational
unit to be concerned with long-range planning but top management could
not abdicate responsibility for planning. If a special planning unit
were set up, it should do the fact-finding and editorial work but the
plans must reflect the convictions and involvement of senior management
personnel. There was no doubt that the programme review procedures and
other elements of the planning process would take up more of the time of
senior management than had been true in the past. He hoped that the
organization study now under way in External Affairs would bring about
changes that would allow senior management to devote more time to planning
purposes. The Department was, in fact, doing programme planning all the
time; it had planned the opening of new posts in Africa, the development of
cultural relations and other programmes. In doing so it made value judge-
ments, indicating the direction in which it wanted to move. All that was
now suggested was that the process of planning be made more explicit and
that a system be developed that would directly connect planning with the
decision-making process and that would allow an evaluation of alternatives.

Quantitative Measurements - The speaker agreed that there was a
danger of relying too greatly on quantitative measurements in circumstances
in which they were not meaningful. For example, a situation could exist in
which information work was increasing all the time in terms of total
measurement while the international relations they were intended to serve
were getting worse. The speaker said it was important to try to identify
what signified good performance. The Department would have to prepare
its own standards to serve its particular objectives and these might have
to be more subjective and more qualitative in form than those of some other
departments.

Flexibility - In reply to doubts expressed about the wisdom of
identifying certain activities and putting them in compartments and thereby
lessening flexibility, the speaker said that if the financial system is
properly designed it should improve flexibility. The right to alter plans
was implicit. But if planning did not exist, flexibility could be equated
with chaos. Once a planned programme had been approved for a year ahead,
the Department should be free to carry it out. It should certainly have

P.H. Irwin.

enough freedom to be flexible and to manoeuvre. External Affairs
should find itself with more and not less flexibility under the new
concepts of financial management.

Planning Unit - In answer to a question as to whether it
would be easier to get money if the Department had a planning unit, the
speaker said the mechanics of planning were of less significance than
the results. Treasury Board would be interested in knowing whether
the Department had a well-designed programme structure, and whether
it was able to handle delegated authority effectively and what the
Department hoped to achieve.

Delegation to Posts - In answer to a question of whether
financial authority should be delegated to posts, the speaker said
that the question for the Department to answer was whether lack of
financial authority hindered the Head of Post in doing his job. The
problem of the degree of decision and independent action to be assigned
to posts required study.

Definition of Programme - In answer to a request for a definition
of a programme, the speaker said that a programme was an operation of
major significance undertaken to achieve social, economic or political
objectives of the Government. Most departments would have one to five
programmes. A programme should be divided into activities and sub-
activities. For example, in the Immigration Branch, a programme might
be that of obtaining immigrants for Canada. The activities contributing
to this programme could be identified as seeking and finding the necessary
immigrants; transporting the immigrants to Canada; exclusion of undesirables;
control of non-immigrant visitors and administration. He recognized there
was a problem of defining the programme structure and of avoiding overlapping.
A principal programme of External Affairs might loosely be described as
developing good relations with other countries, with activities of
representation abroad, cultural affairs, communications and emergency
evacuation.

## THE MANAGEMENT PROCESS

Note: While his main topic was financial management, Mr. Irwin dealt at
some length in his talk at the seminar and in reference material he
provided, with the requirements of good management generally. A
condensation of the views he expressed is given below.

## Definition of Management

While we are concerned principally with the implications of the
new financial system, we might reflect also on the broad requirements of
good management. Management is simply the art of attaining objectives
through directing the work of other people. Effective managment involves

P.H. Irwin.

six processes - forecasting, planning, organizing, directing, co-ordinating and controlling. No matter what the endeavour, these processes should be involved. If any one of them receives inadequate attention, the results are likely to be less effective.

The Glassco Commission made some important recommendations in 1962 on the management of government operations. In the intervening years, a good many improvements have been made, both in the government system as a whole and in individual departments. The Glassco Report emphasized in particular that departments should be given greater authority for management of the money and manpower available to them; that managers in departments should be held accountable for effective use of these resources; and that improved systems and services were needed if managers were to discharge responsibilities effectively and if their performance was to be properly measured.

We must always be careful to distinguish between effectiveness and efficiency. Effectiveness means doing the right thing; efficiency means doing things right. Both are vital but effectiveness should come first. Unfortunately, too often, time is spent performing efficiently certain tasks which need not be done at all.

Looking at the role of the manager in a broad perspective we could say that he must establish objectives; direct efforts toward the attainment of these objectives; measure the results; develop the capabilities of employees; and promote innovation as a means of improving the policies and practices that lead to the objectives.

The elements of good management may be described in the following chronological order in which they usually take place.

1.  Establishing Objectives

    This involves the following activities:

    (a) Determining the goals or a sense of purpose for the organization, that is, management by objective;

    (b) Determining guidelinesfor reaching the objectives, that is, policy development;

    (c) Synthesizing information to determine alternative courses of action and selecting the best course, that is, planning programmes;

2.  Directing the Attainment of Objectives

    This involves the following activities:

    (a) Determining the best method of assigning facilities and people to accomplish the established objectives, that is, organization;

P.H. Irwin.

(b) Telling individuals or groups what to do, explaining objectives, and describing the organization to accomplish them, that is, communication;

(c) Explaining to individuals why a job has to be done and presenting it in terms which will identify the success of the project with the interests of the individual, that is, motivating;

(d) Aiding progress through giving suggestions, orders, or additional data, directing counselling and guiding, and by teaching how the objectives can be accomplished, that is, co-ordinating.

3. Measuring Results

Every manager must be able to determine the effectiveness with which his plans are being carried out. Thus, evaluation takes place throughout the active phase of managing as well as when the project has been completed. The manager finds out, for example, what impediments to progress are developing by information communicated to him by his group. This information, acting on a sort of feed-back principle, shows where alterations to plans may be necessary. At the end of the project, the final results are compared with those anticipated. This often provides new information and the starting point for another managing cycle. This is known as the control function, and every member of the management group is expected to exercise it within the scope of his assigned authority.

4. Developing People

The preceding three elements constitute the total managing cycle. But implicit in the job of managing is the obligation to develop people. The manager must get his results through people. It follows, therefore, that if these people are adequately qualified through proper development, the results he will obtain will be better than would otherwise be the case. But in addition to this short-range goal, the manager has responsibility for the continued functioning of the work which he directs. The lives of many people — employees, the public at large — are vitally affected by the continued successful functioning of each component of the organization.

Therefore, the manager has an obligation implied by his very position to do what he can to ensure continuity of operation. This means that he must encourage the development of those who will in due time succeed him. This should be a continuing process, something that he does at all times as he contacts his people. Therefore, developing people exerts its influence on the total managing cycle.

P.H. Irwin.

5. Promoting Innovation

The promotion of innovation is, in some ways, the most
important of all.  The manager must be a steady force
behind innovation.  If he wants the organization to progress,
he must never permit himself or his people to become satis-
fied with things as they are.  He must always strive to
stimulate his people to seek better ways of doing their
assigned tasks.  The constant search for innovation should
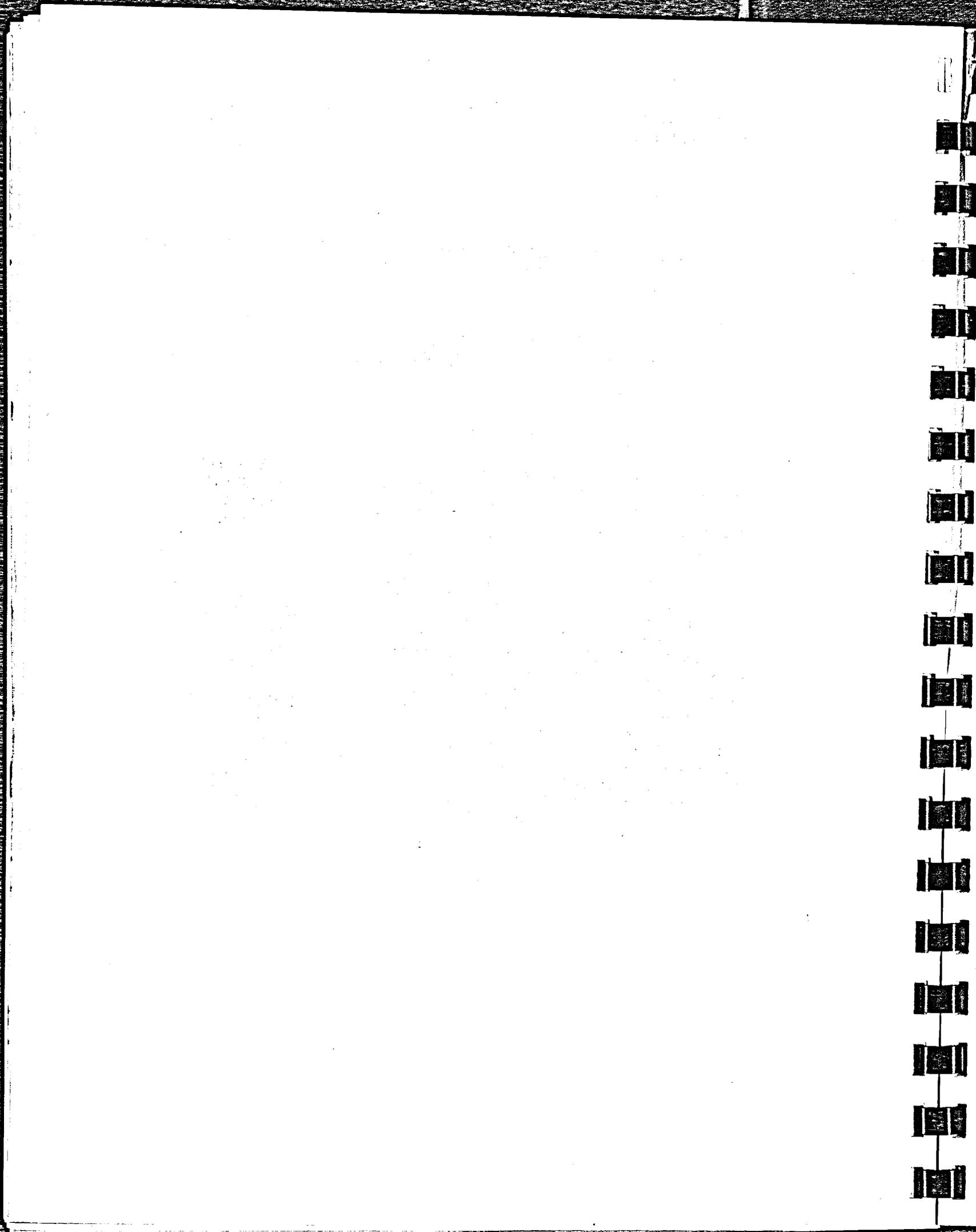influence every phase of the managing cycle.

P.H. Irwin.

PROGRAMME PLANNING AND BUDGETING IN THE CONTEXT
OF WORLD-WIDE OPERATIONS

*by*
*Dr. Donald S. Orkand,*
*Vice-President, Operations Research Inc.,*
*Washington, D.C.*

- Biographical Notes -

Dr. Orkand is Vice-President of Operations Research
Inc. and Director of its Management Systems Division.  ORI is
a private operations research firm that applies the quanti-
tative methods of science to decision problems in government
and industry.

Since joining ORI in 1960, Dr. Orkand has directed
the development of management information systems and the
performance of economic analyses for government and business
organizations.  In the information systems field, his recent
efforts include the development of manpower management
systems for the Bureau of Naval Personnel, the installation
of a Civil Defence Management System, the design of an ADP
Management System for the US Army Data Command and the
formulation of planning and control procedures for the Lewis
Research Centre of the National Aeronautics and Space
Administration.  His work in economic and cost analysis
includes the direction of a cost analysis of the Supersonic
Transport for the Office of the Secretary of Defence and the
design of an economic analysis system for the US Small
Business Administration.

## PROGRAMME PLANNING AND BUDGETING IN THE CONTEXT
## OF WORLD-WIDE OPERATIONS

### By Dr. Donald S. Orkand

### Vice President – Operations Research Incorporated


My objective today is to present the general concept of planning, programming, and budgeting (PPB) systems and to indicate how this approach can be applied in the context of world-wide operations.

THE PPB or programme budgeting approach was first instituted in the U.S. Department of Defense starting in 1960. Last year, the President directed all of the executive departments to utilize similar concepts and systems; the directive requires very rapid implementation on a government-wide basis.

There have, of course, been objections and problems. Some departments have said that such a system may be advantageous for a business but not for government, or that it might work in the Defense Department but not in their own special area of responsibility. Further, we have only begun to develop the concepts, techniques and information systems that are needed for PPB applications across a broad range of government activities.

Essentially, however, what is really involved in PPB is a systematic approach to planning. In planning government activities, we face the problem of allocating resources between competing and sometimes conflicting programmes. It is often not a choice between good and bad, but a choice amongst a number of objectives and programmes, all of which are desirable in some sense.

Identifying these choices and making them explicit and rational is a difficult process. But, what is the alternative? Can an organization get along without planning? What is proposed under a PPB system is really just a more orderly process of planning than has been followed in the past. In fact, in a department such as yours, it may be that planning is more important than in some others since you are engaged in intellectual activity and you can't, for example, have the right number of foreign service officers with ten years experience when you need them without planning to meet this need.

D.S. Orkand

The talk is divided into two major sections: The first presents the general concepts of programme budgeting and discusses illustrative applications to a variety of government functions. Frankly, the range of these applications is intended to persuade you that the application of these concepts to External Affairs is, in fact, quite feasible. The second section sketches, in a preliminary way, some approaches to the implementation of a PPB system in the Department of External Affairs.

D.S. Orkand

## PART I - THE GENERAL CONCEPT AND ITS APPLICATION

I would like first to talk about the overall concept of planning, programming and budgeting systems. We can then spend some time in discussing the ways in which the objectives of a programme and of an organization can be defined. Finally, we will consider how the specific tools of cost benefit analysis can be applied to evaluate programmes. But note that the logic first stresses the overall framework and then the clear definition of objectives. The cost effectiveness analysis is treated only at the third level. I might also add that there have been some attempts made to distinguish between the words "Operations Research", "Programme Analysis", "Systems Analysis", etc. I will use them inter-changeably to mean a logical and generally quantitative analysis of objectives and programmes.

### Planning, Programming and Budgeting Systems

A good starting point in considering the basic concept of planning, programming and budgeting systems is to review the limitations of the traditional budgeting approach which revolves around an annual cycle. The limitations may be enumerated as follows:

1. vagueness of objectives;

2. input or activity orientation;

3. partial costing;

4. limited analysis of alternatives;

5. gap between planning, budgeting and control;

6. no measures of actual and planned accomplishment;

7. short review and decision period.

Let us consider these in detail. First, the objectives are vaguely stated. One defines the defense objective as being that of maintaining the security of the country or one defines the economic development objective as that of adding to the national growth and relieving depressed areas.

D.S. Orkand

We find, too, that there is what we might term an <u>input or activity orientation</u>. The traditional budgets are laid out in terms of the resources required — people, dollars, and so on — rather than what it is we are trying to get out of the programme. Stated another way and using the defence budget as an example, the traditional input type budget was first laid out in terms of services — Army, Air Force, Navy — which are really devices for achieving certain objectives. It is the objectives (and alternatives) that one would like to focus on. The activity orientation simply breaks down budgets in terms of such things as operations, research and development, personnel costs, and so on, again, without an adequate definition of what it is we are trying to accomplish.

The third problem is what we might term <u>partial costing</u>. One sense in which it is partial is that in an annual budgeting approach, we look only at the new obligational authority being requested for the single year without asking what this implies for future years. For example, we would embark on the development of a new weapons system or of a highway programme after evaluating only its initial cost, whereas the really relevant consideration is the total cost of the programme including research, development and, ultimately, operation.

A related difficulty was that there was a <u>limited analysis of alternatives</u> in that we always assumed that there was a particular need and that it had to be met in a certain way. We often failed to consider, for example, the ways in which different levels of that need might be met, Our only statement was that this activity was required. We said all the activities we set forth were essential and none could be cut. We needed a way of saying which ones were more important than others and determining what the "pay-off" was from each.

There was also a <u>gap between planning, budgeting and control</u>. Planning was long range; budgeting was short range. No comparison was made of planned and actual results. We measured only the planned and not actual expenditures. The plans of the department, the things they actually intended to achieve, were not linked directly to the budget and since the budget covered only a single year, there was <u>no real way to measure the achievements</u> or the actual accomplishments of a programme as opposed to what had been planned or predicted.

Finally, all of these problems were compounded by the fact that treating every budget decision for a single year at a time, meant that each decision had to be reviewed singly and in groups within a <u>very compressed time</u>.

D.S. Orkand

These, then, were the considerations that led to the formulation and adoption of today's planning, programming and budgeting systems. What are the objectives of the P.P.B.S.? They may be summarized as follows:

1. Relate national needs to agency objectives in quantitative, output-oriented terms;

2. Force the analysis of costs and benefits of alternative programmes and levels;

3. Link budgets and multi-year plans;

4. Measure actual and planned performance;

5. Stimulate continuing analysis of existing and potential programmes.

Let us consider each of these in turn.

The basic objective is to relate national needs to agency objectives in quantitative and output-oriented terms. We would like to know for each agency: How do its objectives support the national goal? What part does it play in meeting national goals? What is it trying to accomplish, and how can this be measured in terms of actual achievement? For example, if an agency, such as one of the economic development groups, has as its objective increasing the national income or relieving poverty in particular regions, we would like to be able to state the real results they expect to achieve on a year-by-year basis, and then measure progress against those plans. This contrasts sharply with saying only that we were given so many millions of dollars and, somehow, we got it spent. (Which, given the lateness of the appropriation cycle and the problem of processing paper, is perhaps not trivial either.)

As a second endeavour we intend in this system to stimulate the continued analysis of the costs and benefits of alternative programmes and levels of programmes. We wish to evaluate programmes not in terms of a single national need that must be met, but rather in terms of competing national needs so that more of one thing means less of another.

Our third objective is to link the budgets with multi-year plans, i.e., our plans for each of the agencies will extend over a several-year period and the annual budget will then represent merely the first slice of that plan. We say multi-year plans because the tendency is to think in terms of McNamara's five-year force-structure-and-financial programme but there is no particular reason why each department should have a five-year plan as opposed, in some cases, to a six-, seven-, or eight-year plan.

D.S. Orkand

Chart 1

# SBA PLANNING, PROGRAM AND BUDGET SYSTEM
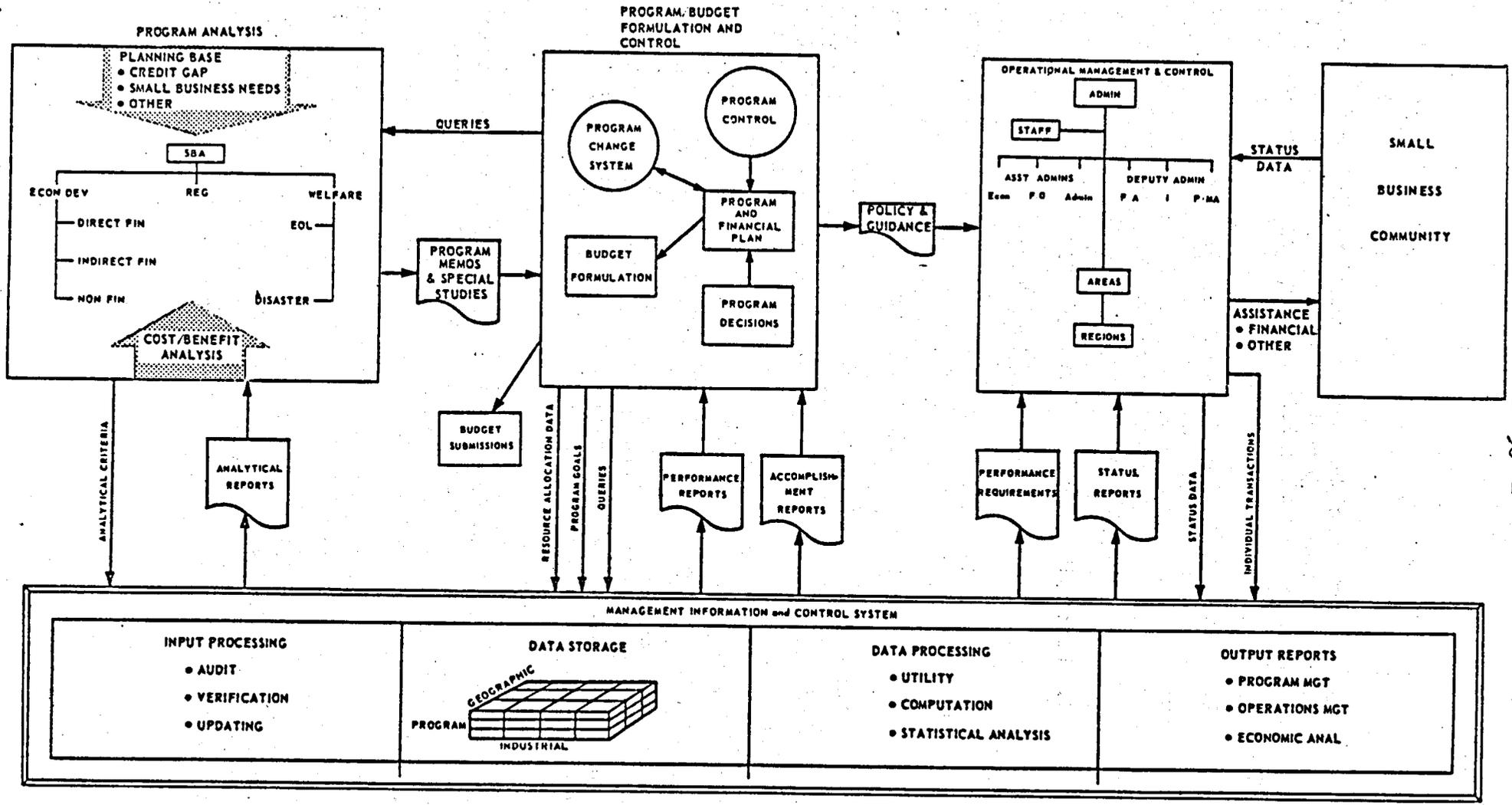
Perhaps the final objective requires some emphasis. We would like the system to stimulate the continuing analysis of potential as well as existing programmes. Programme analysis should be not merely a way of evaulating existing programmes; it should be a way of thinking out quite new and quite different programmes. As I shall point out later, your objectives must be defined in such a way as to permit this to happen.

I wish here to show a diagram (Chart 1) of such a system in order to identify some of the principal elements. This is an outline of a system we are developing for the Small Business Administration in the United States, which is an agency charged with responsibility for aiding the small business section of the economy.

Starting from your left, we have a box labelled "Programme Analysis". Here we are concerned with defining the objectives of the agency so that we can present to the decision makers a full repertoire of options or alternatives for meeting the agency objectives. The centre box represents the programming and the budgeting functions. This is the area in which the decisions made in general terms from the programme analyses are broken down into a detailed multi-year programme. In performing the programme analyses we want to consider all the costs of the programme no matter when they will be incurred, i.e. we want to consider the programme as a total entity. In the second area, we are concerned with detailing the expenditure and the expected accomplishments on a year-by-year basis. Then the multi-year plan needs to be translated into the traditional budget forms which are perhaps less useful for decision purposes but are, nonetheless, a legal requirement.

Finally, in the third area we must treat the day-to-day management of operations. Earlier we were concerned with the basic question of meeting our objectives; here we are concerned with perhaps the subsidiary but nonetheless important question of whether we are doing on a day-to-day basis the things one needs to do, e.g., is the backlog of loan applications being processed rapidly?

On the bottom, we have a Management Information and Control System, the system that provides the information needed to support these functions including everything from the general economic information needed to define the needs of small business right on through information pertaining to internal agency operations such as volume of loan applications, number of personnel, etc. A management information system may be a computerized system, as it is in this case. It may also be a relatively simple manual system. The term "data banks" is also becoming popular to refer to organized collections of economic and management information.

In my talk today, we are primarily concerned with the first box, the programme analysis box. I want to point out, however, that the tools of operations research and systems analysis play their roles in the other areas as well. We note that the output of programme analysis is a programme

D.S. Orkand

Chart 2

## PROGRAM ANALYSIS – OVERVIEW
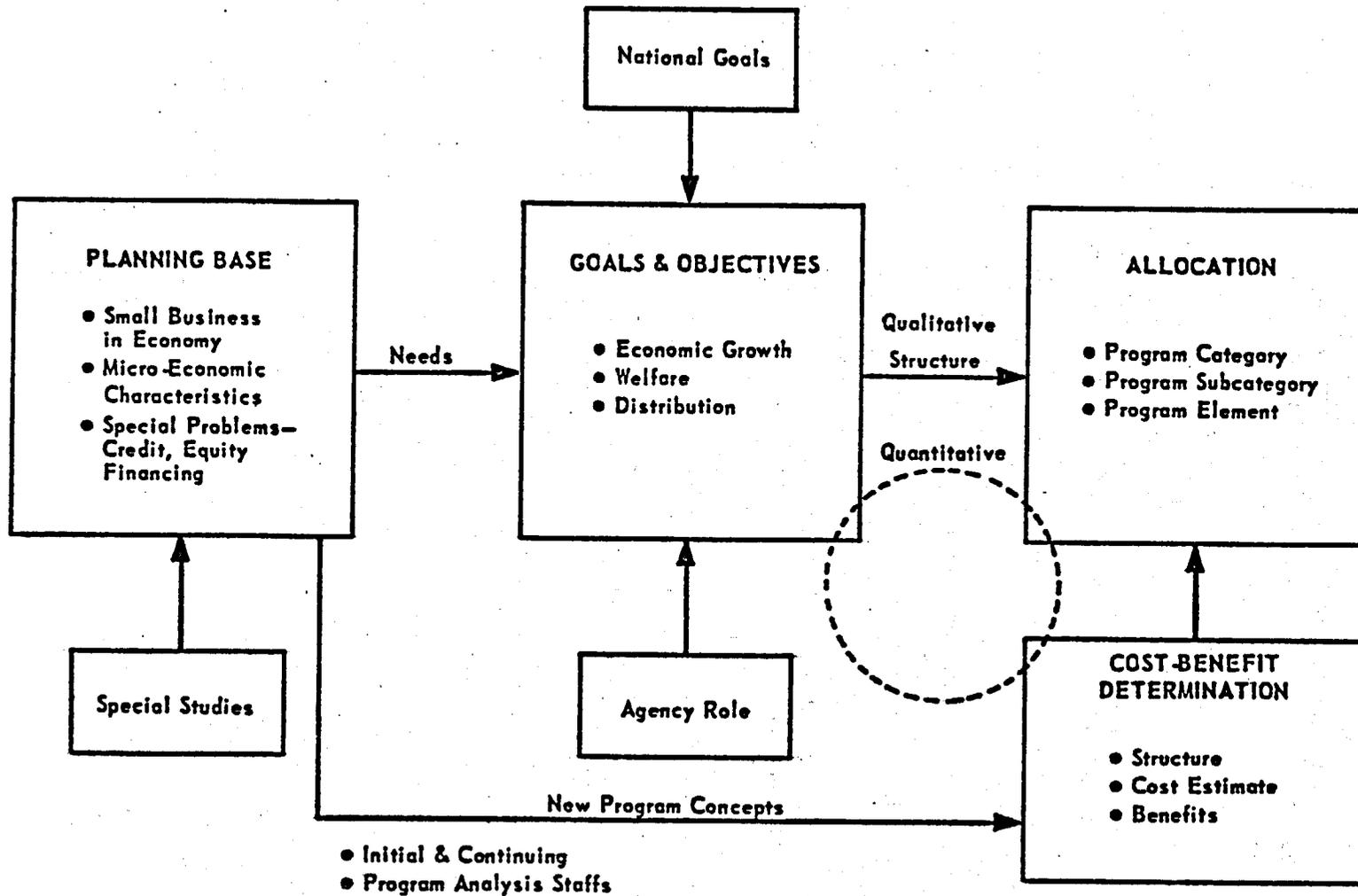
memorandum which, as I said earlier, presents to the decision maker
the relative alternatives and considerations, in quantitative terms
to the extent possible, but with the qualitative factors at least
listed as part of the decision structure.

What then is the role of systems analysis or operations
research in the planning, programming and budgeting process?  It
includes:

    (a)  the quantitative definition of goals and objectives;

    (b)  the evaluation of the costs and benefits of alternative
        programmes;

    (c)  the evaluation of alternative programme levels;

    (d)  the development of new programme concepts.

## Definition of Objectives

Now let us look for a bit at how this works in a specific case
(Chart 2).  This is a highly summarized view of the programme analysis
function in a small business area.  We have on our left what one might
term a planning base.  By planning base, we mean this:  given that a
government programme relates to a particular national need, the planning
base is the combination of quantitative and qualitative information that
enables us to appraise both the nature and the extent of that need.  In
the military context, for example, it is generally referred to as a
"threat" analysis, a view of the world around you and the forces that both
support and threaten you.  In its economic context, some elements of the
planning base would include information pertaining to:

    (a)  the role of small business in the economy;

    (b)  the economic characteristics of small business;

    (c)  special problems, say in credit or equity financing
        with which small business is faced.

These define some level of need and, as you can see from the
top of the diagram, also help to define a set of national goals.  One
might then say that there are three kinds of objectives with respect to
small business.  The first is economic growth, that is simply adding to
the aggregate national income.  The second is welfare which includes the
use of small business financing to aid the depressed areas or assist
minority groups, i.e., the primary goal is not that of contributing to
the national economic growth but of re-distributing national income.  The
third is the general maintenance of the small business sector.

D.S. Orkand

At this point, we can consider which of these national goals should be met by one agency as opposed to another. There are, in fact, other ways to aid depressed areas or particular minority groups than through small business. The job corps, proverty corps, etc., are examples. The product of this analysis is what one might term a qualitative structure of goals and objectives. This is simply a statement, a listing if you will, of what our goals and objectives are. This "simple listing" is perhaps the most difficult part of the whole process because if you start untangling this you find that the statements you have inherited through legislation and history are really not very useful.

Having established these qualitatively we then need to consider the questions of defining quantitative goals for particular programmes and objectives and allocating the resources among the various programmes to meet the objectives.

This is where we get into the problems of allocation and cost benefit determination. That dotted circle on the chart is intended to represent the fact that this is a cyclical problem. One starts by defining a quantitative level for the goal, e.g., we want to reduce unemployment by 2%. We do some analysis and find perhaps that reducing unemployment by 2% requires an enormous expenditure and we then go back and adjust our objective in terms of more reasonable levels. Of course, this planning base also leads to the generation of new programme concepts to be evaluated.

## Programme Structures

Let us look briefly at several examples of qualitative structures of objectives which are generally called programme structures. The familiar example is that of the Department of Defense programming system. As I said earlier, we used to have our defense goals and objectives structured in terms of the three services and, subsequently, structured also in terms of activity such as operations, personnel and so on.

To-day we have broken this down in terms of what we view as our defense objectives:

      (a)   strategic retaliatory forces;

      (b)   continental defense forces;

      (c)   general purpose forces;

      (d)   airlift and sealift;

      (e)   reserve and guard;

(f)  research and development;

(g)  general support;

(h)  retired pay;

(i)  military assistance.

If we look at the first four of these, we see that they meet the primary criteria we established earlier, i.e., these are output-oriented objectives. The strategic retaliatory objectives, for example, can be met by the Navy, or by the Air Force, and, indeed, with Polaris and Minuteman we meet it through a mixture of the two. The point is that we can look at an objective that cuts across service lines. Also, when we analyse our continental defense programmes, for example, we can consider meeting this objective through airplanes, through missile systems, or, in fact, through fallout shelters. Any of these are ways of preserving a certain number of lives. The question is how one chooses to do this and which is the most effective way.

The criteria for decision should not be the budget but the potential performance. In some areas, of course, you must make a judgement. For example, how much should you spend on research (which is not output-oriented); then you must allocate a mix of the systems to meet your objectives.

There are approximately 1,000 elements in the 10 categories of the defense programme system and each element is in one service. That is how management accountability is achieved in the total programme. Nobody dreams of doing defense programming now on the basis of three services. I should emphasize that because you have a programme structure and a statement of objectives, it doesn't mean that you will develop your organization along those lines. These are objectives and the operating organization may not be patterned on those objectives. The objectives relate to what you want to get done, not how hard you are going to work at it, or how you are going to do it. There do have to be, however, physical measurements of output that relate to your statement of objectives.

Let us now look at the transportation programmes of the United States Government as they now exist (Chart 3). We have these programmes broken down today by aviation, water transportation, highways and trust funds. These are the budget categories and the recommended 1966 new obligational authority is something like $3.9 billion. As we look at this, it becomes apparent that we have not yet defined these programmes in any way that would help us determine how much ought to go into

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Chart 3

(Millions of dollars)

| | Recommended 1966 NOA |
|---|---|
| **Aviation** | |
| • Federal Aviation Agency | 729 |
| • Civil Aeronautics Board – subsidies | 84 |
| **Water Transportation** | |
| • Department of Commerce | 347 |
| • Coast Guard | 458 |
| • Interoceanic Canal Commission & others | 8 |
| **Highways** (mainly on national forests & public lands) | 40 |
| **Trust Funds** | |
| • Highway Trust Fund | 3930 |

## OUTLINE OF A NATIONAL TRANSPORTATION PROGRAM

I. GENERAL INTER-CITY TRANSPORT

- Interstate Highways

    - Interstate Highway Program
    - Primary System Highways

- Domestic Water Transport

- Aviation

    - FAA & NASA Aircraft Tech.

II. URBAN COMMUTER TRANSPORTATION

- Urban Highway Systems

- Urban Transit Systems

III. RURAL ACCESS

- Secondary System Roads

- Forest, Public Lands, National Parks Roads

IV. MILITARY STANDBY TRANSPORTATION

V. INTERNATIONAL TRADE AND PRESTIGE

FY | 67 | 68 | 69 | 70 | 71 | 72

- 63 -

Chart 4

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(Illustrative)

# ELEMENTS OF A NATIONAL TRANSPORTATION SYSTEM

## URBAN COMMUTER TRANSPORTATION

FY 1967+

- Urban Highways

  - Passenger-Miles Carried

  - Ton-Miles of Freight Carried

  - Number of Miles of Way Completed

  - Number of Miles of Way Placed Under Construction

  - Capital Cost/Mile of Way

  - Average Commuter Travel Time (by Major Metropolitan Areas)

- Urban Transit Systems

  - Passenger-Miles Carried

  - Ton-Miles of Freight Carried

  - Number of Miles of Way Completed

  - Number of Miles of Way Placed Under Construction

  - Capital Cost/Mile of Way

  - Average Commuter Travel Time (by Major Metropolitan Areas)
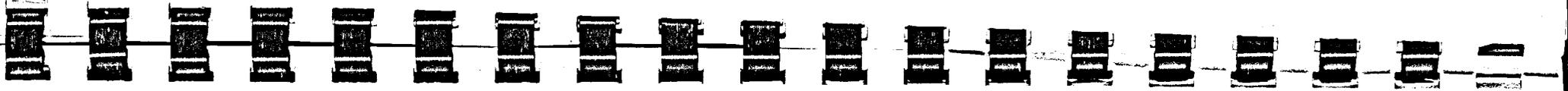
highways vs water transportation. We have not defined them in any way that enables us to ask what it is that we are getting out of this. For example, what are we getting out of aviation? Aviation, itself, isn't the objective. The objective is to get people from one place to another and perhaps a high-speed railroad is a better way of doing this in the circumstances than an airplane.

In order to look at this in more meaningful terms, it has been suggested that we break out the national transportation programme (Chart 4) in terms of inter-city transport (whether by highway, water or aviation); urban commuter transportation, including highways and rapid transit systems; rural access; military standby transportation and international trade and prestige. When we look at it in these terms, we can indeed look at the problem of urban commuter transportation as comprising both highways and transit systems and examine how much money we choose to put into each of these. Note also that this plan extends over a six-year period instead of the one-year period with which we are now confronted.

I have said that we need to establish not only objectives but also some measures that can be quantified. Within this area, and blowing up the urban commuter transportation section (Chart 5) here are some of the measurements that might be used: passenger miles carried, ton miles of freight, number of miles of ways completed or under construction, the cost per mile of highway, and the average commuter travel time by major metropolitan area. What are we really doing to reduce this travel time? Note that several of those measures quite properly are addressed to the question of what we are getting: passenger miles carried, ton miles of freight, decrease in commuter time. The number of miles of roads we have completed is, in fact, a relatively poor measurement because it simply says that we have been quite busy and we have spent the money and built the roads. It doesn't say anything about the question of whether we have built them in the right places to serve the right purposes.

As another example, if we look at the Small Business Administration budget as it is set up today (Chart 6), we have something called "financial assistance" with a variety of loan programmes under it and something called "investment and development company assistance" with different types of loan programmes. This again tells us little about our objectives. Our objective is not to provide financial assistance. We are providing financial assistance to small business in order to do something else. One might say that the basic objective (Chart 7) is that of aiding national economic growth which one might do either through loans or through equity investments. Second, there are some welfare and distributional objectives which the SBA is charged with, including:

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Chart 6

# SBA REVOLVING FUND

FY 66

- Financial Assistance
    - Business loans
    - Economic Opportunity Act loans
    - Disaster loans
    - Administrative expense
    - Interest and other expenses

- Investment and Development Company Assistance
    - Small Business Investment Companies
    - Loans to state and local development companies
    - Administrative expense
    - Interest and other expenses

    (a)   aid to certain minority groups, i.e., helping
           certain minority groups becoming small businessmen;

    (b)   developing depressed regions;

    (c)   aiding the victims of certain types of disasters,
           such as floods and fires.

Third, there is a general category which one might call maintenance of small business sector which lumps together a group of subsidy programmes that stem from the general conviction, that small business is a good thing to have.

None of these objectives come across clearly in either the history of the legislation or the charter of the agency. These documents are written in terms of such things as aiding small business play its rightful role in the economy, aiding small business because it has a higher growth potential (which may not be true and is certainly not known) aiding small business because it creates innovation and so on.

## Programme Analysis

The careful definition of objectives is a prerequisite to analyzing the costs and benefits of specific programmes. Providing aid to a minority group in establishing small business may be designated as an objective, and estimates developed of the cost of the programme and the number of small businesses that will, in fact, be established. This is a quite different objective, however, from that of adding directly to the national income or economic growth. The most effective way to promote economic growth, for example, might be to aid large business. We must keep these objectives clear in our thinking in order to evaluate particular programmes and determine a reasonable balance between welfare and economic objectives. Ultimately the question will become one of judgement but our quantitative analysis will help to formulate and clarify the alternatives.

A basic question is how far we can carry the quantitative analysis, i.e., the mathematics, and where intangible factors must be introduced. In Chart 8, for example, we show three broad classes of goals: economic, welfare, and other. If all of these could be quantified neatly in common terms, we could develop a single number for the national welfare and simply calculate the budget for each agency, based on its contribution, as a matter of strict arithmetic.

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# QUALITATIVE GOALS AND PRELIMINARY PROGRAM STRUCTURE

Chart 7

## I. ECONOMIC GROWTH PROGRAM

A. Loan Assistance

1. Direct
2. Participation
3. SBIC Loans
4. 501/502 Loans

B. Equity Assistance

1. SBIC Investments

C. Disaster Assistance

1. Physical Disaster
2. Economic Injury

## II. WELFARE AND DISTRIBUTIONAL PROGRAM

A. Aid to Minorities

1. Economic Opportunity Loans

B. Development of Depressed Regions

1. Economic Opportunity Loans (Reduced Rate)
2. Direct Loans (Reduced Rate)
3. Participation Loans (Reduced Rate)
4. 501/502 Loans (Reduced Rate)

## III. MAINTENANCE OF SMALL BUSINESS SECTOR

A. Small Loan Program

B. Procurement Assistance

C. Management Assistance

D. Trade Adjustments Assistance

E. Tax Relief
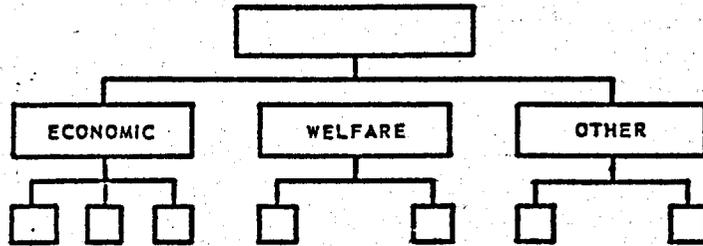
F. Research and Special Studies

Chart 8

# PROGRAM ANALYSIS : LEVELS OF DECISIONS AND CRITERIA

**PROBLEM:**

AGENCY

PROGRAM
CATEGORY

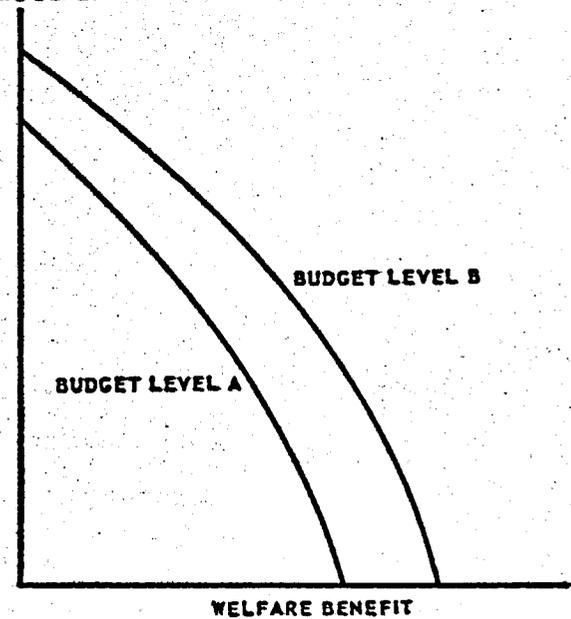| ECONOMIC | WELFARE | OTHER |

PROGRAM
SUB-CATEGORY

- Lack of common measures of benefits at different levels
- No meaningful weighting schemes

**APPROACH:** Calculation and Display of Alternatives for Decision Makers

| | BENEFITS | | | COST |
|---|---|---|---|---|
| | ECONOMIC | WELFARE | OTHER | |
| PROGRAM A | | | | |
| B | | | | |
| C | | | | |
| D | | | | |
| TOTAL | | | | |

ECONOMIC BENEFIT

BUDGET LEVEL B

BUDGET LEVEL A

WELFARE BENEFIT

Chart 9

# COST BENEFIT ANALYSIS: ECONOMIC GROWTH PROGRAMS

OBJECTIVE:  Determine preferred levels of alternative loan programs

- Borrower characteristics — size, growth rate, region, industry
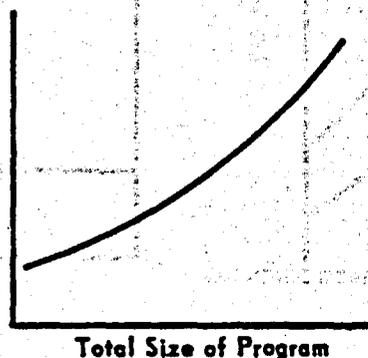- Loan characteristics — size, interest, maturity, purpose

**Cost Analysis**

| Administrative Cost from Cost Accounting |
| --- |

| Interest Cost (Rediscount Rate) |
| --- |

| Loss Range from SBA-EIS |
| --- |

**Marginal Cost**

*Total Size of Program*

**Benefit Analysis**

| Sales Employment Value Added Profits | Single or Combination | Compute from SBA-EIS 177 Form |
| --- | --- | --- |

**Marginal Efficiency of Capital**

*Total Size of Program*
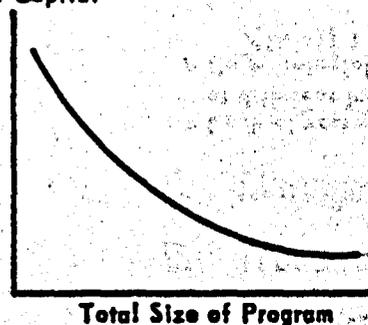
DECISION RULE:
- Attempt to approximate market place
- Pareto optimality
- $$\frac{MC_1}{MEC_1} = \frac{MC_2}{MEC_2} = \frac{MC_n}{MEC_n}$$
- Uncertainty in allocation

Clearly, this is impossible and the question is how far down the chain we can go in quantifying these benefits or criteria. In some cases one can treat various agency programmes on a comparable basis. That is, we can measure economic growth, for example, as an increase in national income and ask how much each programme contributes. It is also obvious, however, that at the top level we cannot measure economic growth and welfare in terms of the same quantities. We simply don't have a magic number to do this. Further, within the welfare area, we find that we can't even directly compare two different types of welfare programmes, say aid to minority groups vs aid to a group of people in New Orleans who have been flooded out of their homes. So there we may have to stop our comparison at an even lower level. We use the term "incommensurables" to designate benefits that cannot be combined into a single measure of effectiveness.

The point here is to go just as far up the chain of objectives as we can, stopping at a point where single measurements are not meaning-ful. At that point we must forsake the notion of a "grand optimum" but what we can do, at least, is to calculate and display the alternatives for the decision makers for a particular mix of programmes. That is, one can set up a table similar to that shown in Chart 8 in which we have at the top, the various types of benefits we hope to receive, economic growth, and so on, defined as well as we can and then, for each programme, estimate the contribution to each of those benefit categories. We can then add and subtract programmes until we get a mix of programmes that we believe to be consistent with the national objectives.

In the case of defense, for example, there is no way of relating in a single measure, general purpose forces and strategic retaliation. That is strictly a matter of judgement. The role of computers in the Department of Defense decisions has been greatly overplayed. The role of quantitative analysis however is quite an important one.

These general principles can best be illustrated by summarizing the cost benefit analyses that were performed for three quite different programmes: the economic growth programmes of the Small Business Administration, a high school dropout prevention programme, and the modernization of Washington National airport. The first and third of these were performed by members of my own organization; the second analysis was conducted by Professor Burton A. Weisbrod.

In analyzing the costs and benefits of the economic growth programmes of the Small Business Administration (Chart 9) we can treat the benefits in terms of the increase in sales, employment, value added, or profits that result from a loan. The costs include the interest cost, the loss rate, and the administrative cost. We have some statistical procedures for estimating both the growth rate and the cost for different classes of borrowers. The problem is one of balancing the two.

D.S. Orkand

# SUMMARY OF BENEFITS AND COSTS PER HIGH SCHOOL DROPOUT PREVENTED

- Resource Costs per Dropout Prevented

    | | |
    |---|---|
    | Direct Prevention Costs | $5, 815 |
    | Additional Instruction Costs | 725 |
    | Total Resource Costs | $6, 540 |

- Internal Benefits per Dropout Prevented

    | | |
    |---|---|
    | Increased Present Value of Lifetime Income (unadjusted)   $2, 750 | |
    | Minus Adjustment for Effects of Noneducational Factor            * | $2, 750 |
    | Improved Self-Esteem of Student | + |

- External Benefits per Dropout Prevented

    | | |
    |---|---|
    | Increased Productivity of Cooperating Resources | + |
    | Increased Social and Political Consciousness and Participation | + |
    | Decreased Social Costs (e. g., of crime and delinquency) | + |
    | Decreased Social Costs of Administering Transfer-Payment Programs (e. g., of public assistance) | + |
    | Intergeneration Benefits | + |

- Total Costs (per dropout prevented) Not Covered by Measured Benefits         $3, 800

- Distributional Effects                    **

Stated another way, if we were asked to determine the industries in which we should be making loans, we could start in the industries in which the risk was relatively low, and then go on to industries having higher risk, which would, as the programme expanded, cause the cost to rise.

However, loaning money to a high risk firm is not necessarily a poor action to take. The Small Business Administration is not supposed to be a bank, it is supposed to be a device to aid economic growth. So we can, in fact, accept quite a high risk if the potential growth is correspondingly high.
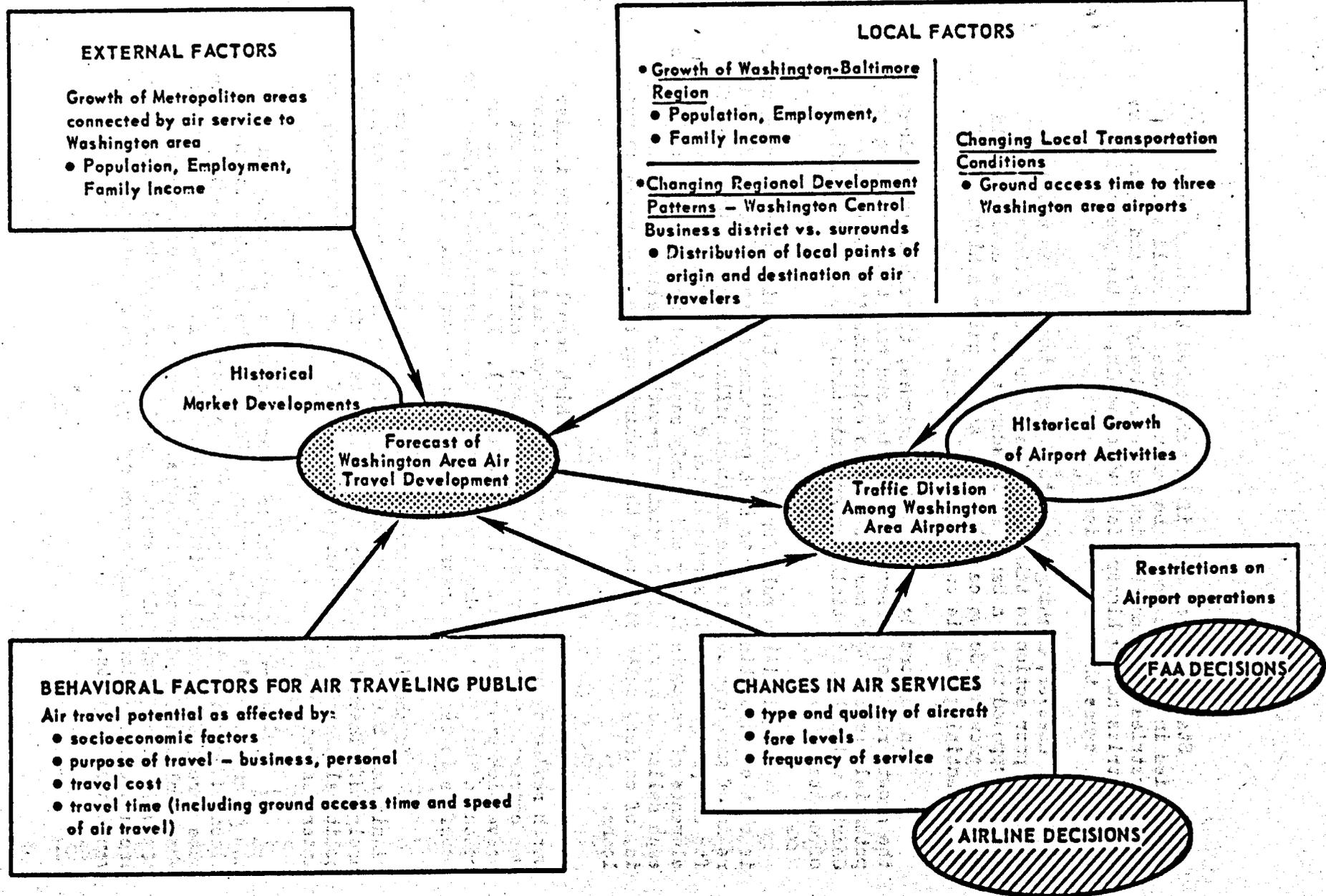
In performing our benefit analyses, therefore, we evaluate the growth rates of different industries and rank them according to potential growth. Our next step is to calculate the curve shown in Chart 9 which is essentially an approximation to a marginal efficiency of capital curve.

The decision rule for establishing the size of each programme is that of allocating money to each programme up to the point where the ratio of marginal cost to the marginal efficiency of capital is equal for all programmes. This rule is based on some fairly well-known elements of economic theory and simply says that we continue to allocate each dollar so as to get the maximum growth for dollar expended. This is, of course, quite different than minimizing the loss rates on our loans.

Professor Weisbrod's study of high school dropouts is also worth reviewing briefly. In grossly oversimplified terms, the study was concerned with determining the costs and benefits of a dropout prevention programme in St. Louis (Chart 10). It was found that the resource cost for each dropout prevented was approximately $6,500; the benefits in terms of increased lifetime income were only $2,750.

It should be emphasized, however, that there are a number of significant but intangible factors for which no dollar values could be assigned. These included improved self-esteem, increased social and political consciousness, decreased costs of crime and delinquency, and inter-generation benefits.

These intangible factors preclude any simple statement that the programme isn't worth pursuing. Further, the analysis is influenced by the fact that employment opportunities for non-white dropouts were not appreciably different than those for non-white students who completed the high school course. If we consider our objectives somewhat more thoughtfully, we might wish to broaden the definition to include the creation of employment opportunities as well as the prevention of dropouts.

D.S. Orkand

Chart 11

**EXTERNAL FACTORS**

Growth of Metropoliton areas
connected by air service to
Washington area
● Population, Employment,
Family Income

**LOCAL FACTORS**

● Growth of Washington-Baltimore
Region
● Population, Employment,
● Family Income

Changing Local Transportation
Conditions
● Ground access time to three
Washington area airports

● Changing Regional Development
Patterns — Washington Central
Business district vs. surrounds
● Distribution of local points of
origin and destination of air
travelers

Historical
Market Developments

Forecast of
Washington Area Air
Travel Development

Historical Growth
of Airport Activities

Traffic Division
Among Washington
Area Airports

Restrictions on
Airport operations

FAA DECISIONS

**BEHAVIORAL FACTORS FOR AIR TRAVELING PUBLIC**

Air travel potential as affected by:
● socioeconomic factors
● purpose of travel — business, personal
● travel cost
● travel time (including ground access time and speed
of air travel)

**CHANGES IN AIR SERVICES**
● type and quality of aircraft
● fare levels
● frequency of service

AIRLINE DECISIONS

**FACTORS AFFECTING COST-BENEFIT ANALYSIS**

My third example is taken from a study we recently completed for the Federal Aviation Agency. The purpose of the study was to assess the economic consequences of opening Washington National Airport to jet traffic. The alternatives were to continue to exclude jet aircraft entirely, to permit short and medium range jet aircraft to use the airport or to permit unrestricted use of the airport including long-range jets.

Each alternative permitting jet operations implied a different investment required by the Government to modernize and expand the airport to accommodate the passenger and aircraft traffic growth projected to follow. Also, they implied different levels of benefits to the public users of the Washington area airports resulting from the improvements produced in air travel service. Each of the three alternatives creates a different aircraft noise environment in the surrounding communities.

Chart 11 shows some of the factors that affected the analysis. Estimates were made of the annual volumes of these physical activities for each of the three airports in Washington area. From these projections, airport operating costs and revenue were derived to estimate net revenues (profit or loss) of the airport operations. Benefits to the public users of Washington area air services were estimated in terms of the value implied by total trip time savings resulting from air carrier jet service being made available.

The results of the study provided the basis for a comprehensive examination of the issues and for the recent decision to open Washington National Airport to short and medium range jet traffic.

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Chart 12
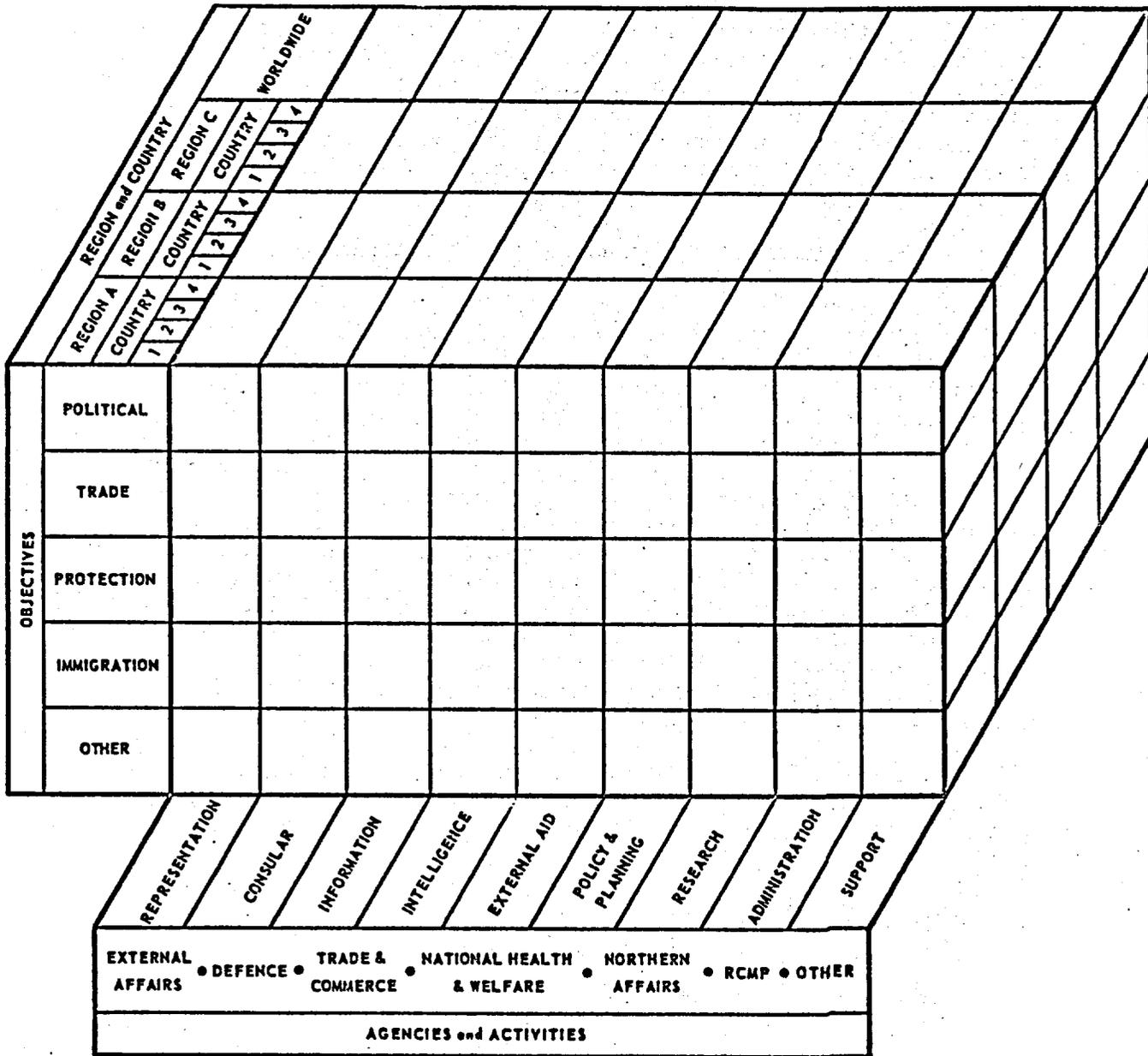


DECISION STRUCTURE FOR PPB

D.S. Orkand

PART II  APPLICATION TO EXTERNAL AFFAIRS

In applying programme budgeting to External Affairs, it is helpful to start by considering the types of decisions that are relevant in the management of foreign affairs, i.e., the kinds of allocation problems we face.  Based on very limited information and a good deal of guess work, I prepared the figure shown in Chart 12 which depicts a decision structure that reflects  some possible objectives, the regions and countries to which these objectives apply, the activities that are performed in meeting these objectives, and the responsible agencies.

Obviously, I hold no particular brief for the set of objectives that are shown for illustrative purposes.  The only purpose of the chart is to indicate that we must consider foreign affairs decisions in all of these dimensions while focusing primarily on our basic objectives.

The value of a programme structure in the sense we discussed earlier lies in the fact that it provides a convenient classification of goals, subgoals, and specific objectives.  In order to stimulate thinking, I have prepared the illustrative programme structure shown in Chart 13.  For illustrative purposes, I have organized foreign affairs goals under the headings of trade, political affairs, protection of Canadian interests and citizens, immigration, direction, and general support.  Since this structure was developed without any analysis whatever, and with very little knowledge of foreign affairs, the one that you may ultimately formulate may be quite different.  In any case, it should be far more detailed.

The difficulty in any foreign service is that its objectives are likely to be extremely vague.  For instance, you might find as an objective the representation of Canada abroad but the question is, representation for what purpose?  Similarly, you might regard as a worthy endeavor the projection of the country's image in other parts of the world.  Again, for what purpose?  The definition of programmes in terms of region and country focuses on activities instead of objectives and can lead you astray.

The analysis of External Affairs programmes must be carried out with due respect for some of the basic difficulties involved.  As shown in Chart 14, a major problem is determining the decision level at which the analysis is to be performed.  Should we, for example, consider allocating our resources at the country or regional level?  How can we treat comparisons between trade and polical objectives?  How can we estimate costs for several years in the future?  Given the difficulty of defining and estimating the ultimate benefits in the political cases, what proximate measures can we use?

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Chart 13

## ILLUSTRATIVE PROGRAM STRUCTURE

**I.  TRADE**

    A.  Consumer Goods
    B.  Producer Goods
    C.  Military Goods
    D.  Tourism
    E.  Other

**II.  POLITICAL**

    A.
    B.
    C.
    D.

**III.  PROTECTION OF CANADIAN INTERESTS AND CITIZENS**

    A.  Investments
    B.  Citizens
        1.  Passport
        2.  Consular

**IV.  IMMIGRATION**

    A.  Special Skills
    B.  General

**V.  DIRECTION**

    A.  Research
    B.  Plans and Policies

**VI.  GENERAL SUPPORT**

    A.  Information
    B.  Personnel Training and Assignment
    C.  Communications
    D.  Housing
    E.  Financial Management

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# EXTERNAL AFFAIRS PROGRAM ANALYSIS

LEVELS OF ANALYSIS

COST AND BENEFITS

COST ESTIMATION

- Lack of Data

- Multi-year Projection (Personnel)

BENEFIT ESTIMATION

- Difficulties

- Ultimate Benefits

- Proximate Benefits

Chart 15

# ACTIVITY ALLOCATION — INFORMATION

|  | Worldwide | Region | Region |  |
|---|---|---|---|---|

**Activity**

Radio

Television

Motion Pictures

Press & Publicity

Information Centers

Exhibition

Research

Administration

TOTAL

o Output

o Total Cost

o Unit Cost and Marginal Cost

o Benefits and Marginal Return

Total
Information
Budget

External Affairs
Trade & Commerce
Manpower
Northern Affairs
CBC
Film Board

- 80 -

Some general approaches to these difficulties were indicated in the first part of this talk. Their resolution in the context of specific External Affairs problems will, however, require considerable analytical experience, coupled with policy guidance. Obviously, trade objectives can be quantified to a much greater extent than political objectives. Similarly, immigration can be quantified to a far greater extent than research and policy planning. The trick in each instance is to push the quantification of costs and benefits as far as you can without going beyond the bounds of common sense and substituting the spurious assignment of numbers for real analysis.

There are, of course, a variety of guidelines that can be used as a starting point for a cost benefit analysis and resource allocation. Chart 15, for example, depicts a possible approach to allocating resources among information activities. Ideally, one would like to know the marginal costs and benefits for additional information activities of various types by region and country. The problem, of course, lies in measuring the real impact. Perhaps exposure in the sense of the number of listeners or readers could be used as proximate measures. As crude as they are, these measures would still be better than thinking in terms of the number of copies of a pamphlet that are printed. Certainly we ought to be able to do as well in foreign affairs as the advertising agencies do in far less serious matters.

It may also be useful to consider the allocation of resources at the country level in terms of various agencies and activities and their contribution to meeting the stated objectives. Note that Chart 16 summarizes the total expenditures _for_ the country, rather than _in_ the country, because this is a more useful measure of the resources being devoted by the Canadian Government as a whole to meeting its objective in that country. A more detailed breakdown in terms of a specific objective is shown in Chart 17.
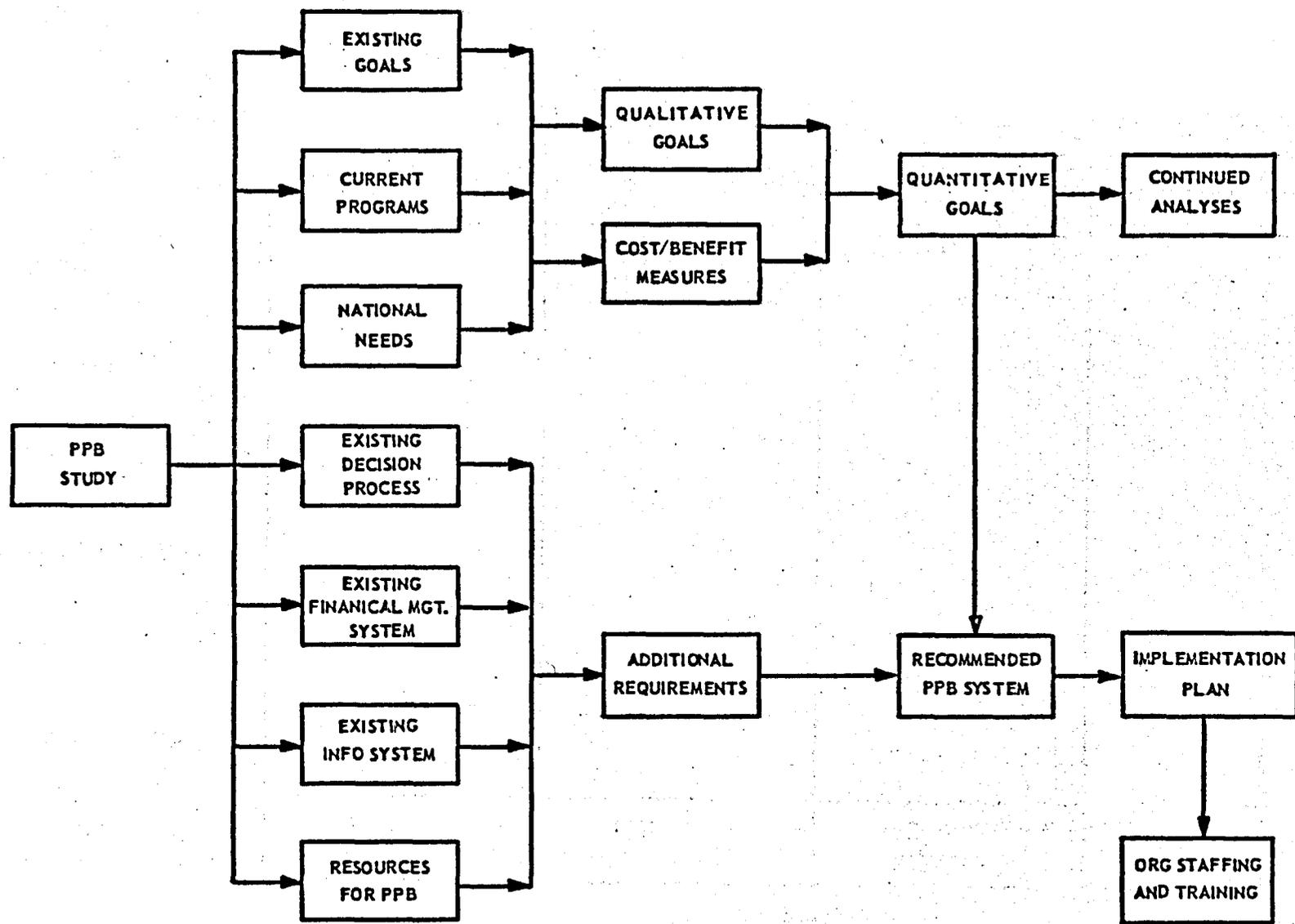
A general approach to the implementation of a programme — planning — budgeting system is shown in Chart 18. Please note that the definition of goals and objectives and the analysis of the costs and benefits of particular programmes is a continuing process and one which the results at any point in time must be treated as a working hypothesis rather than a final product.

## Summary

My objective today was simply to indicate some approaches to the effective application of operations research in planning, programming, and budgeting for government operations. I wish not to overstate either the degree of progress that has already been made or the ease of extending this approach even further. These analyses are quite difficult to perform because they are concerned with some very fundamental questions. It is precisely for this reason, however, that this type of searching and probing analysis of objectives and programmes is, in fact, a very effective way of formulating and evaluating government activities.

D.S. Orkand

Chart 16

# COUNTRY LEVEL ALLOCATION

Agency/Activity

| OBJECTIVES | | | |
|---|---|---|---|
| Political | Trade | Protection | Immigration |
| | | | |

Total Expenditures __for__ Country

## COUNTRY LEVEL ALLOCATION — TRADE OBJECTIVES

| Agency/Activity | TRADE | | | |
|---|---|---|---|---|
| | Consumer Goods | Producer Goods | Military Goods | Tourism |
| External Affairs | | | | |
| Defence | | | | |
| Northern Affairs | | | | |
| Trade & Commerce | | | | |
| Wheat Board | | | | |
| Other | | | | |

Chart 17

Chart 18

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EXISTING GOALS

CURRENT PROGRAMS

NATIONAL NEEDS

QUALITATIVE GOALS

COST/BENEFIT MEASURES

QUANTITATIVE GOALS

CONTINUED ANALYSES

PPB STUDY

EXISTING DECISION PROCESS

EXISTING FINANICAL MGT. SYSTEM

EXISTING INFO SYSTEM

RESOURCES FOR PPB

ADDITIONAL REQUIREMENTS

RECOMMENDED PPB SYSTEM

IMPLEMENTATION PLAN

ORG STAFFING AND TRAINING

PPBS IMPLEMENTATION

## DISCUSSION

(The following information was provided in response to questions)

### Special Staff for Programme Analysis

The speaker said that he thought that specialized programme analysts and the staff of the organization were both needed for effective programme analysis. The agency staff is needed to define the objectives and help keep the study moving in the right direction. The specialized staff, whether private or government, should help the organization recruit, train and organize staff with a continuing capability for programme analysis work. There is a special technology and skill in this field and an advantage exists in having access to the general techniques.

### State Department Attitude

By presidential directive, every department will submit in May a budget in programme form. A number of people in the U.S. State Department are working on this project.

### Form of U.S. Budget

For reasons of law and congressional preference, the budget is presented in appropriation accounting form. However, a statement will accompany it in programme structure form and decisions are to be made in departments on a programme basis.

### Realistic Objectives

The speaker said that it was useful to know the difference between what we say we want to do, and what we really want to do. We should be aware of this difference ourselves even if it is necessary to keep the statement Top Secret. In today's world, we don't necessarily print our real objectives in the newspapers, but we shouldn't mislead ourselves about what they are.

### Involvement of Senior Management

The speaker said that there was a prime necessity for involvement of senior management of departments in implementing P.P.B.S. If a programme analysis study is to be undertaken, his organization won't sign the contract unless it obtains agreement ahead of time on the amount of time the senior management will spend on it.

D.S. Orkand

## Application of Techniques to Canada

The speaker said that even though there was a different form
and scale of government in Canada compared to the United States, there
was still a need for systematic exploration of the means of reaching
the Canadian Government objectives.  These objectives were broad and
could perhaps be listed in some form such as preservation of world
peace, protection of Canadian citizens, development of trade, etc.
Programme analysis techniques could be applied to these objectives
as readily as to the objectives that needed to be backed up with
large scale armaments.

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## THE NEW ROLE OF THE CIVIL SERVICE COMMISSION

*by*
*J. J. Carson*
*Chairman, Civil Service Commission*

### – Biographical Notes –

Mr. Carson's career has been devoted to personnel management.  He had a varied background in industry and government prior to 1961, at which time he was loaned by the B.C. Hydro and Power Authority to the Royal Commission on Government Organization to direct the study of personnel management problems in the Federal Public Service.  In 1964 he was loaned to the Treasury Board and in September, 1965, he was appointed Chairman of the Civil Service Commission.

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# THE NEW ROLE OF THE CIVIL SERVICE COMMISSION

by
J. J. Carson
Chairman, Civil Service Commission

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## THE NEW ROLE OF THE CIVIL SERVICE COMMISSION

### by J.J. Carson,
### Chairman of the Civil Service Commission

The title of this talk might more properly read QUO VADIMUS because in some respects I can only share with you the Commission's own intentions as to the road we are travelling. Some of our plans are already under way within the context of our present Civil Service Act. There are certain others which we cannot implement until the necessary legislation has been passed. The Government's intention with respect to such legislation is clear. What Parliament will decide remains to be seen.

There are three pieces of legislation involved. The first is the "Public Service Staff Relations Act", which will provide for collective bargaining. This will be introduced in the House of Commons next week. The second piece of legislation will bring about certain changes in the "Financial Administration Act". The third will be under the title of "Public Service Employment Act" and will be an entirely new piece of legislation which my colleagues and I hope will replace the present Civil Service Act.

The new role of the Civil Service Commission bears a strong resemblance to that envisioned for it in the Report of the Royal Commission on Government Organization, (the Glassco Report), but departs from that monumental blueprint in certain significant ways. I make no apology for these deviations. Subsequent study and more intensive exposure to some of the current practical problems of public personnel administration in the Federal Service, together with the Government's declared intention to introduce collective bargaining and arbitration, has convinced me that some of Glassco's recommendations cannot or should not be implemented.

Before launching into a discussion of our new role, let me briefly summarize the roles we expect to abandon.

1. Classification - With the completion of the classification revision programme and the advent of collective bargaining, the Commission is expected to relinquish the statutory responsibility for classification of positions. We fully expect to see the transfer of this function to the Treasury Board and from it to the departments. The Bureau of Classification Revision is making good progress and hopes to complete its work by the target date of July 1, 1967. Ultimately I see the operational responsibility

for classification work being exercised by departments and a co-ordinating responsibility being carried out by the Treasury Board through standards, guidelines and general supervision.

2.  Pay, Leave and other Economic Benefits - With the advent of collective bargaining and arbitration, the Commission expects to be relieved of any statutory responsibility for making recommendations in those areas which will comprise the subject matter of bargaining. Complete responsibility for pay, leave and other economic benefits will rest with the Treasury Board, along with the obligation to conduct negotiations with the staff associations.

3.  Pay Research - The Preparatory Committee on Collective Bargaining has recommended the transfer of the pay research function from the Commission to the proposed Public Service Staff Relations Board. Once such a Board is established we would expect to have no further responsibility in this area (a departure from Glassco with which I cannot quarrel). The Pay Research Bureau should operate as an independent neutral research unit under direction of a neutral body.

4.  Appeals on Discipline - With the passage of legislation providing for the adjudication of grievances under the Public Service Staff Relations Board, the Commission does not expect to play any part in the adjudication of disciplinary problems. At the present time the Commission processes about 1,000 appeals a year. Many are appeals against administrative discipline in departments. We expect to be relieved entirely of adjudication of disciplinary grievances as a result of adoption of a grievance procedure in departments, with final adjudication carried out under direction of the Staff Relations Board. So much for what we will not be doing.

Let me now address myself to what we will be doing — or what we expect to be doing!

## Staffing

It is our intention to become the most efficient facilitator and co-ordinator of public service staffing in the democractic world. At the same time we hope to preserve and give added lustre to the principle of merit throughout the whole Canadian Public Service. Brave words! - maybe - but so far I can see no insurmountable obstacles to the achievement of this objective. We wish to extend the influence of the merit principle. Some 140,000 employees on public service payrolls now come under the regulations

relating to the merit principle. We hope to extend this coverage to the 40,000 exempt employees who are appointed under various forms of recruitment.

Already we have streamlined the Commission's own organization with a view to providing a specialized and comprehensive staffing service to all departments and agencies. Further, we stand ready to delegate our staffing authority to departments to the fullest extent possible and practicable. By possible and practicable I mean:

(a)   a department's capacity to absorb this responsibility in a way that ensures preservation of the merit principle, (External Affairs has been to the forefront in administering its own staffing function and I am confident it will continue to operate with managerial courage and integrity.)

(b)   the Commission's own capacity to establish effective and useful guidelines for those to whom this authority is delegated,(It would be irresponsible of us to delegate authority without providing comprehensive guidance.)

(c)   the continuing need of the Public Service for central co-ordination of staffing in the case of certain short supply occupational groups or common service groups such as personnel administration, financial administrators and management analysts. We want to avoid competition between departments for staff in such groups and ensure instead that there is an adequate supply of talent to meet all needs. (We also want to see that specialists in these groups enjoy adequate career opportunities through rotation from one department to another.)

Let me restate, however, that we are serious about our intentions to delegate and decentralize the staffing function. Our ultimate objective is to have staffing decisions made as close to the place where the need exists as it is possible and practical to have them. This can be done only by delegation and decentralization. The great bulk of the work will be handled by departmental management. This is one way in which we can overcome the problem of the delay that has often been involved in recruitment into the Public Service; many good candidates have become disenchanted with delay and bureaucratic control from the very start.

Perhaps I should take a minute to outline what I mean by the staffing function. I am referring to the whole spectrum of activities that are required, or are going to be required, if we are to have an efficient and dynamic Public Service capable of meeting not only today's tasks but those

J.J. Carson.

of 1967 and those of 1977. This means much more than ad hoc recruitment, selection, transfer and promotion. It involves manpower planning with all that that name implies: continuous appraisal, inventorying of resources on a service-wide basis, early identification of needs, planned up-grading, planned rotations, and provision of long-range advice to the universities and other educational institutions as to our staffing requirements.

So much for the overview of what I mean by the staffing function. Obviously this is not a task that the Commission can or should undertake alone. It must be a shared responsibility between the employing departments, the Treasury Board's Personnel Policy Branch, and the Commission. We see our role as that of facilitator and co-ordinator. To this end we have created a Staffing Branch organized along occupational lines consistent with the Classification Revision Programme, (Executive, Scientific and Professional, Administrative, Technical, Administrative Support, Operation). Each of the occupational staffing units is expected to provide expert advice and assistance to all departments with respect to a specific occupational group. Previously we were organized on departmental lines but we found that the generalist staffing officer could not provide the necessary specialist advice. Henceforth our staffing officers should be well qualified for this specialist role. The degree of expertise and co-ordination that we provide will vary with the significance of the occupational group -- that is, significance to the Service as a whole or significance in terms of recruiting and retention difficulties.

However, if we are to concentrate on a facilitating and co-ordinating role we must effect a massive _delegation_ of our operational responsibilities. This we are in the process of doing. We see it flowing in two directions -- depending on departmental needs and circumstances:

(a) Delegation to departments

(b) Decentralization of authority within the Commission's own structure, i.e. to our Regional and District Offices.

In both instances we envision far greater utilization of the resources of the National Employment Service with respect to the Operational, Administrative Support, and Technical Categories (which comprise approximately 75 per cent of the Public Service).

This cannot be achieved over night. As I mentioned earlier, it depends first on building up the personnel administration capacity of departments to assume this added responsibility. We have hired a number of personnel administrators and we are upgrading personnel administrators in the Public Service. Within a year we hope all departments will have an adequate personnel administration organization. This work is in hand and good progress is being made. The second requirement is the development

J.J. Carson.

by the Commission itself of guidelines, standards, instruments of delegation, and audit procedures. Again, this is in hand.

Let me now turn to some interrelated functions that I think deserve special attention in any discussion of our new role.

## Training and Development

There is abundant evidence of the continuing need for some central co-ordination in the field of training and development. By agreement with the Treasury Board secretariat, the Commission expects not only to continue many of its present services in this area but to expand its advisory and leadership role. It is our intention to strengthen our own professional resources so that we can give advice and assistance to the medium-sized and smaller departments as well as expand and improve our interdepartmental programmes. If the administrative revolution that is currently under way in the Federal Service is to succeed it must be paced by a massive programme of management development. It is our intention to supply whatever resources and facilities the Treasury Board and the departments deem necessary to fulfil this requirement.

## Staffing Appeals

Earlier I made reference to the Commission's expected withdrawal from the area of disciplinary grievances. At this point I wish to clarify our intention and expectation of remaining active in the area of staffing appeals. Apart from our statutory responsibility in this field (which is not likely to change) there are two practical reasons for our continued involvement in the appeal process.

(a) If the staffing function (and in particular selection and promotion) is to remain outside of the collective bargaining area, as visualized by the Preparatory Committee, it is essential that some independent body such as the Commission be available for the adjudication of grievances arising from managerial staffing decisions.

(b) If the Commission is to delegate and decentralize its stewardship of the "merit principle" to departments it must establish a variety of post-audit procedures to ensure continued adherence to the merit philosophy. The appeal process is one obvious means of keeping in touch with the quality of departmental staffing decisions — and one that we expect to maintain.

J.J. Carson.

## Advisory Services

Here I am referring to the advisory services in which the Commission has pioneered, in the fields of organization analysis and management analysis. These services have traditionally represented the closest thing to a purely advisory or staff function that the Commission has performed. In our proposals for new legislation we are not seeking any statutory base for this role, on the grounds that such would be inconsistent with a truly advisory service. Instead we are suggesting that the Commission may undertake such additional functions as the Governor-in-Council requests. We would be willing to give up this responsibility but our discussions with Deputy Heads and the Treasury Board secretariat indicate a strong desire for the Commission to continue in these fields, for the time being.

Accordingly, it is our intention to expand and upgrade our existing advisory services. Our objective is to develop the most effective "resident" management consulting firm in Canada. It should definitely be client-oriented instead of control-oriented. For the present, I see this developing along three lines:

(a) Organization analysis

(b) Management analysis

(c) Personnel services

The first two are reasonably well known to all of you, but the third may require some elaboration. By personnel services, I mean a personnel consulting service primarily for the smaller departments and agencies that may have difficulty in justifying specialist personnel resources of their own. Such a service would of course also be available to supplement the resources of larger departments when they have major re-organizations or other "crash" programmes under way.

These three units, together with the resources of the Treasury Board's Personnel Policy and Administrative Improvement Branches, the Comptroller of the Treasury's Accounting Advisory Services, and the Commission's own Staffing Branch, should provide the Federal Government with a reasonably complete consulting service. I can envision a number of situations where task forces drawn from all of these groups might work together as a consulting team. Whether there would be advantages in having all of these expert resources under one administrative roof remains to be seen. For the present we intend to develop the capacity and skill of our own three services to the fullest extent possible and to provide departments with an integrated approach to their management problems in these three fields.

J.J. Carson

## Bilingualism and Bi-culturalism

There is another area in which the Commission has specific statutory responsibilities and in which it intends to provide positive leadership. I refer to the question of bilingualism and bi-culturalism in the Public Service. The Commission does not have jurisdiction in all the areas from which contributions will have to be made if a satisfactory solution to this problem is ever to be reached. However, in the context of the national requirement to preserve and strengthen Canadian unity and identity, the Commission is resolved to apply all the solutions that lie within its power. In addition, the Commission hopes that others concerned will also apply to the problem all the energies and resources at their disposal.

No one will disagree, I am sure, with the notion that the execution of public policy in Canada deserves the best minds and the highest executive, administrative and professional skills available in the land. The Civil Service Act recognizes this requirement and makes provision for its fulfilment. However, it is an unfortunate fact that the Public Service of Canada has up to now been unable to attract and retain its fair share of competent persons reflecting the two cultures of Canada. We have not succeeded in recruiting, particularly for intermediate and senior positions, a sufficient number of well-qualified citizens from French Canada and it is the Commission's view that this vacuum is detrimental to the public interest. (External Affairs is unusual in the fact that a substantial proportion of its officers are French-speaking Canadians.) It is serious because to a significant degree the formulation and execution of public policy is deprived of the benefit of different cultural approaches, with all that this would imply for more dynamic, imaginative and effective service to the population of this country.

The changes that will have to be brought about in order to achieve bilingualism and bi-culturalism in the Public Service are numerous and difficult, and for this reason, the required administrative action must be well considered and appropriate to the issues to which it is applied. The changes to be effected must take the form of an evolution consistent with the broad development of our Canadian society through formal and mass media education.

It must be made clear to all concerned that the Commission cannot and does not contemplate a situation where Canadian citizens who are not bilingual are denied a place in the Public Service, and we must guard against prejudicing the position of people already in the Service. At the same time, we must ensure that they are fully aware of the objectives in this important area and the special measures being initiated in order that they many participate fully in the opportunities of the future.

J.J. Carson.

In order to increase the intake of French language university graduates, the Commission has in the last two years given particular attention to <u>recruitment</u> at French-language universities, particularly through a summer internship programme designed to introduce under-graduates to the Public Service and to generate in them the desire to return after graduation and become permanent public servants. The Commission proposes to develop and extend this and other recruitment programmes at French-language universities. This will require new, more imaginative and more effective measures on the part of the Commission. It will also require the active participation of the most senior public servants, including deputy ministers.

The Commission has recently recognized proficiency in the two official languages as an element of merit in <u>selection</u> for appointments and promotions to positions in the National Capital area and in other centres where the public being served is sufficiently representative of the two cultures of Canada. In these cases, proficiency in the two official languages is considered as an additional asset and is accorded up to ten per cent of the total selection rating score. This new policy is complementary to the Commission's responsibility to determine the language proficiency requirements of all positions, and in this connection we are in the process of developing standard tests to determine the degree of proficiency that should be required of candidates.

Starting with the 1966 competitions for recruitment in 1967, bilingual proficiency, or the willingness to take the necessary steps to acquire it within a prescribed period of time through appropriate training at public expense, will be an <u>element of merit</u> in the selection of all university graduates recruited for administrative trainee positions, in the same way as is now being done in the case of candidates for foreign service positions. And for those successful candidates who are not bilingual, the Commission will provide training in the English and French language as part of the normal basic training given to all new university recruits upon entry into the Public Service, again in the same way as is now being done for university recruits for foreign service positions.

In a similar vein, the Commission is determined to refine its procedures for the filling of executive and administrative postions so that in a few years in the case of appointments from outside the Public Service and perhaps somewhat later in the case of promotions from within, proficiency in the two official languages, or the willingness to take the necessary steps to acquire it within a prescribed period of time through appropriate training at public expense, will be a <u>criterion of selection</u> in locations where a need for bilingualism exists and will be considered as an element of merit, or an additional asset, in the case of positions located in other centres.

J.J. Carson.

Language training is therefore a very important means to our
end and the Commission will accordingly have to continue to expand its
language training programme. At the moment, five centres in the National
Capital area are offering a variety of language courses to some 2,100
students, ranging from one-hour-a-day five days a week to full-time
classes and extending also to evening courses. However, 1300 candidates
nominated by their departments could not be accommodated, and training
facilities have yet to be developed in other Canadian cities where
language training requirements exist. In addition to expanding its
facilities, the Commission intends to refine its admission procedures
to ensure the optimum return for the time and money invested in the
programme, and to refine its teaching methods through the development
of special technical and professional vocabularies tailored to the various
occupational specialities found in the Public Service.

These measures do not add up to an exhaustive list. They
represent a beginning. Others will have to be developed. But my
colleagues and I believe that the application of these measures should
dissipate the apprehension that some English-speaking public servants
have manifested towards the move to bilingualism and bi-culturalism in
the Public Service, and should also cause French-speaking Canadians to
lose some of their reluctance to join the Public Service. However, even
the clearest of policies and the best of programmes will not achieve
the desired end by themselves. There must be added men and women of
goodwill and the courage to make them work.

In short, if we are ever to have a bilingual Public Service,
French-speaking Canadians must not remain on the outside looking in.
They must be willing to come and join us, and work with those of us who
are already here, for without their presence in body as well as in spirit
nothing of great significance can be achieved towards the attainment of
our common objective.

In the same way, English-speaking Canadians must be willing to
abandon the status quo and to avail themselves heartily of the various
measures placed at their disposal for the attainment of our common
objective, for without their enthusiastic co-operation the Public Service
cannot but fail in meeting the challenge that is facing it.

## Conclusion

These then are the continuing elements in our proposed new role
for the Civil Service Commission. As I stated at the outset, some of them
must remain on the drawing board until enabling legislation is passed —
others you can expect to see moving into high gear almost immediately.
At this stage, I can only give you my word and that of my colleagues that

J.J. Carson.

our goal will be the establishment of practical and useful standards
and guidelines, and that our future orientation is going to be primarily
that of a "service" agency. The point at which we expect to resume the
role of a "control" agency will be in those rare instances when some
weak manager abuses his delegated custodianship of the merit principle.
I trust this may never occur — but if it does, I suspect the scorn of
his fellow-managers will be more impressive than the most severe sanctions
that the Commission itself might invoke.

## DISCUSSION

(The following information was provided by the speaker
in response to questions.)

### Mobility

In response to a question about how the policy of mobility of
staff would apply to External Affairs, the speaker said that he couldn't
be sure. He had held discussions on this point with the Under-Secretary.
It presented an interesting problem for External Affairs and others. It
would be unwise to suggest that the policy of mobility should impinge on
the rotational careers in the Department of External Affairs. The
Advisory Panel on Senior Appointments was sympathetic to the special
problems of the Department.

### General Executive Group

He said plans were underway to develop a general executive
group whose members would have a centrally managed career, just as External
Affairs had FSO's who could be moved to a variety of jobs but whose salaries
were based on their FSO grades. People could move into the general executive
group from the professional and scientific category or from the administrative
category. Once in the general executive group, officers would not enter
competitions on their own or move on their own initiatives. They would be
rotated on a planned basis and would move to the Treasury Board, to the
Privy Council Office, to the Civil Service Commission or to other departments
in accordance with the need for enlarging their knowledge and expanding their
careers. The objective would be that after a certain number of years of
broadening experience they would qualify for the executive category as
assistant deputy ministers and directors of branches. The door would be kept
open for appointment to the executive category from the professional and
scientific category and the administrative category but the majority of
appointments would be from the general executive group.

J.J. Carson.

## Recruitment of Specialists

The speaker said he was sympathetic to the requirement of the Department of External Affairs of keeping positions available at head-quarters for rotation of people now abroad. However, there was a growing complexity of administrative responsibility in government, particularly in the fields of financial administration and personnel administration. External Affairs, in common with all other departments, would have to build up a corps of specialists of its own. It could not continue to depend on generalists if it was to fulfil its responsibilities. It would need officers who had specific training in these fields. This was a manpower utlization problem for the Department. Unless departments built up their own specialized talent equal to the purpose, the Commission could not assign the staffing and classification responsibilities to them and, equally, the Treasury Board could not delegate financial management responsibilities.

The Commission was telling other departments that their load of manpower planning, their share of collective bargaining and their problems of wage and salary administration were such that they needed a personnel director as a specialist reporting to the Deputy Minister. For External Affairs there would be a continuing dilemma. There was no point in being doctrinaire. There were extremist supporters of the specialist role and extremist supporters of the generalist role. There needed to be accommodation in a department such as External Affairs to achieve a workable solution.

## Professional Status of F.S.O.'s

The Foreign Service Officer has emerged as a person having a professional quality in the sense that Judge Brandeis used the term — a person whose training is intellectual in character and one whose skill is less important in his work than are his intellectual capabilities. However, the Foreign Service Officers are drawn from various disciplines at the under-graduate and graduate level and do not have a common academic preparation. The issue might be confused if the F.S.O. classification were viewed from the standpoint of the outside legal or statutory definition of professional.

The speaker said he didn't want to be controversial, but he mentioned that he has asked his staff to look at the possibility of setting up a special section in the administrative category to accommodate the Foreign Service: a section that would lead on into the executive category. There was some merit in keeping the professional category precise, limited to groups which had a distinctive professional calling, such as doctors and lawyers, and for whom there could be exact outside counterparts for purposes of salary determination.

J.J. Carson.

He did not think the Foreign Service represented a category in itself since F.S.O.'s moved into and out of foreign service work. As an example, a senior F.S.O. was serving as a Personnel Officer.

## Bilingualism

In answer to a question about how bilingualism would be implemented in Ottawa, the speaker said that the most effective gesture would be to make clear to university graduates that if they wanted a career in the general executive category, they would need to become bilingual. The only legitimate aspiration at the present time was achievement of a type of passive bilingualism under which the employee would be able to comprehend the other language when spoken or written. Some mild pressure would be kept on all senior employees under the age of 55 to acquire a greater familiarity with the second language. He said he was not confident that much was going to be achieved in this direction in technical departments. The Government could not cut itself off from the sources of scientific personnel where it was competing with business and other governments. It must go slower in these areas than in the administrative and executive fields.

As to the policy of according up to 10 per cent of the total selection rating score for proficiency in the two official languages, he did not consider that this was a distrotion of the merit principle. In the period since announcement of this policy, no one had won a competition on the basis of bilingualism alone. The competitions were usually won by unilinguals whose competence was more than 10 per cent better than bilingual candidates.

In the next few years, it was assumed that the Treasury Board would expect departments to allow in the estimates of personnel requirements for enough positions to enable the departments to release people for language training. For example, there were plans to send some 20 officers and their families to Quebec City for a year and their work would have to be taken over by others.

The policy on bilingualism had been rather inhibited until the Prime Minister made his long-awaited statement in the House of Commons. However, on April 6 he had set forth the Government's policy and the Commission could now start exploring various possibilities that might be adopted to make the learning of French worthwhile and rewarding in itself. There needed to be opportunities both to learn the language and to use it. He agreed with a participant that some effort should be made to encourage provincial governments to revamp their teaching curricula so that the learning of French could be undertaken where it belonged, i.e., in the provincial education systems. He said that by the time we have all our

J.J. Carson.

senior echelons engaged in part-time or full-time French training, they will begin to find opportunities to use their language skills. There are many unanswered questions: What are the most effective methods of teaching? What standards should be adopted? Should we keep the one-hour-a-day procedure or provide other alternatives?

## University Recruitment

The speaker said the Commission planned to do more to modernize its procedures in obtaining university graduates. The Government was still not competitive. External Affairs had an advantage in that there was a large degree of pre-determination on the part of the candidates who wanted to enter that Department. Many under-graduates have regarded the Foreign Service as a career objective. That may not be true for much longer in view of the other attractive opportunities. It is certainly not true of other types of government occupation. The graduate in the next few years will find himself in a seller's market. The Commission hoped to place university liaison officers in each area and to cultivate the university community during each year instead of on the occasion of infrequent visits. The university recruitment liaison officer would be attached to the regional offices of the Commission, but there would be an aggressive co-ordinator in Ottawa who would be in touch with the departments and who would see that the liaison work was carried on to the best advantage. There would need to be improved advertising and better recruiting booklets. It was also important to cut down on the time lag between the interview date and recruitment date. The initiative in this field could increasingly be carried by departments themselves.

## Character Weaknesses

Mr. Carson said that the personnel administrators were not well trained or well informed on how to handle problems resulting from character weaknesses in employees. The difficulty arose partly from the fact that there had been little sharing of knowledge. He was appalled to find that after people were declared eligible in competitions, an obvious flaw would sometimes be brought to light which prevented the person from being confirmed in the position. This could lead to a most distressing situation. The system should be able to provide signals at once of any character weaknesses or special circumstances which might prevent the Commission from confirming an appointment.

## Pension Plans

The whole philosophy of pension arrangements needed to be reviewed. The pension plans were designed to hold employees. They put pressure on people to stay in their existing job by relating the size of the pension

J.J. Carson.

to their terminal earnings. This created immobility. It also had undesirable social consequences. The portability of pensions was essential to a dynamic personnel programme. There was, for example, a bulking up in the scientific population at the wrong age. With a large number of senior scientists on strength, there was not enough opportunity for the junior scientists who were likely to be more creative. These senior scientists could go out to universities and make a great contribution but they were locked in by the pension plan benefits and were most reluctant to leave, even when opportunities elsewhere were attractive.

## Public Service Inertia

He said that he was convinced that fears that the new concepts of management would merely reflect a transfer of inertia in the Public Service were groundless. The transfer of responsibility from the Civil Service Commission to other agencies was being made with specific objectives in mind. The shifts were going to facilitate management in the Public Service. The Commission was sincere in wanting to be freed from operational responsibilities that have slowed up its staffing and personnel work. The only possible discouragement might be the slowness of departments in taking advantage of the opportunities offered to them to assume responsibility.

J.J. Carson.

THE DEVELOPMENT AND USE OF HUMAN RESOURCES

*by*
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- Biographical Notes -

Mr. Morry has a background that involves both account-
ancy and personnel work. He joined the Civil Service
Commission in January, 1965, to organize and implement a new
personnel administration programme for the government service,
He is now Director of the Personnel Administration Programme
in the Staffing Branch. His particular concern is with the
development of a corps of adequately qualified personnel
administrators available for service in government departments.

His earlier responsibilities include appointment as
Director of Personnel, Unemployment Insurance Commission, 1958
(with subsequent addition of responsibility for administrative
services); Director of Enforcement Operations, UIC, 1956;
member of Standards and Methods Division of UIC, 1953; District
Auditor, UIC, St. John's, Newfoundland, 1949.

He was born in Newfoundland and educated in Newfoundland
and in the United States.

## THE DEVELOPMENT AND USE OF HUMAN RESOURCES

by T.G. Morry
Director, Personnel Administration, Staffing Branch
Civil Service Commission

Manpower development is a responsibility to which the Canadian Civil Service has not given sufficient attention in the past but to which we are now devoting a great deal of attention and determined effort. We have not been alone in this neglect. Private industry has also done very little in manpower planning and manpower development; probably because they have had to be concerned so much with industrial relations in recent years. Whether for government or industry, a fully integrated manpower programme is costly but essential.

The question is sometimes asked, "Why should the employer spend a lot of money on manpower development?" There are those who contend that good employees will rise to the top whether or not there is a development programme and this is true in enough cases to justify the generalization. But the employer should not be concerned only with the few who do rise in this way; he should be interested in getting the best from all his employees, in meeting needs created by expansion of activities or programme changes, and in preparing for succession in important positions within his organization.

What does a manpower development programme involve? I would say that it is a programme that ensures:

(a) That the right employees are hired;

(b) That the employees are properly placed;

(c) That employees are properly trained;

(d) That employees are presented with sufficient challenge;

(e) That employees have sufficient authority to permit their growth and development; and

(f) That employees are given the opportunity to broaden their experience and background through rotation, transfer or temporary assignments.

In my opinion all of these elements are necessary for a coherent and effective development programme.

T.G. Morry

The Commission made some effort toward manpower development in its Junior Executive Officer programme. It must be admitted, however, that there have been serious deficiencies in this programme. For example, we don't know what has happened to the J.E.O.'s of the last five years. We have hired a specialist to examine the J.E.O. programme and make proposals on how we should get such candidates from the universities and what we should do with them once they are in the Public Service, what type of programme should be laid out for them, and how central direction should be organized governing the use of J.E.O.'s. We must build a platform for staff development of such young officers who can form an important element in the creation of a strong executive structure.

## Why is Manpower Planning Needed?

There is obviously a good deal of self-interest for management involved in a manpower development programme. Where there is a sound programme, turnover is likely to be reduced, morale is kept high, and there is greater continuity of performance. Employees are likely to be more effective because they are faced with a challenge and have the opportunity for the full use of their talents.

There is also the important consideration that effective and capable people for senior managerial positions are not available in anything like the numbers needed by government and business. The ones who are available in the employment market are often over-priced. They often have not had time to mature and develop because they have been lured from one post to another too rapidly. Thus, the Government cannot rely solely on outside sources of manpower to meet its senior executive needs and must make the best possible use of the manpower resources already in the Service.

There is also an acute shortage of skilled talent in the technical and administrative fields. The shortage is likely to worsen as time passes.

## What the Commission is Doing

The Civil Service Commission has appraised personnel officers against exacting standards. A good many officers already in this work did not meet these standards. The exercise revealed that serious needs must be met through improved processes of hiring, training, re-training, rotation, and re-assignment. The number of trained personnel administrators has been increased and the Civil Service Commission is well on its way to ensuring that the expert capabilities needed are available in sufficient quantity to enable the departments to carry out the personnel function adequately.

T.G. Morry

## The Requirements of Manpower Planning

In order to carry out effective manpower planning, we must first know <u>what kind</u> of employees we want. We must determine for this purpose the level of academic achievement that is essential. It has been found that we sometimes have hired people with higher qualifications than really were needed for the responsibilities indicated; this frequently leads to frustration and high turnover of staff.

We must know <u>the number</u> of people who are required to carry out present and future work. This involves effective forecasting and organization planning. The minimum period for manpower planning purposes should be at least five years in advance of need. This is made more difficult in Government Service by the unpredictable nature of future Government policies.

We must determine <u>what training</u> is appropriate. This includes orientation programmes to impart the philosophy and purpose of the department to new employees and early training in the special responsibilities they will assume.

We must ascertain <u>what career planning</u> can be undertaken. This involves an integrated system of personnel administration with an emphasis on planning and also assumes a certain degree of flexibility.

## Delegation to Departments

The Civil Service Commission is delegating to departments the greatest possible measure of responsibility for personnel management and it is doing so as rapidly as the growth of departmental capabilities permits. Departments will be responsible for training in skills and knowledge and for career development, for promotion policies, and for rotating staff to different assignments for development purposes. To help departments, the Commission must provide co-ordination of training and of rotational assignments. Adequate information is not yet available for these purposes in most fields and there is a pressing need for a central manpower inventory to allow co-ordinators to provide the kind of help that departments will require.

Considerable progress has been made with the personnel administrator group. Information about employees in this group has been recorded in a manpower inventory along with appraisal information about their present and future capabilities.

The Civil Service Commission is now making promotions in this group without the traditional posters and without some of the other procedures which previously obtained. Selection is made on the basis of information already

T.G. Morry

available in the inventory files, supported, where necessary, by interviews, and an appeal notice is then issued. At senior levels in management and in groups common across the Service, the use of posters in filling the majority of vacancies merely points to poor personnel management practices. If we don't know the people we have at these levels and their capabilities, we are not doing a good job. Issuance of a poster for a senior level position is to some extent a confession of inadequacy. One might ask what we expect to find that we didn't know, or at least should have known.

## Manpower Planning Experts

Experts in manpower planning are hard to find. They are eagerly sought also by the private sector of the economy. However, the Government rates of pay are now reasonably competitive and we are attracting a few well qualified candidates. It will, however, be some time before the Commission can equip departments as well as it would like with experts in manpower planning. While responsibility for performance evaluation and appraisal belongs to line managers, personnel administrators who are experts in this field can be of considerable assistance to them.

## Immediate Requirements of Manpower Planning

There are certain problems that should be faced if manpower planning is to be adequately developed in the Government Service:

(a) Increased Mobility - It should be possible to move employees much more readily between functions and between departments. Arrangements should be made for movement between specialty areas and general areas. A more enlightened policy on payment of costs of moving should be developed as a means of encouraging increased mobility, particularly when rotation is involved.

(b) Selection for Training - There is a tendency, in some cases, for departments to send those employees on training courses who can be spared or who can be conveniently away from their jobs for a period. Departments should give greater attention to the selection of candidates for these courses and ensure that the individual and the department will benefit to the utmost from these opportunities for development.

T.G. Morry

(c) <u>Education Opportunities</u> - It should be possible to increase the availability of education designed to improve the qualifications of staff members already in the Government Service. In some instances this should be provided without cost to the employee and even on a subsidized basis. Some encouragement can be drawn from the fact that the Treasury Board now contributes toward the cost of fees for certain courses. Fees have been paid, in part, for instance, for public administration courses at Carleton University, and it is possible that in future the full cost of fees may be borne for certain other courses, such as the Personnel Administration Course.

(d) <u>Development of Managers</u> - Much of the trend toward efficiency in Government operations will be dependent on the success achieved in developing good managers. Management training, in particular, is of importance and all departments should endeavour to encourage and stimulate the development of management talents within their ranks.

(e) <u>Allowances for Training</u> - So far there has not been too much encouragement to those who wish leave of absence for extended periods to undergo further study and training to improve their educational level. The Government should perhaps not only pay fees but consider granting substantial living or educational allowances to encourage deserving, able employees to further their education. If safeguards are necessary, they can be invoked.

(f) <u>Early Retirement</u> - Sometimes an employee reaches the stage where his effectiveness is considerably reduced and the ideal solution would be early retirement. Under present circumstances, departments are not able to adopt a strictly honest approach to these problems which are bound to arise and which are sometimes quite a hindrance to effective manpower utilization and development.

Above all, there will have to be a major change in attitude on the part of many people and I might add that those to whom I refer are not all at senior levels. A manpower planning programme can only be effective in a positive climate where there is bold imaginative leadership. Manpower planning requires courage on the part of those responsible because many of the decisions which have to be made are difficult and many of the interviews with employees are unpleasant. A programme can only survive and flourish if its objectives are clear and if there is honesty in purpose and equitable treatment for all.
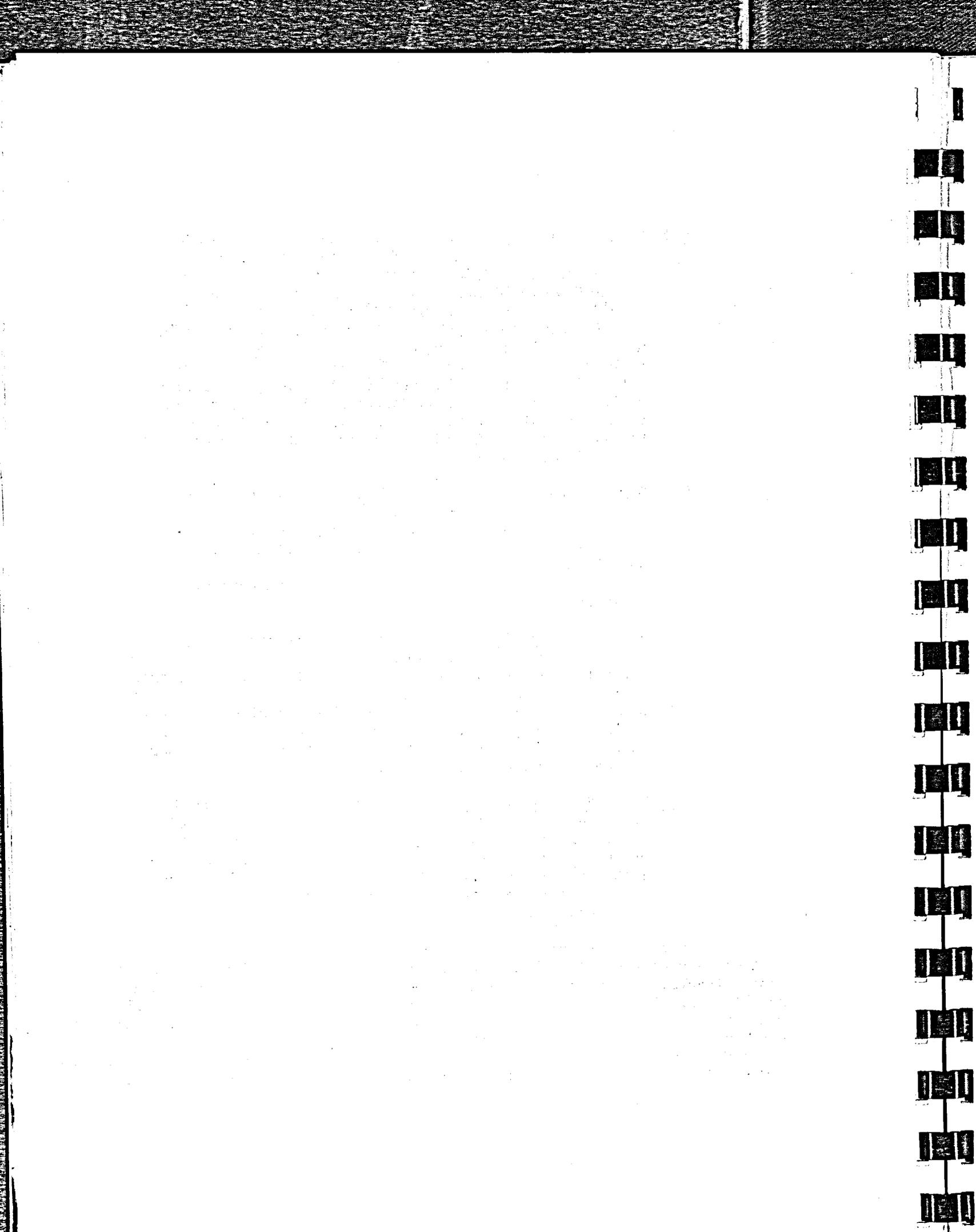
T.G. Morry

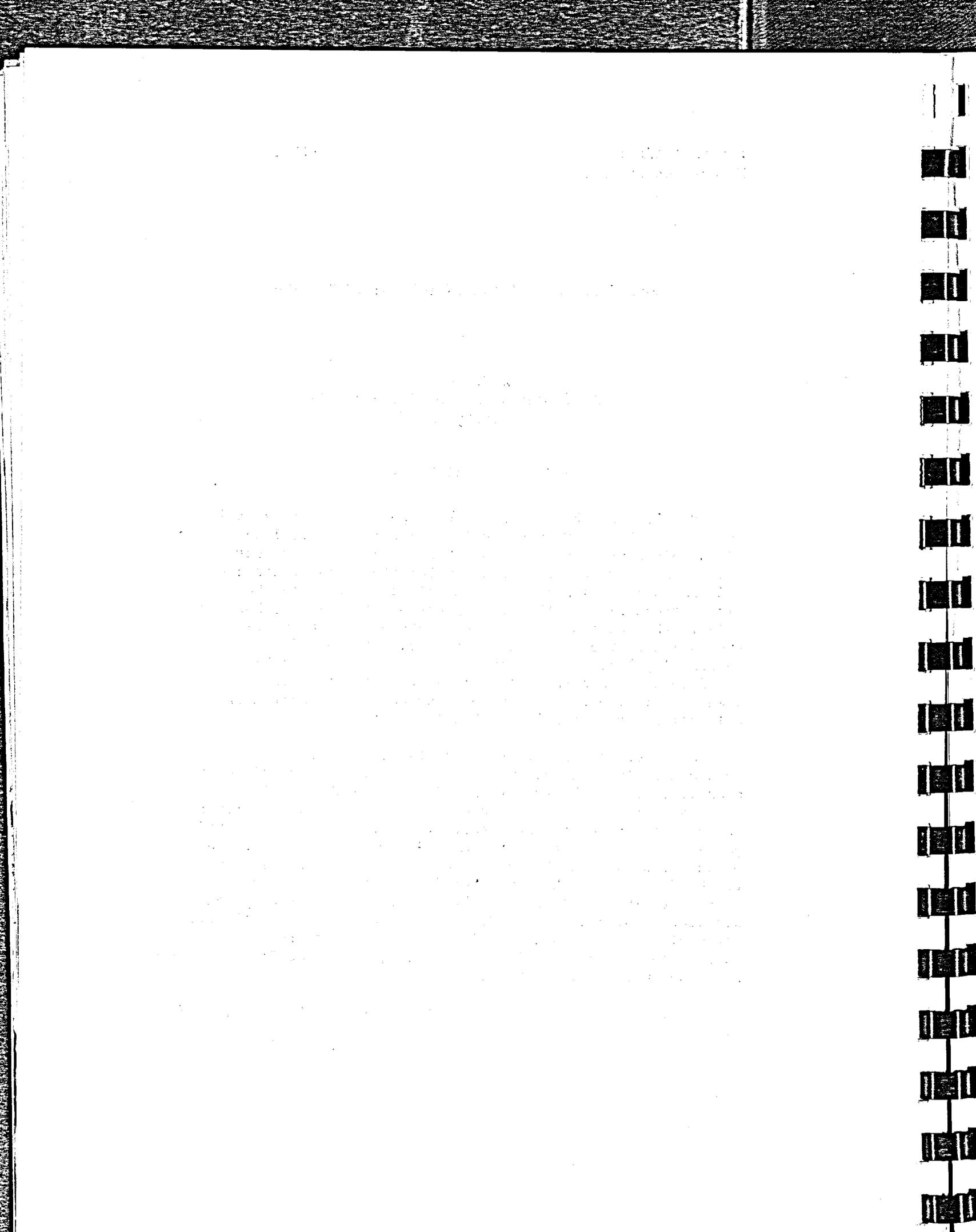## COLLECTIVE BARGAINING IN THE PUBLIC SERVICE

*by*
*J.D. Love*
*Assistant Secretary (Personnel)*
*Treasury Board*

- Biographical Notes -

Mr. Love has had a variety of experience in personnel
work in the Public Service, culminating in August, 1965, in
his appointment as an Assistant Secretary to the Treasury
Board.  He carries responsibility for the administration of
existing personnel policies.  In this time of change he is
also responsible for the development of the Treasury Board's
role in the new approach to the management of personnel in
the Public Service, and for reorganizing the Board's
personnel policy function in a manner which will enable the
Board to discharge the obligations it is expected to assume
when legislation comes into force authorizing a system of
collective bargaining in the Public Service.

After eight years in the Department of Labour, where
he was largely concerned with industrial relations and subse-
quently research, he transferred in 1957 to the Civil Service
Commission to help develop the Pay Research Bureau and later
to serve as its Assistant Director.  In 1961 he was attached
part-time to the staff of the Royal Commission on Government
Organization and in 1963 he was appointed Special Assistant
to the Chairman of the Civil Service Commission.  From
September, 1963 to August, 1965, he served as Secretary and
Director of Studies of the Preparatory Committee on Collective
Bargaining in the Public Service.  From October, 1964 to
August, 1965 he served also as Director, Bureau of Classification
Revision, Civil Service Commission.

He is a graduate of the University of Toronto (B.A., 1949;
M.A. 1953).

## COLLECTIVE BARGAINING IN THE PUBLIC SERVICE

### by J.D. Love,

### Assistant Secretary (Personnel) Treasury Board

Note:  In view of the fact that Bill C-170 (the Public Service Staff
Relations Act) was introduced into the House of Commons just two
days after Mr. Love spoke to the Seminar, the following text is
based on a talk given more recently, and reflecting the provisions
in the proposed Act.  In other respects the text reflects what
was said at the Seminar.

On April 25, the Prime Minister of Canada introduced into the
House of Commons in Ottawa a measure, known as Bill C-170, the purpose
of which is to provide the Public Service of Canada with a system of
collective bargaining.  The Bill represents some kind of milestone in the
development of Canadian legislation governing the relationship between
public servants and their employers.  My purpose this morning is to sketch
in the background, describe the principal characteristics of the proposed
system, and offer a few observations along the way.

Employee organization in the Public Service began in the 1880's.
It started in the Post Office and gradually spread to other departments.
Its basic structure was discernible shortly after the First World War.
The three Service-wide organizations that now occupy the field — the Civil
Service Federation of Canada, the Civil Service Association of Canada, and
the Professional Institute of the Public Service of Canada — all had their
genesis in the period from 1908 to 1920.  These organizations, with their
affiliates, can today claim a total membership of about 125,000.

The relationship between the Government and organizations of its
employees was slow to develop.  Until the Second World War, it was essentially
a relationship between the Crown and a group of petitioners, a relationship
characterized by the occasional presentation of briefs.  There was no doubt
about who made the decisions.  The employee organizations were weak and
divided, and the Government as employer was richly clothed in the doctrine
of sovereignty.

The character of the relationship remained unchanged for a long
time, although ideas planted by a wide variety of people, including Mackenzie
King, led to a growing demand for forms of joint consultation.  Successive
administrations managed to ignore this demand until the growth of the labour
movement, the struggle for union recognition and the need to win a war led

the Government to pass legislation making collective bargaining compulsory in defined circumstances for private employers. That was in 1943. For the Public Service, collective bargaining was still a long way off. But passage of the wartime labour legislation had changed the environment and there is reason to believe that, since that time, we have been on a road leading slowly but quite inevitably to a bargaining relationship between the Government and its organized employees. Along the way there have been many signposts, of which only a few deserve mention here.

— In 1944, the National Joint Council of the Public Service of Canada was established, providing the major staff associations with a form of official recognition and a regular means of discussing conditions of employment with senior officers representing the Government.

— In 1953, as a result of a recommendation made by the National Joint Council, the voluntary revocable check-off was granted to organizations represented on the Council. It had a profound effect on their financial stability and organizing capacity.

— The postwar inflation focussed attention on short-comings in the machinery of pay determination and, in the early 1950's, gave rise to the first serious demands for a form of collective bargaining. In 1957, with the establishment of an independent Pay Research Bureau, the principal employee organizations were, as a matter of Government policy, given access to the comparative data used in setting rates of pay.

— It was a natural step from the provision of information to consultation about its interpretation. This came with the Civil Service Act of 1961, which made consultation compulsory at two points in the pay determination process. The law required the Civil Service Commission to consult with employee organizations before making recommendations on rates of pay. It required the Treasury Board, a Committee of Cabinet, to do the same before arriving at decisions. The procedure proved to be cumbersome and produced an unhappy experience on all sides.

Here it is worth noting that, having struggled for twenty-five years to achieve institutionalized forms of joint consultation, the Public Service employee organizations were slow to establish collective bargaining as a policy objective. It was not until the mid-fifties that there developed

J.D. Love.

among the organizations a clear-cut consensus in favour of collective
bargaining. And when the consensus arrived, it favoured, not the system
of collective bargaining prevailing in the private sector, one based
ultimately on the right to strike, but rather a system modelled on the
type of binding arbitration that had been available to organized civil
servants in the United Kingdom since the First World War.

For ten years then, the Government of Canada was under pressure
to make available to its employees something almost invariably referred
to as "collective bargaining and arbitration". One can only speculate
about the reasons, although it seems clear that "white-collar" values and
attitudes and a recognition of the special responsibilities of public
servants were important factors. The proceedings of convention after
convention emphasized that most organized employees were not prepared to
contemplate strike action and regarded arbitration as the only appropriate
form of dispute settlement for the Public Service.

It was primarily in response to this point of view that the
Government, in 1963, committed itself to the introduction into the Service
of a system of collective bargaining and arbitration and moved quickly to
establish a committee of senior officials to develop the necessary
legislative proposals. In the precise if rather ponderous language of
the bureaucracy, the committee was called the Preparatory Committee on
Collective Bargaining in the Public Service. It was given as chairman
a distinguished public servant, Arnold Heeney, who is recognized in
Ottawa as an old hand at making committees work.

The Preparatory Committee was asked by its terms of reference
"to make preparations for the introduction ... of an appropriate form of
collective bargaining and arbitration, and to examine the need for reforms
in the systems of classification and pay". It was authorized to put
together a staff drawn from both inside and outside the Service. It was
empowered to consult with the major employee organizations and to report
to Cabinet. In some respects it functioned like an internal Royal
Commission.

In May 1964, the Committee recommended that a new system of
classification and pay, based on a relatively simple structure of occupational
categories and groups, be developed and introduced with all possible speed.
The recommendation was approved and referred for implementation to the Civil
Service Commission, which moved quickly to launch a crash programme that
calls for installation of the new system, in stages, by the middle of 1967.
I mention this here because it has a bearing on the provisions for collective
bargaining now being considered by Parliament. (There is appended to this
section of the proceedings an excerpt from a separate talk given by Mr. Love
on the subject of the classification revision programme.)

J.D. Love.

In July, 1965, the final report of the Committee, containing
detailed proposals for a system of bargaining and arbitration, was
handed down and made public.  In the period since that time, the
Government has had the experience of a rather severe strike in the
postal service and an opportunity to receive representations from all
of the major employee organizations.  One can assume, I think, that
Bill C-170 represents the product of a good deal of thought and
discussion.

Under the proposed system, bargaining rights would be avail-
able to all public servants except those carrying managerial responsi-
bilities and those serving management in a confidential capacity.  The
inclusion of employees engaged in professional tasks, which would
represent a significant departure from the prevailing norms of
industrial relations law as it applies to private industry, is a
reflection of the pragmatic position taken by the Preparatory Committee
when it said in its report:

> Professional employees in the Public Service ...
> have had a long and responsible history of organiza-
> tion and have played a significant part in the
> developing processes of consultation over rates of
> pay and conditions of employment.  Although some
> groups ... may not at this time want to make use of
> the proposed system, there seems to be no good reason
> why they should be denied access to it.

The system would be administered by a staff relations board,
similar in composition to the labour relations boards that operate in
the different jurisdictions across Canada.  The board would have the
power to define bargaining units and to certify employee organizations
as bargaining agents, and would also provide an administrative umbrella
for the other "third party functions", including the arbitration of
disputes and the adjudication of grievances.

For a period of about two years, bargaining units would have
to be defined in such a way as to coincide with the occupational groups
identified in the new classification structure.  This provision also
flows from recommendations of the Preparatory Committee, which was
satisfied that, without some predetermination of bargaining units at the
outset, the problems of achieving an orderly introduction of bargaining
rights would be almost insurmountable.

Under the proposed legislation, bargaining would take place
between the Treasury Board, representing management, and each of the
certified bargaining agents, representing employees.  Agreements reached
would be binding on the parties.  Arguments about their interpretation
would be subject ultimately to independent adjudication.

J.D. Love.

The dispute settlement provisions in the Bill are, so far as I know, quite unique. In applying for certification as a bargaining agent, an employee organization would be required to choose one of two dispute settlement options, one providing for recourse to binding arbitration, the other for a procedure requiring reference to a conciliation board and offering, in defined circumstances, to employees other than those deemed "necessary in the interests of the safety or security of the public", the right to strike. Each bargaining agent would be bound by the procedure of its choice and would be unable to change its option for a period of three years.

According to present indications, the arbitration process would be the one most frequently chosen. Provision is made in the Bill for an Arbitration Tribunal based on the British model. For any one dispute, the Tribunal would consist of a permanent chairman and two members drawn from panels of individuals representing in a general way the employer and employee interests. The awards of the Tribunal would be final and binding on both sides.

So much for the proposed system. A good deal more could be said but only at the risk of burying essentials in detail. Given Parliamentary approval, the Public Service will soon have a system of collective bargaining — a system with unique features but bearing a marked resemblance to that which applies in the private sector of the economy.

It is impossible to say what the ultimate effects will be. It is possible, however, to say that the initial influence has been good. I will try to explain why.

As you may remember, the Glassco Commission, in its 1962 report, advocated a greater emphasis on managerial freedom and responsibility in the Public Service and recommended sweeping changes in the processes of personnel administration. Its report was barely off the press when a perceptive critic, the same Arnold Heeney who was later to chair the Preparatory Committee, said at a meeting of the Institute of Public Administration that, if more power was to be put in the hands of Public Service managers, more power would find its way into the hands of Public Service employees. As things turned out, it was the reverse proposition that had to be upheld. For, before much could be done about implementing the Glassco recommendations, the Government had committed itself to collective bargaining. Thereafter, it was possible to argue persuasively that, since employee organizations were to be granted bargaining rights, it was necessary to get the managerial house in order.

Let me digress for just a moment to say that, in coming to grips with the concept of collective bargaining in a public service, one of the most difficult problems is to find management and, having found it, to clothe it with the authority it needs to play its part. In a public service setting, managerial authority tends to be divided between a legislature, an executive, an independent commission and a large number of operating departments. Because badly dispersed, it tends to lack

substance and definition and almost, at times, to disappear in a forest
of checks and balances. One could almost sustain the thesis that
collective bargaining has been slow to establish itself in public
services because employee representatives have been unable to identify
individuals with whom they could really deal.

Be that as it may, I believe that the coincidence of the Glassco
recommendations and the commitment to collective bargaining has had, and
is continuing to have, a dramatic and beneficial impact. Because of
pressures released by the coincidence, we have managed in the past three
years to launch a programme of reform and renovation that bids fair to
change the face of personnel management in the Public Service.

The programme has many constituent parts. The systems of
classification and pay are being completely overhauled. The approach to
recruitment and promotion is being modernized. There is a new interest in
manpower planning and a new emphasis on training. Plans for a computerized
central personnel record are about to be implemented. A coherent concept
of management development is beginning to emerge. Strenuous efforts are
being made to increase and upgrade the quality of personnel administration
resources, both at the centre and in the departments. Perhaps most important,
the structure of managerial authority and responsibility is being streamlined.
Bill C-170 identifies the Treasury Board as the employer for purposes of
collective bargaining. Companion measures soon to be introduced will permit
the Civil Service Commission to concentrate on the task of staffing the
Service with qualified personnel and provide the Treasury Board with the
authority needed to play the employer role. The same measures will provide
for an extensive delegation of authority to deputy ministers and subordinate
departmental managers.

Looking to the future, I think it is fair to say that we are in for
an exciting time. In the British Civil Service, the introduction of
collective bargaining and arbitration was followed by a period of what
someone has referred to as "starch and dynamite". We expect some of the
same. We also expect in time to establish a mature and productive relation-
ship with the organizations representing employees and to use the pressures
released by that relationship in a manner calculated to increase the
quality of the Public Service. We are keeping our fingers crossed.

### DISCUSSION PERIOD

(The following information was provided by the
speaker in answer to questions)

Attitude of Management - In response to a question whether manage-
ment should still try to get improved benefits for employees or should
wait until the employee organization asks for them, the speaker said that
it would still be the responsibility of departmental management to press

J.D. Love.

for changes in personnel policy, including changes in conditions of employment, where these could be justified in terms of improved operational effectiveness and higher productivity. Where changes of this nature were required, management should not wait for employee pressures to be exerted.

Open Book Theory - There was a tendency to believe that all employees should be kept fully informed of all developments. However, such a principle involved a danger of creating expectations that could not be fulfilled. When a manager makes recommendations to his superiors concerning his subordinates, he has no responsibility to inform his employees of the recommendations. These recommendations may not be accepted or, for one reason or another, it may be impossible to implement them. This was part of the concept of the unity of management. In the new régime, all managers would have a responsibility to keep to themselves any differences of opinion that might exist between different levels of management. In matters of personnel policy it was hoped that the Treasury Board and departments would work closely together through interdepartmental working groups. The Treasury Board wanted departments to take responsibility but also wanted to continue to be in close touch with them and to be able to adjust policies and standards to meet the needs as they arise.

Conflict of Interest - It was pointed out that a senior F.S.O. negotiating on behalf of the employer on matters of F.S.O. salaries couldn't help but have a conflict of interest if he belonged to an association of Foreign Service Officers, since an increase in F.S.O. salaries would provide him with a larger pay packet. The speaker indicated that this was a problem that existed and would be repeated in other departments. He thought that ultimately there would develop through classification and other means a differentiation between managers and non-managers so that the pay of managers would not be affected by pay negotiations in which they participated on behalf of the employer.

Mechanics of Negotiation - Once the employee organization is certified as a bargaining agent, it will serve notice on the Treasury Board to enter into bargaining on an agreement. The local councils of staff associations will deal with their national office and it, in turn, will deal with the Treasury Board. The Treasury Board will ask for the participation of management from departments concerned and will seek their help in developing a bargaining position. The bargaining team led by the Treasury Board official will then meet with the employee organization to bargain. The results of the bargaining will be embodied in an agreement. The department will then be responsible for implementation. If implementation is not satisfactory to them, employees will be able to lodge grievances and process them up through the department to an independent tribunal.

J.D. Love.

Exercise of Employee Rights - It must be assumed that employees given the right to negotiate will take advantage of it. Foreign Service stenographers for instance can form their own local unit and can then work through a national employee organization to which they presumably will belong. The managerial responsibility for satisfactory conditions will continue.

Foreign Service Act - The speaker said that without knowing much about the pros and cons he would be personally opposed to a Foreign Service Act that would separate the Foreign Service from the Public Service. Such an Act would result in a severe loss to the Public Service because of the restrictions it would put on movement between the foreign service and domestic departments. He recognized that there were frustrations for the Department of External Affairs but he believed that an extreme solution along the lines suggested would be a bad thing for the Public Service. Furthermore, it would not necessarily be a good thing for the Foreign Service. He said that nothing he had seen in his studies in England or elsewhere had persuaded him that compartmentalizing the foreign service departments had more advantages than disadvantages. There were no historical, legal or constitutional reasons for a separate foreign service.

Bargaining Units - The confinement of bargaining units to occupational groups was mandatory for only 28 months. After that time a group of employees could go forward to the Staff Relations Board and propose a different kind of bargaining unit. It would be quite possible within the law for the Board to establish different kinds of bargaining units so long as they did not cross the boundaries of occupational categories.

Future Outlook - He said that the inception of collective bargaining would not bring paradise. For four or five years life would not be easy. The objectives have been laid down but it is something else again to move toward them. Personnel policy in the government was enormously complicated at the present time. He had found when he moved to the Personnel Policy Branch that there were 112 sets of regulations for which the Branch was responsible. It took three weeks to bring them together physically. Before the Treasury Board could achieve decentralization it must review the policy content in such regulations and define a policy framework within which departments could exercise authority in the administration of the regulations. It would take some time to devise procedures for the delegation of authority to departments in a way that would give them freedom to act but would not negate entirely the final responsibility of the Treasury Board.

J.D. Love.

## CLASSIFICATION REVISION IN THE PUBLIC SERVICE

Note: This summary, based on previous speeches by Mr. Love, is included in order to amplify remarks on the subject made during the discussion of collective bargaining.


The first normal system of classification and pay in the Public Service came as the result of the Civil Service Act in 1918, which gave to the Civil Service Commission the authority to bring order out of chaos. The Commission brought in Arthur Young & Company, a firm of management consultants from Chicago. After a period devoted to study and investigation, a plan was devised and, in due course, employees found that they occupied positions and that their positions had been described and analysed and grouped together in classes and grades.

Opinions vary about the system introduced at that time. Some say it imposed on the Canadian Service a highly fragmented structure of classifications from which we have been struggling ever since to escape. Others say -- and I count myself among them -- that, for its time, it was very progressive. In support of this view there is some evidence that, for a long time after its introduction, the classification plan in the Canadian Civil Service was regarded by many public and private employers in both Canada and the United States as something of a model. In any event, it seems clear that it was a great improvement over what it replaced.

It is probably fair to say that all classification systems have a tendency to "grow like Topsy", as employees and managers press for modifications and additions designed to serve a multitude of purposes. If allowed to go unchecked, the tendency is almost bound to produce an unsatisfactory result. This is what it seems to have produced rather quickly in the Canadian Service.

By 1930, the Royal Commission on Technical and Professional Services,-- known in official shorthand as the Beatty Commission -- was criticising the "very great" number of classifications, referring to the sytem as "unnecessarily cumbrous" and making recommendations aimed at simplification -- recommendations that were apparently never implemented.

Meanwhile, as a result of a series of decisions to exclude certain classes from the Civil Service Act, a separate system for labouring and trades classes was beginning to take shape. Governed by different principles and a different administrative mechanism, it was destined to develop in time into the present prevailing rate system.

In the 1930's and 1940's, as the country sought first to pull itself out of a major depression, then to gird itself for an all-out war and, finally, to adjust to the perils and opportunities of an uneasy peace, the

J.D. Love.

Civil Service and its system of classification and pay were subjected
to a great many pressures: pressures generated by new functions and
increasing size and complexity; pressures generated by extreme varia-
tions in economic conditions; pressures generated simply by the passage
of time.

In 1946, when the Royal Commission on Administrative Classifica-
tions in the Public Service made its report, the system was clearly in
bad shape. The number of classes and salary ranges had been allowed to
proliferate until all sense of an orderly structure had been lost. The
underlying principles had become very obscure indeed. The Report of
the Commission records the fact that there were at this time no less than
3,700 different classifications and 500 different salary scales in use,
not counting those used for prevailing rate employees. Among the recom-
mendations of the Commission was one calling for "a drastic re-arrangement
and curtailment of the existing salary structure". It is interesting to
note in passing the names of some of the people who served with this
Royal Commission: the chairman was Walter Gordon, the former Minister
of Finance; the secretary was John Deutsch, the present Chairman of the
Economic Council of Canada; the assistant secretary was Paul Pelletier,
Deputy Minister of DVA.

The recommendations of the Gordon Commission led to some
improvement. An effort was made to cut down on the number of classes
and salary ranges in use. It met with a fair amount of success but it
would be an exaggeration to describe the result as the recommended
"drastic re-arrangement". And, meanwhile, the postwar escalation in the
demand for government services was bringing even greater pressure to bear
on the system and on the relatively small group of harried officers of the
Civil Service Commission responsible for its administration. Growing
criticism of the system was heard from both staff associations and de-
parmental management.

Some of the worst of the postwar pressures flowed from a
relatively rapid and continuing upward movement of wages and salaries in
the economy at large. Successive governments, committed to the principle
of keeping Civil Service rates of pay in line with those paid by outside
employers, found it necessary to grant an irregular series of across-the-
board increases. They found also that there were gaps and defects in
the existing machinery of pay determination.

The result was the Pay Research Bureau, which was established
in 1957 to provide a continuing stream of objective information on the
relationship between rates of pay inside and outside the Service.

In my opinion -- and you may take this as a somewhat biased
opinion -- the decision to establish the Pay Research Bureau, and to make

J.D. Love.

its findings available to representatives of both management and employees, produced a major breakthrough on a number of fronts. It had a very great impact on staff relations, putting the associations for the first time in a position to have a direct influence on the determination of salaries. It made it possible for the Government to respond in a more intelligent way to changes in outside rates of pay and, by doing so, to establish a more competitive position in the labour market. It had other, more subtle effects. The development of a systematic survey programme made necessary a critical examination of the many classifications in use -- and this led to a growing interest in the possibilities of occupational grouping as a means of giving a more rational shape to the structure. It was the principle of occupational grouping on which the cyclical system of pay reviews was based. Finally, the survey programme opened a window on the outside world, drawing attention to some of the things being done by progressive outside employers in the field of classification and pay administration.

By 1962, when the reports of the Royal Commission on Government Organization began to make their way into Civil Service bookshelves, the rate-setting machinery was in reasonably good shape. Attention was gradually shifting to the system of classification and pay itself. Glassco said in effect that it should be scrapped and replaced by a new one. Although this was considered a rather extreme view, there was general support in many parts of the Service for the idea that a thoroughgoing set of reforms was needed. The elements required for a far-reaching decision were beginning to form.

The catalyst arrived, suddenly and unexpectedly, in the midst of the 1963 election campaign, when all four political parties committed themselves to collective bargaining for the Public Service. Following reaffirmation of the commitment by the new Prime Minister, it became clear that, before a collective bargaining regime could be introduced, a good deal of preparatory work would have to be done, including a careful examination of the systems of classification and pay.

In August, 1963, the Prime Minister announced that a Preparatory Committee on Collective Bargaining, under the chairmanship of Arnold Heeney, was being established. The Committee moved quickly to collect a staff drawn from both inside and outside the Public Service, and to bear down on the problems assigned to it. Within a year it had completed its basic deliberations, consuming in the process more than thirty meetings, and made its basic recommendations to the Cabinet. The classification and pay recommendations were approved and referred for implementation to the Civil Service Commission, which established a new branch for the purpose -- the Bureau of Classification Revision.

Before proceeding to deal with the aims and objectives of the present classification revision programme, I would like to draw one or two conclusions from the recital of past events.

J.D. Love.

I think we can say that the systems of classification and pay applying to both civil servants and prevailing rate employees have had a long and chequered history, that they have been badly bruised and battered by great forces, that they have been in need of renovation for a long time.

But renovation has not come easily. It is 35 years since the Beatty Commission called for simplification. It is almost 20 years since the Gordon Commission endorsed what the Beatty Commission had said and went on to add its own plea for a simpler, more orderly strcuture of classes and pay grades. The record almost suggests that, in a large-scale organization like the Public Service, resistance to change is not unknown.

The fact of the matter is that the classification revision programme in which we are now caught up is the first major reform of its kind since the reclassification of 1919. Like its predecessor, the programme is associated with sweeping changes in the whole approach to personnel administration. In 1919, the change revolved around the introduction of the merit principle of appointment. In 1965 they revolved around the anticipated introduction of collective bargaining and the emphasis given, since publication of the Glassco reports, to the concept of managerial responsibility. The historian of the future may conclude that comprehensive classification and pay reforms occur only when the trouble and inconvenience they are bound to produce can be justified by the causes they serve.

Be that as it may, we are all now deeply involved in a classification revision programme that will affect perhaps 200,000 employees of the Federal Government -- civil servants, prevailing rate employees and ships' officers and crews. It is a mammoth undertaking.

Let us spend a few minutes looking at the objectives. At an early stage in its deliberations, the Preparatory Committee on Collective Bargaining recognized that, if it were to serve the emerging needs of the Public Service, the new system of classification and pay would have to have characteristics that could be clearly described and easily understood. The importance of simplicity was underlined.

The Committee concluded that the system should be designed to serve several objectives. The first was to provide a logical framework for the determination of bargaining units and the negotiation of pay rates. Of all the subjects that bargaining may touch, none is more vital than rates of pay. There must therefore be some coincidence between the class or group of employees to which a particular pay plan applies and the group for which a particular organization is certified to speak. The Committee said that the new system should be designed in such a way as to permit the required conincidence.

The second objective was to make it possible for the Government to respond flexibly to changes in outside rates of pay and, at the same time, to retain a relatively high degree of stability in the more important rate relationships between jobs within the Service. By way of explanation, I should perhaps point out that, at the extremes, there are two types of

J.D. Love.

classification and pay specialists:  those who emphasize the impo
of internal relativity and tend to ignore the labour market, and th
who emphasize the importance of the labour market and tend to ignore
internal relativity.  The first group is inclined to argue that, in
the ideal classification and pay system, there is only one pay plan,
into which all positions are slotted according to the principles of
job evaluation and held thereafter in a fixed relationship, one to the
other.  The second group is inclined to argue that, in the ideal system,
there are a great many different pay plans, each with a capacity to
respond independently to changes in outside rates of pay.  After careful
study the Committee rejected both extremes.  It recognized that some
internal rate relationships are extremely important and should be changed
only for the most compelling reasons.  It recognized also that, in the
outside labour market, the wages and salaries of all types of employees
do not all change at the same time or in the same amount.  It concluded
that, when the new structure was being designed, both factors should be
kept in mind.

The third objective was to permit different approaches to wage and
salary administration, and to personnel administration generally, for
different types of employees.  There is an accumulation of evidence that
some concepts and techniques of personnel administration cannot be applied
with equal success to all types of employees.  An approach to training that
works well with service and maintenance employees may fail badly with
professional engineers.  The type of information that should be kept on
tap in a manpower inventory may vary considerably as between research
scientists and clerical personnel.  Automatic progression through a salary
range may make good sense for the bulk of the Service but, where certain types
of professional and administrative personnel are concerned, progression based
on an evaluation of individual performance may make a good deal more sense.
The Committee concluded that the Public Service, like many large and progres-
sive outside employers, should have a classification structure that would
make it possible over time to develop a custom-tailored approach to personnel
administration for different groups of employees.

The fourth objective was to provide attractive career patterns
and strong incentives to superior performance.  In the past 20 or 30 years,
a large number of employers in Canada and the United States have experi-
mented successfully with different systems of incentive pay, some related
to employee output, some based on a periodic evaluation of employee
performance.  In recent years, the Civil Service Commission has applied
some of the principles involved to limited areas of the Service, most
recently to the Senior Officer class and to Research Scientists.  The
Committee concluded that the possibility of extending their application
should be explored when the new system was being developed.  The reference
to career patterns can be illustrated rather well by a glance at the field
of personnel administration.  At the present time, officers engaged in this
field may be classified as Personnel Administrators, Personnel Officers,
Civil Service Commission Officers, Staff Training Officers, Administrative

J.D. Love.

Officers, Finance Officers or Technical Officers - and there is no way
of knowing that even this list is exhaustive. The Committee said in
effect that this kind of fragmentation is not conducive to good career
planning and development. I should perhaps add that in the new system,
all officers engaged in personnel administration will be classified in
a single group with a single pay plan and a single set of standards.

The fifth and final objective was to permit extensive delega-
tion to departments of the authority to classify positions. It is dif-
ficult to exaggerate the potential significance of this objective. When
I first joined the staff of the Civil Service Commission in 1957, I was
impressed by the amount of paper moving in and out of the Jackson
Building -- moving in and out and also standing motionless on cabinets
and desks. It made me realize as nothing had before that personnel
administration in the Civil Service was a highly centralized business.
At that time, virtually every personnel action affecting every federal
civil servant in Canada had to receive a central agency stamp of approval.
Since that time, the situation has improved, the Commission having
delegated a substantial amount of authority to departments, notably in
the field of promotions. Bur classification decisions must still be
made centrally, partly because the existing system of classification
and pay is so complicated that any attempt to delegate authority might
produce a serious loss of consistency in the application of standards.
The Committee came to the conclusion that, with a simpler system, based
on modern concepts and techniques, it should be possible to delegate a
considerable amount of authority to departments. In the long run, the
result should be very beneficial. With the authority to classify resting
closer to the place where the work is actually done, it should be possible
to get better classification judgments made and to have them put into
effect more quickly.

These, then, were the objectives defined. The Preparatory
Committee went on to examine the problem of how they could be achieved.
After looking at a number of possibilities, it came to the conclusion
that all of the stated objectives could at least be pursued in a system
founded on a relatively simple structure of occupational categories and
groups. Indeed, their conclusion was that only by adhering to the principle
of occupational grouping could a satisfactory system be developed.

After much toil and argument, the Committee finally concluded
that two levels of grouping should be recognized. The first was what we
came to call the occupational category, a broad division considered useful
for policy planning and development. Among other things, it seemed likely
that the basic approach to salary administration could best be brought
through at this level. Six categories were identified: Executive,
Scientific and Professional, Administrative, Technical, Administrative
Support, and Operational.

J.D. Love.

The second level was what we came to call the occupational group, a sub-division on which the processes of pay determination could be appropriately focussed. As we saw it at the time, each group should be composed of employees with similar skills, performing similar kinds of work, bearing a relationship to an identifiable outside labour market. Each group should have its own pay plan, so that its rates of pay could be adjusted independently in reponse to changes in the outside world. Pay relationships within the group should be established with great care and maintained with as little change over time as possible. Some 67 occupational groups were eventually identified.

This, in a nutshell, is what the classification revision programme is all about. It is a programme dedicated to the proposition that the basic needs of the Public Service and its employees can be effectively met by a single system of classification and pay founded on a relatively simple structure composed of six occupational categories and 67 occupational groups.

Work on the programme got under way at the beginning of October, 1964 and is being carried forward with all possible speed by a staff of about 150 officers -- 50 in the Bureau of Classification Revision, 100 in the departments and agencies to which the programme applies.

According to the schedule to which we are working, the programme will be completed by July 1, 1967. The following target dates were established for conversion from the old to the new systems: October 1, 1965 for the Administrative and Administrative Support Categories; October 1, 1966 for the Operational Category; and July 1, 1967 for the Executive, Scientific and Professional and Technical Categories.

A number of steps have been taken to ensure that, in the dis-location caused by the changeover, adverse effects on employees will be kept to a minimum. The pay review cycle is being modified to accommodate the new categories and groups -- but the Government has made it clear that no existing Civil Service class and grade will go for more than two years without a pay review. In keeping with this commitment, a number of special transitional pay reviews are being scheduled.

There will, of course, be a good deal of consolidation. Quite frequently, a large number of existing classes and pay plans will be brought together into a single occupational group with a new grading structure and a single schedule of rates. Some employees will find that their positions have been assigned to a somewhat higher rate of pay or to a range with a somewhat higher maximum. For them, there will be a small windfall. Others will find that their positions have been assigned to a range with a lower maximum. Under the pay conversion rules approved by the Government, an employee in this situation will be placed in a holding classification, retaining the expectations represented by his existing maximum, and will remain there until, as a result of pay revisions, it becomes advantageous for him to be moved to the range of rates that goes with the new classifica-tion of his position.

J.D. Love.

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July, 1965.

### THE MANAGEMENT OF A FOREIGN SERVICE

*by*
*Edwin M. Adams,*
*Special Assistant to the Deputy Under-Secretary (Administration),*
*State Department, Washington*

In his talk, Mr. Adams dealt principally with major developments
taking place in the State Department.  To supplement his
comments on programme budgeting, we are including here as an
appendix to his speech, the text of a document on programme
budgeting in the U.S. Government that was circulated by the
U.S. Delegation at a meeting of the Major Contributors Group
(UN) at Geneva on March 6, 1966.

#### - Biographical Notes -

In his capacity as Special Assistant to the Deputy
Under-Secretary for Administration, Mr. Adams is responsible
for the co-ordination of personnel programmes in the Depart-
ment of State.  These programmes relate to staff at posts
abroad as well as to the headquarters staff in Washington.
Included in the programmes with which he is concerned is the
training system for diplomatic personnel operated through the
Foreign Service Institute.

Prior to appointment to his present position, Mr. Adams
served as Chief of the Career Management Development Programme
in the Bureau of Personnel.  He has been with the State Depart-
ment since 1942 and has been associated in that time with
political, economic and administrative areas of responsibility.

He is a graduate of the University of Illinois (B.A., LL.B.).
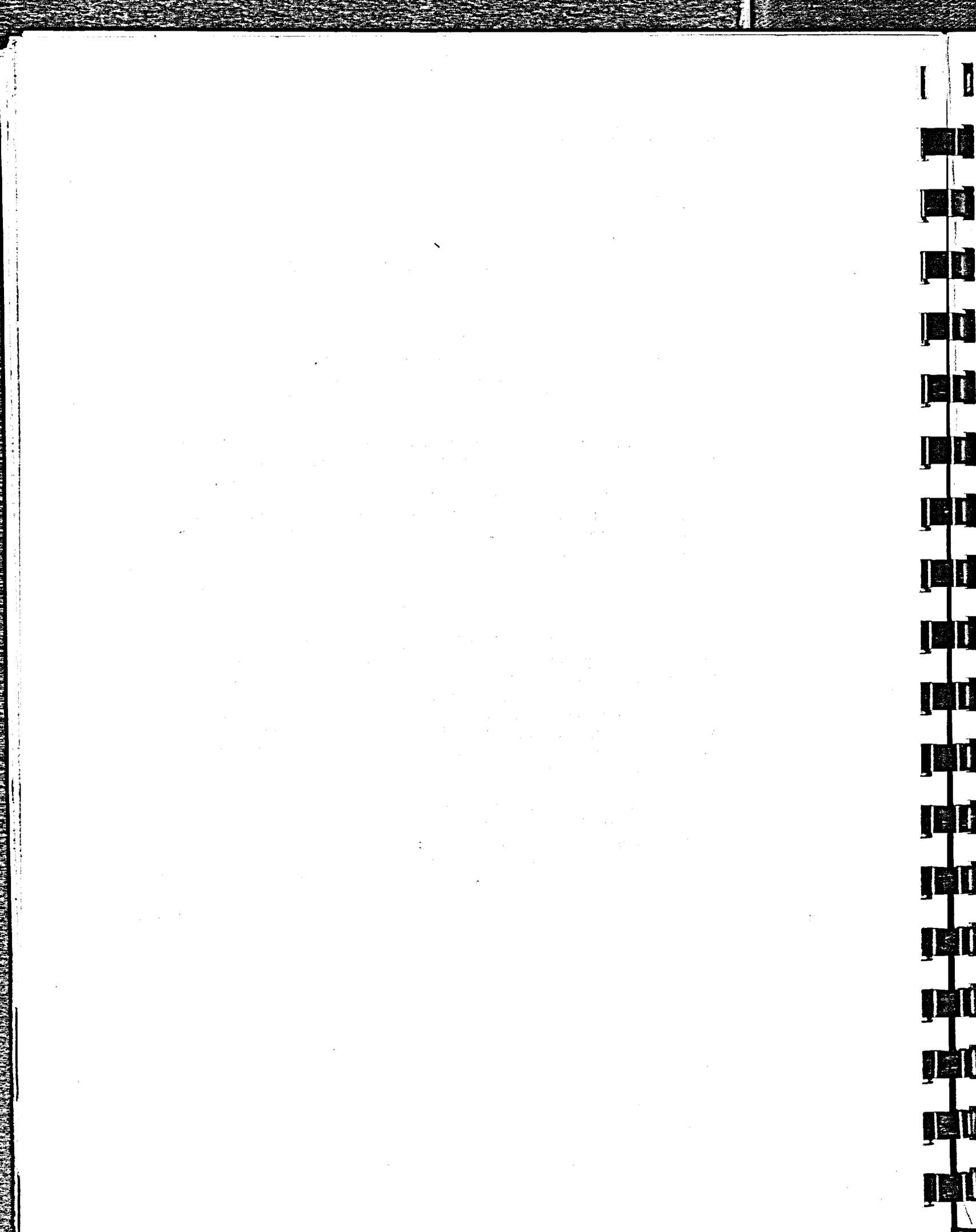
## THE MANAGEMENT OF A FOREIGN SERVICE

by Edwin Adams
Special Assistant to Deputy Under-Secretary
(Administration), U.S. State Department

While my topic is of a general nature—the Management of a Foreign Service—I think it may be of interest to you if I begin with detailed information about some of the major developments that have taken place recently in the State Department. We can go on from there to discuss the general management implications.
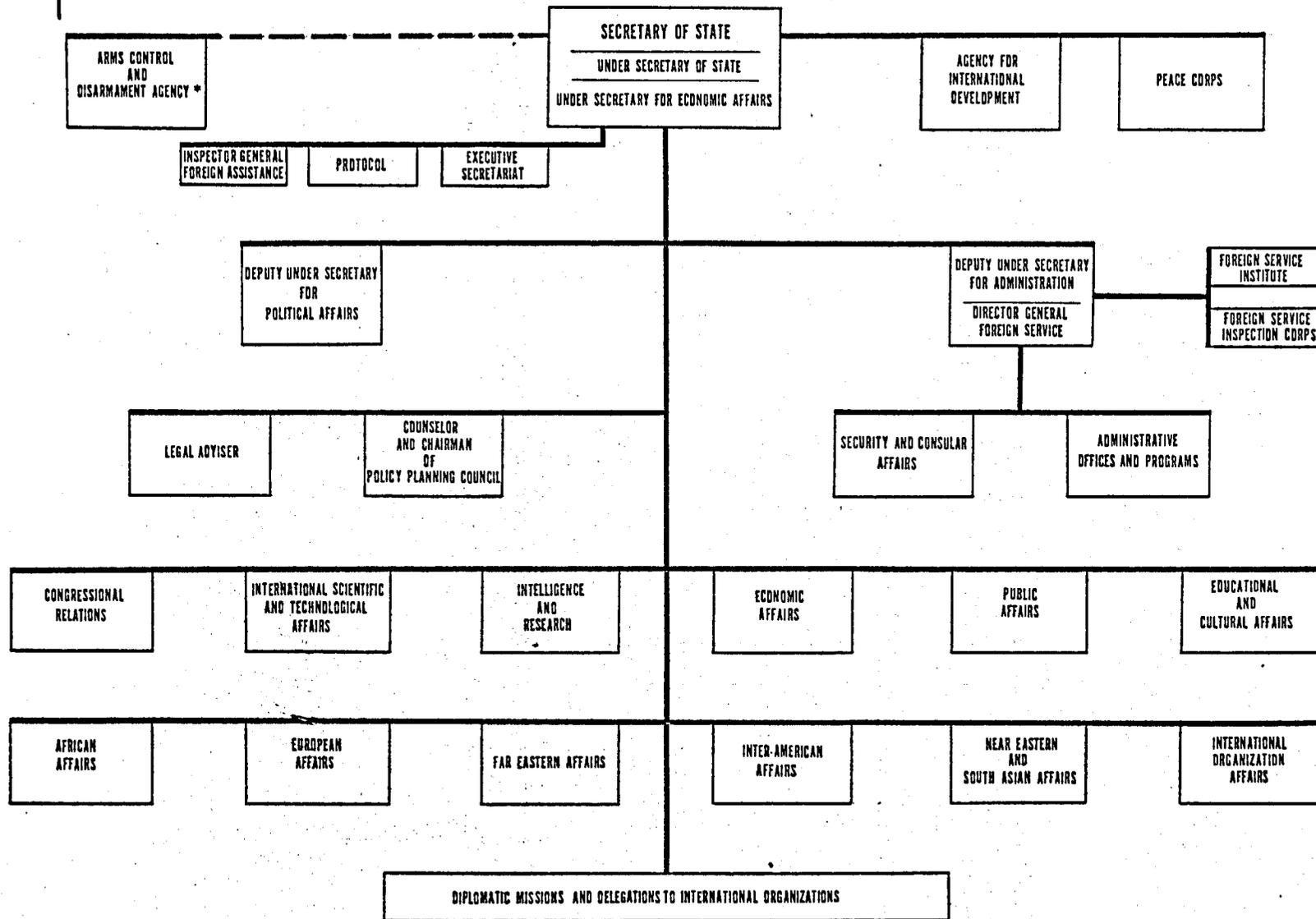
### Direction of Overseas Activities

The President of the United States issued a directive on March 4, 1966, assigning to the State Department extended responsibility for the overall direction, co-ordination and supervision of the interdepartmental activities of the United States Government overseas. This responsibility covers all operations of the United States Government abroad except certain military endeavours and some of the internal administrative aspects of the programmes of other departments. The Secretary of State has pointed out that this responsibility will be discharged in Washington primarily through the Under-Secretary and the Regional Assistant Secretaries of State and that they will be assisted by interdepartmental groups of which they will be executive chairmen with full powers of decision on all matters within their purview. In this way, the Department, and the Regional Assistant Secretaries with respect to their geographic areas, will exercise leadership functions and responsibilities at the seat of Government similar to those delineated for Ambassadors within the countries of their assignments by action of the President some five years ago.

To meet these enlarged responsibilities, certain organizational changes are being undertaken systematically within the State Department. The Under-Secretary and other designated officers are establishing, through prescribed interdepartmental groups and other means, the interdepartmental working relationships essential to the achievement of the President's objectives. There are major implications in this extension of authority. The Secretary of State has pointed out that to exercise this authority effectively will require exceptional qualities of leadership and will demand that officers working on country and regional matters apply an overview of wisdom and judgement that transcends bureau or departmental interests and focuses on the needs and purposes of the United States Government as a whole in its relationships with other nations.

Edwin Adams

# Organization of The Department of State

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│      AND        │                 ├──────────────────────────┤          │ INTERNATIONAL│  │              │
│ DISARMAMENT     │                 │ UNDER SECRETARY FOR       │          │ DEVELOPMENT  │  │              │
│  AGENCY *       │                 │ ECONOMIC AFFAIRS          │          └──────────────┘  └──────────────┘
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| INSPECTOR GENERAL FOREIGN ASSISTANCE | PROTOCOL | EXECUTIVE SECRETARIAT |
|---|---|---|

| DEPUTY UNDER SECRETARY FOR POLITICAL AFFAIRS | | DEPUTY UNDER SECRETARY FOR ADMINISTRATION | FOREIGN SERVICE INSTITUTE |
|---|---|---|---|
| | | DIRECTOR GENERAL FOREIGN SERVICE | FOREIGN SERVICE INSPECTION CORPS |

| LEGAL ADVISER | COUNSELOR AND CHAIRMAN OF POLICY PLANNING COUNCIL | SECURITY AND CONSULAR AFFAIRS | ADMINISTRATIVE OFFICES AND PROGRAMS |
|---|---|---|---|

| CONGRESSIONAL RELATIONS | INTERNATIONAL SCIENTIFIC AND TECHNOLOGICAL AFFAIRS | INTELLIGENCE AND RESEARCH | ECONOMIC AFFAIRS | PUBLIC AFFAIRS | EDUCATIONAL AND CULTURAL AFFAIRS |
|---|---|---|---|---|---|

| AFRICAN AFFAIRS | EUROPEAN AFFAIRS | FAR EASTERN AFFAIRS | INTER-AMERICAN AFFAIRS | NEAR EASTERN AND SOUTH ASIAN AFFAIRS | INTERNATIONAL ORGANIZATION AFFAIRS |
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| DIPLOMATIC MISSIONS AND DELEGATIONS TO INTERNATIONAL ORGANIZATIONS |
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* A SEPARATE AGENCY WITH THE DIRECTOR REPORTING DIRECTLY TO THE SECRETARY AND SERVING AS PRINCIPAL ADVISER TO THE SECRETARY AND THE PRESIDENT ON ARMS CONTROL AND DISARMAMENT.

MARCH 31, 1968

## "SIG" and "IRG"

In the State Department these days, with procedures being developed for administration of this strengthening authority, one hears a good deal about "SIG" and "IRG". In more specific terms, these abbreviations refer to the "Senior Interdepartmental Group" and the "Interdepartmental Regional Group". The formation of these co-ordinating bodies along with the gradual establishment of new positions of "Country Director" represent the three main organizational changes.

The Senior Interdepartmental Group (SIG) takes the form of a permanent Interdepartmental Committee with the Under-Secretary of State as its "Executive Chairman". This latter term is used to describe a chairman who has the authority and responsibility to decide all matters coming before his Committee subject to the right of any member to appeal from his position to higher authority. This is an important provision which makes the difference between the normal committee and an incisive decision-making body. The other regular members of the Senior Interdepartmental Group are: the Deputy Secretary of Defence, the Administrator of the Agency for International Development, the Director of the Central Intelligence Agency, the Chairman of the Joint Chiefs of Staff, the Director of the U.S. Information Agency and the Special Assistant to the President for National Security Affairs. The Chairman will invite representatives of other departments and agencies when they have an interest in the matters under consideration.

At the next level of responsibility, the Regional Assistant Secretary of State will occupy important focal positions in the channel of responsibility for overall direction, co-ordination and supervision of interdepartmental matters in the regions of their responsibility. The Assistant Secretaries will serve as executive chairmen of Interdepartmental Regional Groups (IRG) analogous in membership and responsibility to the Senior Interdepartmental Group. They will work closely with U.S. ambassadors and the country teams abroad and will assure the adequacy in their regions of the U.S. policy, plans, programmes, resources and performance.

## Country Director

A new position of Country Director is being established in the regional bureaus to serve as a single focus of responsibility for leadership and co-ordination of departmental and interdepartmental activities concerning the country or countries of assignment. The Country Director will also be responsible for seeing that the ambassador's needs are served both within the Department and Government-wide. He will ensure that the mission is fully supported in the full range of its requirements. The Country Director can raise specific matters for consideration by the IRG and can bring detailed knowledge to IRG discussions when so requested.

Edwin Adams

The result of these changes will be to give an ambassador authority to examine all programmes that go on in his embassy whether political, economic or administrative. The new concepts cut across agency lines in a way that has never been done before.

The role of Country Director in this new structure is of great importance. Take the conduct of U.S. relations with Tunisia as an example. Previously, there would perhaps be an F.S.O. 4 as the desk officer for Tunisia and he would concern himself with our political and economic relations with that country. Under the new system, the Country Director for Tunisia, who might also have responsibility for other countries, will probably be an ex-ambassador of that area and will be at a level of F.S.O. 1 or 2.

## Management by Objectives and Programmes

In the current jargon, one also hears a good deal in the State Department these days about "MOPS", which means "Management by Objectives and Programmes". The purpose of this new arrangement, which applies only in the administrative field, is to bring together in a co-ordinated way the people responsible for a variety of programmes. The old pyramid of management authority has been greatly modified and, in effect, there is a top manager to whom 40 or so managers of administrative programmes now report. Their work is harmonized by four or five co-ordinators who try to ensure that the programmes are inter-woven and so developed as to support one another. Examples of administrative programmes involved are those for medical requirements, junior officer development, mid-career personnel development and equalization of opportunity.

The problem in the past has been that programme managers didn't know what they had accomplished in relation to other programmes and to general objectives. The new arrangement, which was begun in February 1965, is designed to give them a greater sense of achievement. The people who have been working under this new organization in the last year have been pleased with it. They have a much clearer understanding of what their programmes and responsibilities are. The programme managers report rarely and then only to the Deputy Under-Secretary. They exercise a good deal of independence and operate on the basis of guidelines that have been carefully prepared.

The administrative system exists to facilitate the achievement of the political, economic and consular objectives. The advantage of the "MOPS" system is that it more effectively brings the administrative organization into harness with the political and economic echelons.

The steps followed in this procedure of management by objectives are as follows:

1. The programme manager prepares a programme statement in which he presents his concept of the programme, specific objectives, target dates and the resources needed to achieve them.

Edwin Adams

2.  The senior manager and programme manager discuss the
    statement and revise it as necessary until agreement
    is reached on what it is, what it will do, when it will
    be done and what is needed to get it done.

3.  When formally approved, the programme statement serves
    as the operating charter and programme for the manager,
    covering the next budget year.

4.  As objectives are changed, the programme statement is
    revised; however, revisions must be made jointly by the
    senior manager and the programme manager.

5.  Progress reports are made regularly as a comparison of
    results achieved with stated objectives and target dates.

6.  Statements of programme objectives are designed to meet
    the changing management needs and priorities (in contrast
    to functional statements which are geared to match formal
    organizational structure).

## Planning – Programming – Budgeting System

The President of the United States announced late last year
the introduction of what he termed as "New and Revolutionary System of
Planning, Programming and Budgeting throughout the Government". There
have been many papers issued on this PPB system. It is mandatory for
all US Government departments and a number of them, the State Department
included, are still in the process of determining what it means in
terms of their own operations. The PPBS was started in the Department
of Defence some years ago, and it has proven to be quite successful there.
Now that it has been made applicable to all government departments, it
has taken on new importance for those of us who were only generally
aware of it in the past. All departments are under instruction to submit
programme memoranda to the Bureau of the Budget as part of a process of
developing a spring preview of the 1968 budget. These documents are due
by May 1, 1966. In general the system is intended to provide a rational
evaluation of the individual programmes and a means of judging the
relationships between programmes. It will ultimately lead to a conjunction
of departmental policies and a unified presentation of budgets. The
country policy paper on individual countries continues to be all-important.
It is the fundamental gospel which guides all US Government activities in
respect to an individual country. It is developed at the director level.
When approved, it is made available to the ambassador and he has the
responsibility of ensuring that all people in his complex are working
toward the implementation of US Government policy as outlined in this
statement of requirements. In developing programme budgeting, we start
in the State Department from the assumption that we already have a policy

Edwin Adams

with respect to every country in the world and in relation to every
international organization. It is also assumed that the policy objective
of information and consular activities have been clearly defined. The
programme analysis is, therefore, limited to consideration of the
programmes as such and their relationships to the accomplishment of the
previously defined objectives.

There is, of course, in any planning system a conflict between
the regional and functional point of view. For the purpose of long-range
planning, the State Department really has to concern itself with both,
and this makes the development of programmes more complex.

## Mid-Career Development Programme

The State Department is giving increased attention to career
planning. Dean Rusk has said that you cannot develop careers; each man
develops his own career; all the department can do is give him a series
of experiences. In fact, we are now less inclined to speak of "career
planning" and more apt to refer to an "Experience Planning Programme".
The officer's first three tours of duty are intended to give him a broad
general experience. After that, he is expected to specialize to some extent.
He might specialize in political, economic, commercial, consular or
administrative work. This is where the mid-career planning and development
procedures are involved. For example, we have a shortage of economists
and we are sending some middle-grade officers back to university for special
training. We are also running our own training courses in economics. As
part of this process, we have developed a new inventory of jobs. The
assignment process will be given to regional bureaus. Every bureau will
have detailed information about the background qualities and particular
capabilities of each officer on its strength.

(In answer to a question on the extent to which shortages of
personnel affect career planning, the speaker said that the State Department
was not short of political officers generally. It was true, however, that
the proportion of officers at various levels left something to be desired.
There were too many senior officers and too few middle-grade officers.
Sometimes a senior officer was given a middle-grade position to keep him
busy. This problem created many difficulties. There was also an imbalance
in the proportions of people in various professions in the State Department.
There was a shortage of economists and the State Department was carrying on
training programmes internally to remedy this deficiency. There were not
enough officers interested in consular work.)

## U.S.I.A. Relationship

Another new development is the effort now being made to amalgamate
the officer strength of the U.S. Information Agency with the officer strength
of the State Department. The State Department has some 3,600 foreign service
officers. The Hays Bill, which is now before Congress, would alter the
foreign service personnel system. It is now made up of foreign service
officers, foreign service reserve officers, civil servants and staff corps.

Edwin Adams

There are different pay scales and retirement plans and different benefits for these categories. Under the new proposals of the Hays Bill, the foreign service reserve officers will become foreign service staff officers. If the bill succeeds, it will have the result of bringing in to regular State Department ranks a total of 693 U.S.I.A. officers who are now in the reserve officer category.

(In answer to a question on the relationship of the State Department to AID and to the USIA, the speaker said that both the Agency for International Development and the U.S. Information Agency were administered separately from the State Department. The respective directors are responsible for the operations of their agencies, but they carry out this responsibility within the framework of the policy directives received from the State Department. A close working relationship exists at desk level between officers of the State Department and officers of these two agencies.)

## DISCUSSION

(The following information was provided in response to questions.)

Trade Promotion - The Department of Commerce at one time wanted to have its own foreign service abroad. The decision was made, however, that commercial jobs would be filled by foreign service officers. Through the Foreign Service Institute, the State Department provides training in commercial work and it also assigns officers to the Department of Commerce for specified periods. A new programme of training and career development for commercial officers has been developed in close liaison with the Department of Commerce. A good many F.S.O.'s are willing to go into the commercial work since they consider it to be of value in itself and also to be a useful phase of their career.

Foreign Service Reserve Officers - By definition, a Reserve Officer is a specialist of a kind not available in the Foreign Service. Usually it is a person whose capabilities are in short supply. For example, a person with a Ph. D. in Economics might be brought in to do a special job and might, in fact, be sent abroad on a two-year project. By law, the appointment of such a specialist must be limited to five years and the contract can be renewed for a further five years, but no more. In the U.S.I.A., by contrast, contracts of the Foreign Service Reserve Officers lapse each year and must be reinstated if the officer is to continue. There is some lateral transfer from the reserve to the foreign service officer ranks, but serious problems can arise if a young specialist with rare capabilities is brought in and paid more than older men who have long experience in the foreign service.

Edwin Adams

Selection-Out - A board meets every September and reviews the officers in each class to determine on the basis of performance ratings which ones fall in the upper 10% and the lower 10%. In lower grades, the boards identify the top 30% and the lower 30%. If an officer falls in the lower 10%, he may be subject to the selection-out process. This selection-out procedure is an element in the personnel policy that causes great trouble. It is applied right up to the F.S.O. 1 level.

Proportion of Officers Abroad - The speaker thought that of the 3,600 foreign service officers on State Department strength, approximately 60% would be abroad and 40% in Washington. He gave as rough figures an estimate of 1,500 political officers; 740 economists (and commercial officers); 740 consular officers; and in addition to this a number of attachés for specific purposes. In addition, there were some 1,500 admin. officers. He thought that the administration required some 25% of total staff; a figure which he thought was too high.

Separate State Department Act - The speaker said that the State Department wouldn't wish to abandon its right to operate under a special act. To merge itself with the general Civil Service would create many problems and provide almost no advantages. For example, the Civil Service would not agree to the selection-out procedures; acting pay problems would arise; the policy whereby the officer's rank goes with him and permits rotation would be frustrated. The maintenance of a high quality of officers would be hindered and furthermore, the special retirement system which relates to the risks and problems of foreign service life would be in jeopardy.

Edwin Adams

APPENDIX

## PLANNING, PROGRAMMING, BUDGETING SYSTEM*

## IN THE UNITED STATES GOVERNMENT

In August 1965, the President of the United States announced the introduction of what he termed a "new and revolutionary system of planning, programming, and budgeting throughout the Government". Behind that announcement lay his conviction that the methods of programme development and budget preparation previously used to choose among the variety of claims made upon Federal resources needed substantial improvement.

The resources of the U.S. Government, great as they are, are like those of nearly all public institutions, finite. They are insufficient to meet all the claims which are made upon them. Choices must be made-- choices as to which programmes to carry out, and choices as to the level at which to support them.

For many years, the Bureau of the Budget and a number of the departments and agencies of the Government have been working together to improve the methods for making such choices. The new Planning-Programming-Budgeting System is designed to improve that situation. Its objectives, are to enable us to:

1. identify our national goals with precision and on a continuing basis;

2. choose among those goals the ones that are most urgent;

3. search for alternative means of reaching goals most effectively at the least cost;

4. inform ourselves not merely on next year's costs--but on the second, and third, and subsequent year's costs--of our programmes;

5. measure the performance of our programme to ensure a dollar's worth of service for each dollar spent.

The means of achieving these ends centre on the formulation of individual agency budgets. As the first step, agencies will present their budgets for fiscal year 1968 (July 1, 1967, to June 30, 1968,) in categories representing the main objectives or missions of the agency. Under these categories will be grouped the various operations and activities undertaken to meet those objectives. Such a grouping will make possible the

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* Document circulated by U.S. Delegation at a meeting of the Major Contributors Group (UN) at Geneva, March 6, 1966.

Edwin Adams

systematic review of expenditures in terms of the purposes they are intended to serve. This is the so-called "Programme Budget".

This approach focuses attention primarily, but not exclusively, on the anticipated achievements of programmes, such as the number of ton-miles of freight to be moved on inland waterways or the number of pieces of mail to be delivered. These accomplishments represent "outputs". In the U.S. government, as well as most international organizations, the budget process in the past has concentrated largely on "inputs"--the number of persons to be employed, the amount of money to be spent for equipment or office space or travel. Under the new system, we will continue to be concerned--and even more concerned--with costs, but we will be able to select our targets with better appreciation of their ultimate cost.

In addition to this expanded and reorganized budgetary process, each agency of the government will be required to submit to the Bureau of the Budget well in advance of the final budget formulation, a comprehensive set of studies, or Programme Memoranda, similarly organized by major objectives or programmes. These memoranda will detail the specific programmes recommended by the agency relating them to both national needs and to other relevant international, federal, state, or local programmes. They will describe expected accomplishments in concrete terms, and most important, they will present comprehensive analyses of the probable costs and benefits of specified alternatives--alternative programmes designed to produce similar end-results, and alternative funding levels for those and for the recommended programmes. These documents are intended to provide a comprehensive and factual justification, not merely for new initiatives, but for the total range of each agency's major programmes. They will employ, wherever feasible, the most modern techniques of analysis, operations research, and data processing.

This work will involve a major increase in the planning and analytic effort of most of the executive agencies. Each agency has been directed to establish a central staff for analysis, planning, and programming.

Programme budgeting--the basic concept on which P.P.B.S. has been developed--is not a novel technique either in the public or private sectors. Neither is planning based on the analysis of costs and benefits. Programme budgeting is intended to assist the administrator in his decision-making role so that scarce resources are allocated among competing needs on as rational a basis as possible. It will not--nor is it intended--relieve the administrator of the decision-making responsibility.

P.P.B.S. is unique, not because of the techniques employed, but because of their combination, and the scale and comprehensiveness with which they are to be applied in the U.S. Government.

Edwin Adams

The benefits of P.P.B.S. should be great. The system will give agency heads the means for continuous and systematic review of their agency's activities. It will give the President and the Congress a method of reviewing and evaluating whole programmes rather than incremental requests--and of conducting that evaluation in a meaningful perspective. It should reveal those programmes which are obsolete or of little utility, and those which promise most effectively to meet pressing national needs. It should make possible a more efficient and more productive allocation of the resources of the Federal Government.

In the international organization arena, the I.L.O., in introducing this year its "Programme Planning and Control System", has taken a major step in adopting more modern and useful techniques in the rapidly developing field of public administration. It should be recognized that there is no one system of programme budgeting which can be applied to all situations. The system used is not the most important consideration; rather, adoption of the concepts and developing an integrated framework for their application is of fundamental importance.

Adoption of these concepts, in an integrated system for programme formulation and budget presentation by the organizations of the United Nations system is, in our view, a very promising new approach to the question of how international organizations can more efficiently serve the purpose for which they were established.

Edwin Adams
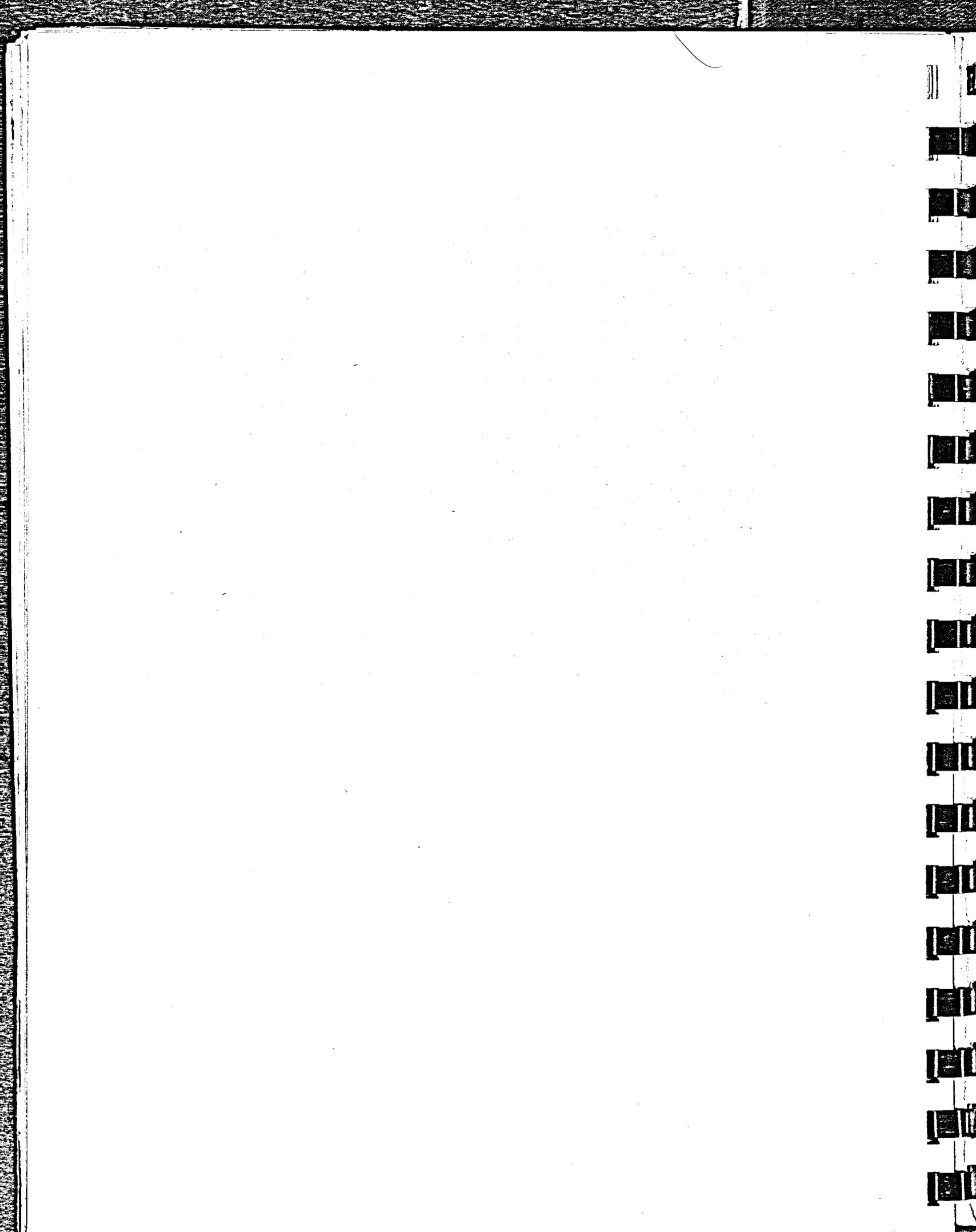
## MODERN TOOLS FOR MODERN MANAGEMENT -- OFFICE EQUIPMENT

*by*
*J. H. Crossan,*
*Office Machinery and Equipment Adviser*
*Management Improvement Branch,*
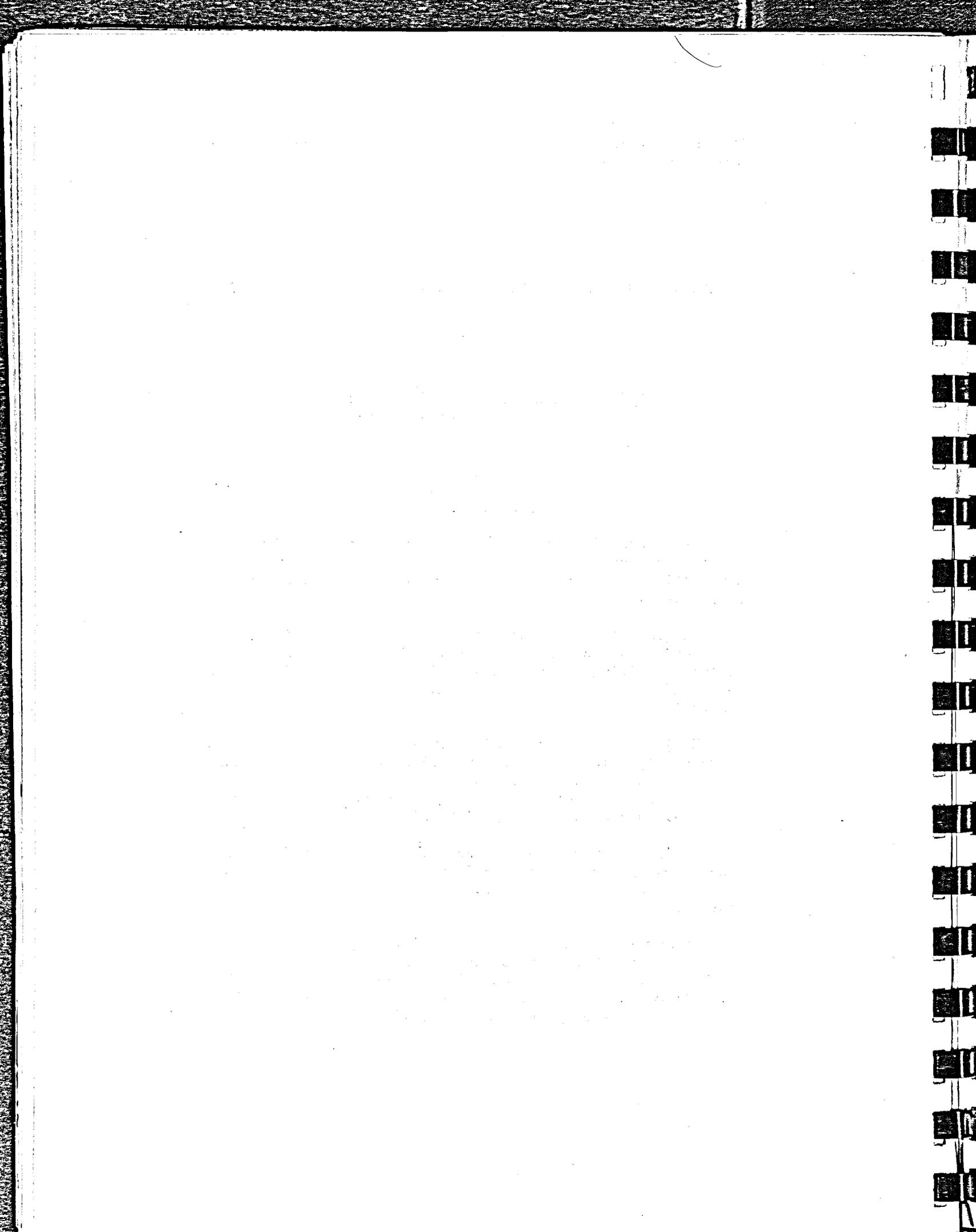*Treasury Board*

### - Biographical Notes -

Mr. Crossan's career has been largely concerned with auditing and systems work, and he has specialized in the application of modern technology and new developments to office problems.

On graduation from the University of Toronto (B. Com.) he joined Canadian General Electric and spent seven years as senior travelling auditor engaged in both audit and systems work, and three years as Chief Administrative Officer, Montreal District.

He joined Underwood Limited in 1940 and for 18 years was successively Sales Manager, Montreal District, District Sales Manager, Eastern District, and eventually Canadian Sales Manager, Automated Data Processing Division, including accounting machines and equipment peripheral to computers.

In 1958 he was appointed Executive Vice-President and General Manager of Associated Broadcasting Corporation, Toronto, a company engaged in communications and closed circuit broadcasting.

In April 1965 he became Chief of the Special Products Division of the Machinery Branch of the Department of Industry which fosters the development of the office equipment and scientific and industrial instrumentation industries. He assumed his present post in January, 1966.

## MODERN TOOLS FOR MODERN MANAGEMENT - OFFICE EQUIPMENT

### by J.H. Crossan

### Management Improvement Branch, Treasury Board

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To-day, we listen to speakers and read articles reminding us that we are in an electronic age and entering upon an era of fascinating developments. When we hear of these things, we immediately think of the electronic computer and perhaps rightly so because it is the heart of most electronic systems.

However, surrounding the computer and available generally are hundreds of machines and devices which prepare and transmit the input material of the computers and, similarly, receive and translate into readable form the output from the computer after processing. These go under the heading of "peripheral equipment" and are normally located at some distance from the computer, sometimes thousands of miles.

The next speaker is going to discuss in some depth the role of the electronic computer. It is my intention to talk about some of the peripheral equipment and also about other office machines which are keeping pace with electronic developments and are making their full contribution to advances in the office equipment industry.

I must transgress a little upon the subject of electronic computers to bring you two definitions that are essential to you if you are to understand properly my constant reference to the role of peripheral equipment.

Time Sharing - In brief, time sharing is the concept of connecting a computer complex by lines to several departments of one company or organization, regardless of their location, and of having the computer perform tasks simultaneously for these various customers. The computer, in this instance, is equipped with several channels. When a query is sent to a machine by wire, it fits into the programme in such a manner that the computer is able to return the answers without disturbing the other work it is doing.

Decisions in Real Time - When we speak about "real time" we refer to the ability of a computer to relay back to the client facts about a situation as it exists at the very moment in time that the query is made rather than at some cut-off point in the past. Examples of such information are accounts receivable balances,

J.H. Crossan.

credit approval, stock control balances, etc. In other words, the computer is designed as a multi-processor unit capable of transferring and of producing real time information. This is also known as provision of information by "direct access".

When computers were first introduced, they proved to be so rapid in comparison to any other equipment in use up to that point that they outstripped the associated input and output equipment. This had the effect of limiting severely the speed with which the computer could do its work since the whole system could operate only as fast as the slowest unit in the configuration. Various off-line procedures were introduced to speed up the processes, but the development of peripheral equipment has always been and continues to be behind the development of computers. We can expect to see continued effort on the part of the industry in improving the speed and capability of peripheral units.

Office Facilities - Let us assume that we have installed one of the large computers in a central location and have connected it on a direct line with an ultra-modern executive office of the future. What will this executive office look like and how will it be equipped and used? During the last few months, various articles have been written by experts well acquainted with current research and development.

The desks and other pieces of office furniture will, in all likelihood, take on the general appearance of the most modern modular units available to-day, but they will be designed to support or house the various types of peripheral units with which these control centres will be equipped. Some of these will be in auxiliary housings alongside the desks. There will probably be an array of buttons and switches that will look formidable, but will be quite simple and understandable to the highly trained administrative officer of the future. Some of the machines and instruments we may expect to find will be:

> Cathode-ray viewing screens
> Microphones and loud speakers
> Television screen for communication purposes
> Automatic typewriter
> Telephone
> Photocopy machine

These will all have become pieces of peripheral equipment capable of producing punched paper tape, magnetic tape, or some other language medium compatible with other office machines located elsewhere or connected directly with the computer itself. This output may be fed into a communications system and transferred by wire to the computer location to be received there in the same form in which it originated.

J.H. Crossan.

All this will be influenced by the urgency connected with the transmission of raw data and the receipt of the answers.

The typewriter will be capable of receiving punched paper tape at very high speeds through a photo-electric reader. It will operate at double the speeds of present automatic electric machines. We are fortunate in having available here for demonstration to-day a new automatic tape-operated electric typewriter — the Dura Mach 10 — using pertinent data that has been punched on master tapes or edge punched cards. This machine will automatically type out the information at a rate of 175 words a minute without making any mistakes and it will position the material correctly on the page. At the same time, it can punch out a by-product tape for direct input into a computer. Machines of this kind will be in common use in years to come for automatic preparation of letters and general correspondence where form letters would serve the purpose with minor modifications. It will also have a variety of other uses.

Optical Scanning - It has always been a fond hope that some day a way would be found to have input devices read the printed word directly. Considerable progress has been made in this direction. Optical scanners equipped with photo electric cells can read letters and figures of distinctive shapes directly from documents and forms.

If this language is going to become common to several types of machines, a certain degree of standardization has to be worked out. In addition, the system is costly and requires extensive use to reach the stage of being practical and economical. The minimum economical quantity to justify an optical scanner is 10,000 documents a day.

The adoption of a common machine language will make its greatest impact in the transfer of documents from industry to industry, but there should also be a potential savings to be realized from the exchange of forms between industry and the Government. These would include income tax returns, customs forms, census of industry reports, etc., where key punching or other processing now required before information can be entered in the computer could be drastically reduced or eliminated. The development of peripheral machines to produce typography suitable for optical scanning is now being extended to typewriters, cash registers, accounting machines, add punches, ADP machines such as Flexowriters, computypers, etc. While optical scanning is now quite costly it is hoped that future development work will lead to more efficient and economical equipment which will come within the reach of more and more users.

Magnetic Ink Character Recognition - The type of coding known as Magnetic Ink Character Recognition (MICR) is similar to optical scanning but uses a different sensing principle. It may be familiar to you as you

J.H. Crossan.

see it in daily use on your savings or current account cheques and on certain cheques issued by the Government. The letters and figures used for this purpose are the peculiarly shaped ones you find along the bottom of your cheques. They indicate the bank and the branch. The date and amount and any other variable data are added by an encoder after the cheques are cashed. When run through a machine they are sorted by bank and branch, the amounts are totalled and the bank clearing figures are prepared. All of this equipment is self-proving and self-checking.

Cathode Ray Viewing Screens - In October 1965 the Canadian General Electric Company exhibited a cathode ray viewing screen at the National Business Show in Montreal. These screens look like the T.V. screens you see at the airports containing lists of flight schedules but they are not the same. The flight schedules are shown merely as pictures of printed forms. The cathode ray viewing screen presents information obtained direct from the computer. When a computer is requested to supply information, it seeks it from one of the memories where it will be stored in code on magnetic tape, disk, drum or core as the case may be. The computer, when properly instructed, will send the video counterpart of this coding along the wire for presentation to you on your screen, where it may be read. Some day it may be possible to go a step farther and make instant copies of what appears on the screens.

Similar developments are already with us or coming soon in connection with the following: add-punches developed from adding machines, data processing machines with paper-tape output possibility, such as Flexowriters, omputypers, Mercators and other forms of calculators and billing units; other machines capable of paper tape input and output, magnetic tape and optical scanning.

Not all of these instruments will be in the modern executive offices or will be of interest to senior members of government departments. However, you will certainly have a telephone and it will probably be characterized by interesting changes. It will become what is known as "touch-tone" with a ten-button keyboard for speed and simplicity of dialing. It will be capable of direct access to the computer; if you dial certain numbers, you will get certain information. It will be equipped with a card reader for identification purposes and for transmitting fixed data. Teletypewriters, telegraph and Telex will advance similarly and will become more flexible through micro-wave relay systems.

The telephone will be so constructed that you will be able to reach frequently used numbers by pressing only three or four digits. This will be possible through what is called an "electronic switching system." You will also be able to hook up by telephone a conference arrangement using the telephone alone or, if you wish, using closed circuit television.

J.H. Crossan.

The use of cards and other forms of automatic dialing of frequently required connections will increase. The telephones of the future — and, indeed, these possibilities are technically feasible now — will be used for accounting purposes, paying bills and other requirements. For example, the store at which you wish to charge a purchase, will insert a plastic card into a slot in the telephone and this will transmit fixed data such as the code for the store, date, etc., and also information about your purchases. The result will be that your account at your bank will be automatically charged with the amount of the purchases and the store will be credited. Many transactions will be completed in this way without any use of paper.

The Post Office Department of Canada has just contracted for an electronic computer and data collection units similar to the card reader of the telephone system, which will convey instantly to the computer the times of start and stop, the account number involved in the work, the cost centre, and the number of the employee engaged on manual work on which this type of work measurement is used. This computer will be established in the Toronto office. If this trial is successful, the application will be extended to other cities.

Security of Information — Up to this point we have been talking a great deal about questioning electronic computers for information through the medium of peripheral equipment. I am sure some of you have been wondering how secure or private the information contained in one's own computer really is when anyone who has a Touch-Tone phone, a Telex or any other "on line" device could make contact with your computer and ask it for any information he would like to have. What is to prevent anyone making such a call and altering the records or obtaining secret information? Proper precautions are taken. I mentioned previously when I was citing the example of the customer dialing a bank transaction that he inserted a private code. Without this code the computer would not accept the call. You must have the correct code before you can question a computer at all. This code is good only for the computer receiving this code number and others like it. The computer is programmed to release only the information it is supposed to release and no more. It will refuse all other enquiries. The computer will permit changes only in those areas authorized for alteration or updating.

Information Retrieval Systems — The term "information retrieval" itself imples that we are about to embark upon a system and/or equipment that will help us find documents that are lost. They might just as well be considered lost when you consider the volume of paper that is raised in government, business and institutions. I have been informed that you believe that when you occupy your new building four years from now your Department, at its present rate of expansion, will be generating close to 500,000

J.H. Crossan.

documents a year. On the assumption that this material can be accommodated at a rate of 1,500 documents to the foot, it would require about 40 four-drawer file cabinets to hold it. If these were retained for only 5 years, you would have a file acquisition of 2½ million documents in 200 filing cabinets. To search for one document in a file system of this size is quite a task. However, it becomes much more difficult when we wish to seek out all documents which have one or more common relationships.

I would not try to guess what records, secret or otherwise, you possess. I can only create hypothetical situations to illustrate the latest developments in information retrieval that might some day be useful to you. Let us take for example the crisis in Rhodesia. It may suddenly become necessary that you retrieve for immediate perusal all of the messages that arrived from certain major posts on that subject during a specific two-week period. These are on file and even if kept current they are intermingled with the 20,000 other documents that arrived during that period.

You all have a general knowledge of microfilming and know that up to a short time ago the images of a microfilm could be reached only by running them through a viewer, locating by sight the alphabetical or numerical designation of the frame or frames you wanted to examine. Many new locating devices and methods for rapid use of microfilm are in the course of development and some are already with us.

Aperture Cards — The automatic punched card sorter has been borrowed to help put in sequence and file large numbers of microfilmed images containing documents, maps, drawings, codes and all sorts of information. These transparencies are mounted in punched cards which are coded and which can then be sorted, merged, collated, sequenced or withdrawn from the files when desired. While it is unlikely that you would run a huge batch of such cards to extract one document you would certainly do so to extract a large number of documents related to one subject. Example: retrieval of all drawings related to the fire control system of a class of destroyer up for redesign.

Film Jacket or Strips — Clear acetate film strips are available in jackets each with 12 frames on related subjects. The individual frames may be updated. The user can make prints while the film is in its jacket. Plastic strips are also available that will hold up to 31 frames.

Microfiche Films — These are rectangular sheets of film made with a step camera. Each one holds about 70 images, usually on one subject. A disadvantage is that a single frame cannot be altered without altering the whole unit.

J.H. Crossan.

Sometimes Aperture Cards and Microfiche Films are stored in automated files. If it is necessary to examine one or more frames they can be quickly retrieved and inserted in a slot of a viewer and they are flashed on a screen. If a copy of the image or images is required, a touch of a button sets the necessary reproduction facilities in motion.

Continuous Film - We began this discussion by referring to the microfilm images in continous form on reels. The devices to which we have made reference thus far constitute forms of escape from the limitations imposed by this form of record. While it has been relatively simple to locate an image contained on a continuous film strip maintained in strict alphabetical or numerical order, searching for an individual document or a number of related documents from such a medium in a conventional reader is difficult and time-consuming. For this reason sorting and retrieving devices such as the strip, the microfiche and aperture cards were developed.

There are, however, several conventional methods of grouping images into blocks which speed up the search process with continuous film. One of these is to have all images pertaining to one subject in one or more separate casettes. Another is to insert various types of "target flashes" consisting of several frames in bright colours or horizontal bars calling attention to an index card which follows immediately after the target area and localizes groups of images which can be examined at slow speed. Blank film causing a bright flash can also be used as an indicator. Use of continuous film has been facilitated also by casette or magazine loading which has permitted more rapid insertion and removal of film for search and review.

Index Coding - Of considerable importance has been the introduction of a system of coding between images on continuous film which enables certain frames bearing this code to be retrieved in a few seconds. The operation consists of photographing on the film the index code of the document to be recorded. One roll of film will accommodate up to 2,000 documents complete with coding. Images may be retrieved from a single magazine containing 2,000 images in an average time of 5 seconds.

A retrieval station may be equipped with as many as 15 code key boards, each consisting of 3 digits, which gives the user as many as 1,000 descriptors. (Descriptors are usually words extracted from a document and used for indexing.) Each retrieval station could accomodate some 900,000 pages, any one of which could be displayed on the screen in 15 seconds and reproduced in photocopy form in 25 seconds. The machine will automatically search the magazine and display on the screen, one after the other, every image that meets the various criteria. If a copy is required, a touch of a button produces it while the machine continues the search. In the event that there is over-definition in your request (too many descriptors) and the search does not turn up any

J.H. Crossan.

frames that qualify, the operator may remove the least significant descriptors until the request is fulfilled.

Computers to Microfilm - Digital information from computers may now be passed through an interface to 16 mm. microfilm at the rate of four pages per second. This is accomplished through equipment which displays the content of the computer by means of a cathode ray tube and photographs it rather than printing it out on a line printer.

Super Microfilm - One of the most interesting developments is in the field of super micro photography. Researchers have been able to produce a grain-free film that allows effective enlargement of film images to a much greater extent than heretofore. One form of this development is called Photo-Chromic Micro-image, or PCMI. Using this film the image of a document can be reduced 40,000 to 1 and later reproduced by enlargement in a legible form. Using this method the entire Library of Congress comprising 270 miles of shelf filing could be photographed and stored in six ordinary filing cabinets. National Cash has developed a form of supermicro-photography which permits reduction of 1 to 50,000. The entire Bible photographed by this process occupies a small piece of film measuring less than two inches square.

New Research - I could go on to describe additional fascinating ways to store information and retrieve it quickly and efficiently, but not necessarily inexpensively. Some of the more sophisticated but very costly systems such as video tape to cathode ray viewing screens are very impressive but as yet impractical for the average user. Hundreds more developments of this type are on drawing boards and in laboratories. Industry is about ready to break out and this research work will permit it to expand rapidly when the time comes. This could be in 1970 to 1975, but is is my suggestion that we all keep abreast of these new products and be ready to use them when they become available.

The terminology and trade names of some of the equipment on the market and in the course of development begin to sound like electronic computer language, and of course some are closely related to data processing. All are quite intriguing. Examples are: electrofile; conservamatic; lektriever; centroc; peek-a-boo systems; termatrex; MWIC; DACOM.

Government Applications - Some installations similar to those I have described are in operation in the Government of Canada today. For example, the National Research Council is using what is called an SDI system - Selective Dissemination of Information. Interested persons enquire about new articles in periodicals, indicating a profile. The document file is searched by the system and the recipient receives a list of authors, titles, sources and abstracts from which he requests what he wants.

J.H. Crossan.

A system of electronic retrieval of information on microfilm through index coding is currently being installed in the Food and Drug Directorate of National Health and Welfare and I expect that other government agencies will also be able to benefit in the future from modern equipment of this kind, which goes under the trade name "Miracode".

In making use of Social Insurance Numbers, the Government maintains a cross-indexing system on microfilm and all records are searched through viewers. In the Citizenship Registry cross reference indexing is housed in mechanical revolving trays. All documentation over two years old is retained on microfilm and searching of these records is performed on viewers.

It is expected that these various systems will be enlarged and improved upon as the hardware and systems prove themselves and as we gain experience with them. The object of most of them is to: cut down on paper work; lower costs; speed up both filing of information and access to it; provide better service; assist the decision-making process; save space. I think you will find in time that some, at least, of these modern techniques will be of interest to the Department of External Affairs.

J.H. Crossan.
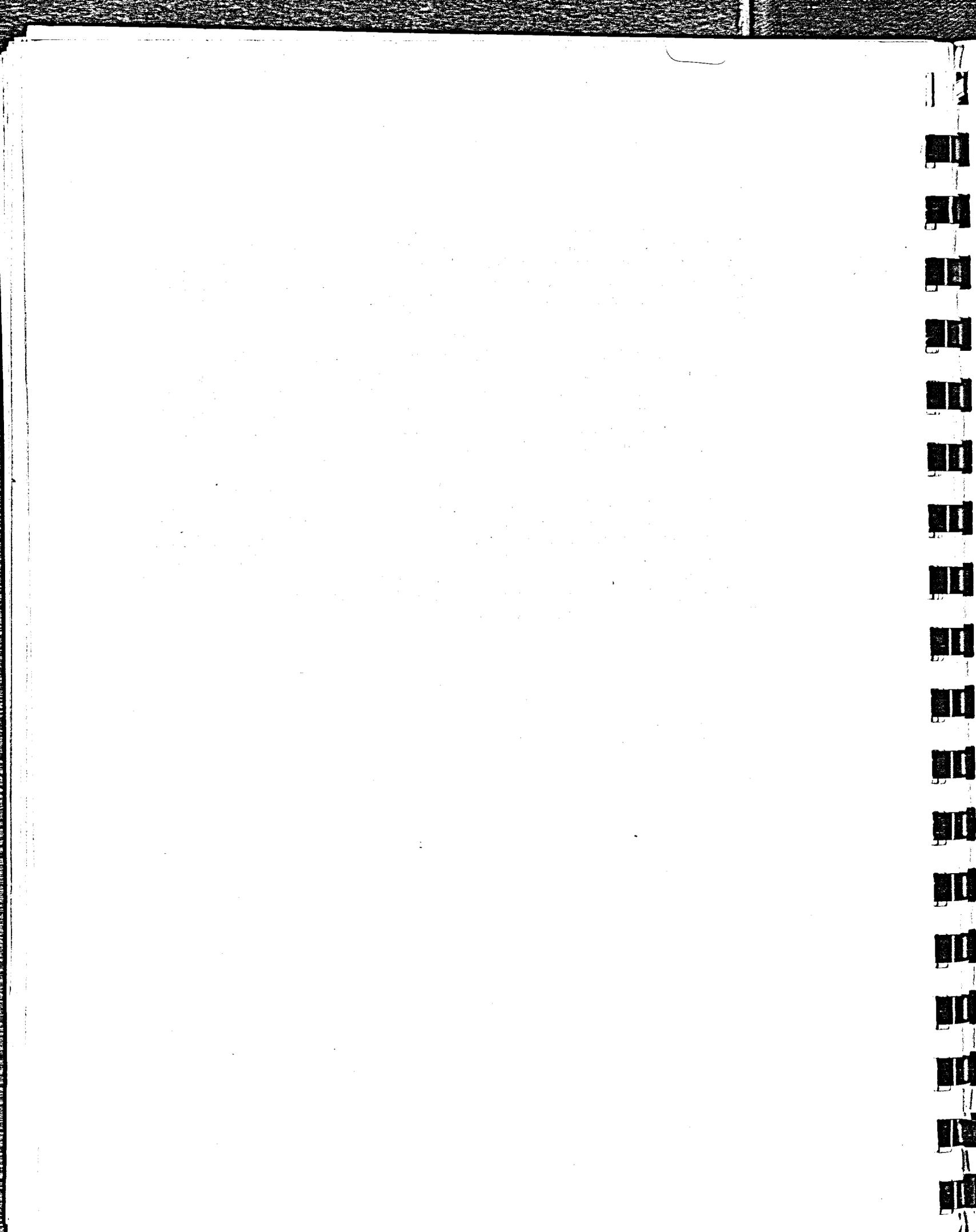
## MODERN TOOLS FOR MODERN MANAGEMENT - COMPUTERS

' *by*
*K. J. Radford,*
*Director,*
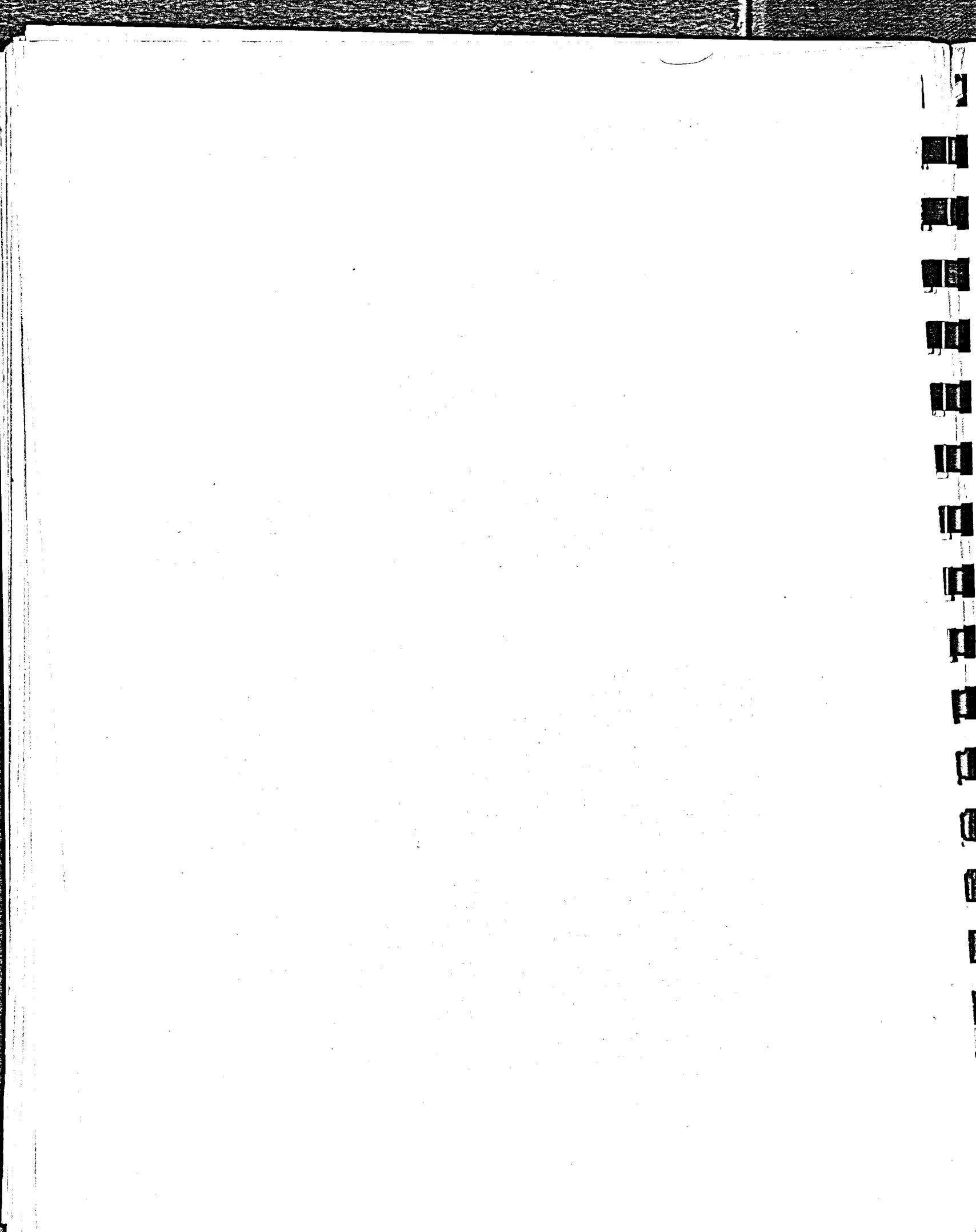*Central Data Processing Service Bureau*

At the Department's request Mr. Radford has provided in this
text a greater amount of detailed information about computer
operations and use than he was able to include in his speech.
In so doing he has drawn upon a speech he made to the Computer
Society on May 31, 1966 and a Management Improvement Bulletin
of March 1, 1966.

### - Biographical Notes -

Mr. Radford was appointed Director of the Central Data
Processing Service Bureau of the Canadian Government at the
time of the Bureau's creation in September, 1964. (The
Bureau was established by Treasury Board decision in conform-
ity with a Glassco Commission recommendation and along lines
proposed by an Interdepartmental Committee, to meet the
computing and data processing requirements of departments on
a repayment basis; it began providing service on April 1,
1965, and will have a large new central computer in operation
in August, 1966.)

After service with the Royal Air Force and the British
Ministry of Supply, Mr. Radford joined the Defence Research
Board of Canada in 1953. He was a member of the Canada-U.S.
Scientific Advisory Team in Washington, D.C., from 1954 to
1956. He joined the RCAF Directorate of Systems Evaluation
in 1956 and was appointed Director in March, 1958. He served
with that Directorate until October, 1963, when he was
assigned to special duties with the Defence Research Board.

He was educated at the University of Cambridge and
graduated with the degree of Master of Arts (Honours
Mathematics).

## MODERN TOOLS FOR MODERN MANAGEMENT - COMPUTERS

by K.J. Radford,
Director, Central Data Processing Service Bureau

Ever since its development 20 years ago, the computer has been given the public image of the "giant brain", a collection of blinking lights, row upon row of intricate electronic circuitry, rattling high-speed printers - a giant hostile to the layman, too technical for him to understand, and too powerful for him to control. The modern manager, however, must be willing to see beyond this misleading image, and to recognize that the computer is simply another tool for him to work with, a versatile one but a tool none the less.

### The Recording and Storing of Data

The electronic computer is a processor of data. Its raw material is the recording of an event or a transaction, which may take the form of a written report, a record, a chart, or a graph. If the volume of data is small, we can deal manually or by business machines with this original or "source data", as it is called. But when large-scale operations have to be performed, electronic means of processing are indispensable. To process data electronically, the numbers or characters in which source data are recorded are converted to a sequence of signals which are either "on" or "off", analogous to the on-off state of a light bulb. Numbers or characters which have been recorded in this binary or two-state notation can be transferred from one device to another rapidly, and can be stored economically.

### How a Computer Works

Consider the five recognizable parts into which any computer can be divided:

1. The "memory" of a computer is a collection of devices in which numbers or alphabetic characters can be stored. The characters are converted to binary numbers, and stored each in its own location or cell in such a way that they can be retrieved as required. Usually a computer can store several thousand characters in its main memory. To augment this main memory, cheaper but larger memories are provided on reels of magnetic tape or on magnetic disks. Such tapes and disks can hold millions of characters of information. The important fact about all of these memories is that information, once recorded, can be held forever and can always be retrieved when needed. If so desired, the old contents can be replaced by new data in a fraction of a second.

K.J. Radford

2. There are _input devices_ on the computer so that numbers
can be read from external sources such as graphs or
signals of different kinds and stored in the computer
memory. The commonest input device is a punched-card
reader which can convert the pattern of holes in the
punched card into words of memory. The card itself is
prepared by an operator reading the information from
some external source.

3. There are _output devices_, which can take words from
memory and transfer them to a typewriter, a printer,
or some similar device. The commonest output device,
the line printer, can produce up to 1200 lines of
printing in one minute, equivalent to six hours of
typing by a secretary.

4. The _arithmetic unit_ is a collection of circuitry
capable of performing the basic arithmetic operations
(addition, subtraction, multiplication and division)
on numbers stored in the memory and putting the answers
back into the memory. Besides enabling a computer to
perform these operations at very high speed (for example,
addition of a million numbers per second) this unit also
enables it to move numbers around in the memory, splitting
them up or combining parts of them together. The many
highly sophisticated tasks that a computer can carry out
are merely combinations of these simple operations.

5. The _control unit_ enables the computer to follow a pre-
determined and self-contained sequence of elementary
steps. These steps are coded as numbers, stored in the
memory, and then executed one after another under super-
vision of the control unit. A typical instruction
defines the operation to be performed and the location
in memory where the relevant data are stored.

This sequence of elementary steps is called the computer "program"
and they can themselves cause modification of the sequence in which they are
executed. To run a problem on a computer, this program is loaded into the
memory from the input device. Then the computer is instructed to begin
calculating using the instruction in some particular location. The program
steps are then executed, one after another, data are read in from the input
devices and results are printed on the line printer. To complete a given
problem may require several minutes or several hours. When the work is
completed the memory is erased, a new program is read in, and the computer
is ready to begin a new task.

K.J. Radford

The instructions, or elementary steps, which must be stored in the computer's memory before a program can be executed, must be written down in a form peculiar to the computer being used. The form of these commands is chosen for easy execution by the circuitry of the computer, and not necessarily for easy understanding by the program writer. This machine-language level of programming is being replaced more and more by the use of so-called higher-level languages. Use of these languages speeds up programming and allows a program to be moved from one computer to another with less difficulty, but generally at the expense of increasing the computer time required for a particular job.

The most extensively used programming languages today are FORTRAN and COBOL. FORTRAN is an abbreviation for "FORmula TRANslation" and is commonly used for programming mathematical problems. For a business data-processing problem, such as payroll calculation, the programmer might use the COBOL language (COmmon Business Oriented Language).

Solutions are not arrived at infallibly. In the same way that a man can make an error on an adding machine if he does not enter the right numbers at the right time, a machine will produce an error if the programmer has not set down the program steps correctly.

## When and How to Use a Computer

The question when to introduce computing and data processing equipment is difficult to answer briefly, except in general terms. This step should be taken when the automatic equipment can perform a task more quickly, more economically, or more efficiently than is possible by the use of manual methods.

It is helpful to compare the relative abilities of men and electronic data-processing machines to perform certain basic tasks. While man still retains a commanding lead in the use of his brain and the basic organization of its components, the machine has already surpassed his performance in:

(a) its speed and accuracy of execution of routine arithmetic and logical operations;

(b) its speed of assimilation of data and of producing written output after manipulation of the data;

(c) its accurate and fast retrieval of stored information.

The ideal team for data-processing is a combination of man and machine with each taking that part of the task for which it is best suited. The computer, therefore, should be viewed as an extension of man's intellectual and clerical capability, just as power-tools are an extension of his muscles. It is important to remember always that the use of electronic data-processing

K.J. Radford

equipment does not absolve man from the responsibility of thought. In fact, use of such a powerful tool without careful and thorough preparation results only in a magnification of any error and the generation of large quantities of incorrect data, an unsatisfactory outcome for any attempt at problem-solving.

A manager whose operations require a considerable volume of work of the kinds described above should ask himself this question: leaving aside all consideration of cost and of feasibility, how fast, how often, and how accurately would he like to have these operations performed? If the answer involves increasing the present speed, frequency, or accuracy, or all of these, he should then put down in writing exactly what the operations are, step by step, but again without regard to cost or feasibility. Many managers, as well as executives and scientists, have failed to appreciate how their problems might be answered by a computer because they think of the work to be done primarily in terms of existing manual or largely manual routines.

With his tasks now described and his ideal standard of operation established, the manager is in a position to call in a computer systems analyst. The analyst would review the specifications, adapt them for the computer, advise on modifications to increase their suitability for electronic data-processing and make suggestions about the choice of equipment to do the job. A computer programmer will then translate the application into computer language. It has to be stressed that translation of the originator's specifications into a computer program is not a quick and easy task. From initiation of the project to initial operation on the computer two to six months or possibly even longer may elapse.

Uses for Computers in Government

Examples of successful applications in government can be divided into five different types.

1. Mass Data-Processing

Many of the government's extremely large essentially bookkeeping and accounting tasks are today handled by computers. The Comptroller of the Treasury uses a large multi-million dollar IBM 7074 computer to perform the payroll calculations for some 150,000 classified civil service employees. The same computer is also used to perform the cheque reconciliation function not only for payrolls but for all federal cheques issued for such purposes as family allowances, student loans, and old age pensions. A total of five million cheques are handled each month.

Another large computer in the government is used by the Department of National Revenue to process all income tax returns. First, a list of last year's taxpayers which was recorded on a series of reels of tape is used to

produce address labels to allow mailing out forms for next year's returns. When these forms, thus personalized, are returned, the information is transcribed on to punched cards, the cards read into the computer, the amount of the tax re-computed, and an appropriate form printed for return to the taxpayer. Since records of each year's returns are available, it is possible to perform comparisons of one return with another, if necessary. In addition the complete file of returns can be scanned to produce summary reports at any stage desired.

A third and larger computer, a Burroughs B5500, will be installed shortly to perform the accounting necessary for eight million depositors in the Canada Pension Plan.

A special use of mass data-processing is inventory control. At Rockcliffe, an IBM 705 computer is used by the Materiel Command of the Canadian Forces to keep track of some 300,000 items stored in warehouses throughout Canada and Overseas. An order originating at any Air Force station at home or abroad is transmitted by teletype to Ottawa where it is read into the computer's memory. The nearest warehouse containing the item desired is found by the computer, a message to that warehouse is written for transmission by teletype, and the amount of the item on hand in the warehouse is reduced accordingly. When the volume on hand falls below a specified level, instructions are printed to re-order that item.

Another use of growing importance is processing the preparation of reports for management control. The computer has been recognized as a device suitable for gathering together information from the various parts of an operation, summarizing it and presenting reports in a form suitable for management decision-making. Especially helpful are the speed with which reports can be produced, and the computer's ability to correlate data from a wide variety of sources.

A good example is a pilot study being undertaken by the Post Office Department's main office in Toronto. A computer is being installed to collect data from 75 reporting stations in the building. They will record automatically which employees are working at what work stations, what the volume of mail passing various points is, and related factors. Each morning the data for the previous 24-hour period will be transmitted by telephone line to Ottawa where calculations will be performed to relate it to performance the day before and the previous year. Summary information will be transmitted to managers in Toronto within a few hours after the original report to Ottawa, thus allowing managers to decide the best allocations of manpower for the next day's operations.

Data-processing is also used to maintain personnel records in the Department of Northern Affairs. When the system is fully operational, data on positions and personnel will be filed on tape and used to provide not only establishment reports by organizational structure, leave and attendance records, and a skills and training inventory, but also reports on establishment by program and activity.

K.J. Radford

## 2. Tabulations and Statistics

The government requires vast amounts of information--educational, occupational, geographic, economic--on people, activities and places within the country.  For this data to be meaningful, it must be filed, assimilated and summarized, a task often requiring advanced statistical techniques.

The largest survey the government makes is the decennial census. Its order of magnitude is reflected in the fact that the tape or memory file in the computer used by the Dominion Bureau of Statistics for this task stored more than one billion characters of information for the 1961 census.  The degree of detail that can be extracted from this mine of data by computer methods is immeasurably greater than would have been possible by manual methods alone.  Introduction of the computer has meant not only that the same results are produced more economically, but also that significantly more refined results can be produced from the same raw data.

## 3. Mathematics and Science

Early computers found their first area of application in scientific fields, and only later in business data-processing.  The necessity for carrying out calculations beyond human capabilities was the primary spur to computer development in the 1940's.  The level of achievement now reached can be gauged from the fact that a modern computer can perform in one hour as much calculating as a man could do in ten years using a desk calculator.  The use of computers in research, in the analysis of test results, in development, in carrying out design calculations, and in the production area has had a tremendous impact on scientific and engineering endeavour in the last 20 years.  At Atomic Energy of Canada Limited, National Research Council, and the Department of Mines and Technical Surveys, computers are being used to assist scientists and engineers in these tasks.  Areas of application range from the calculation of the behaviour of atoms inside a molecule to the gravitational effect of one celestial body on another, from the microscopic to the celestial.

Computers have also proved their worth in problems studied by simulation or modelling by making it possible to replace a physical model of an airplane, a dam, or an atomic reactor with mathematical formulas that describe how the actual device would behave under specified circum- stances.  In the case of an airplane, for instance, the mathematical model reflects, by number values assigned to each, all the factors that would determine how the airplane would fly, such as weight, wing span, and engine thrust.  By varying the numbers and working out the formulas in the computer, the researcher can determine what the airplane would do under a far greater variety of conditions than could ever be portrayed by a physical model of the airplane tested in a wind tunnel.

The same simulation technique can be used for something as abstract and complex as an economic system.  For example, econometricians in the Depart- ment of Finance and the Bank of Canada are attempting to determine the mathematics of the behaviour of Canada's economy.  Exercises performed on this model might be of great value in predicting the effects of changes in government policies.

K.J. Radford

## 4. Computer Control

It should not be thought that computers are capable only of being fed numbers on punched cards and producing lines of printed output. Devices now available will translate a wide variety of quantities into a form suitable for use by a computer, and similarly computer outputs vary in types. For example, one increasing application for computers is in the direct "on-line" monitoring and control of processes or experiments.

At the new Douglas Point nuclear-power station, a computer will be used to monitor several hundred temperatures, pressures, and flow rates to ensure that quantities remain within prescribed limits. If they do not, the computer will generate information to allow rapid correction of the deviation to be made. If necessary, the computer is capable of direct action such as turning a valve or manipulating a switch; - it will 'run' the power station. In an application like this, the computer is being used to relieve man of a routine, monotonous, but necessary task.
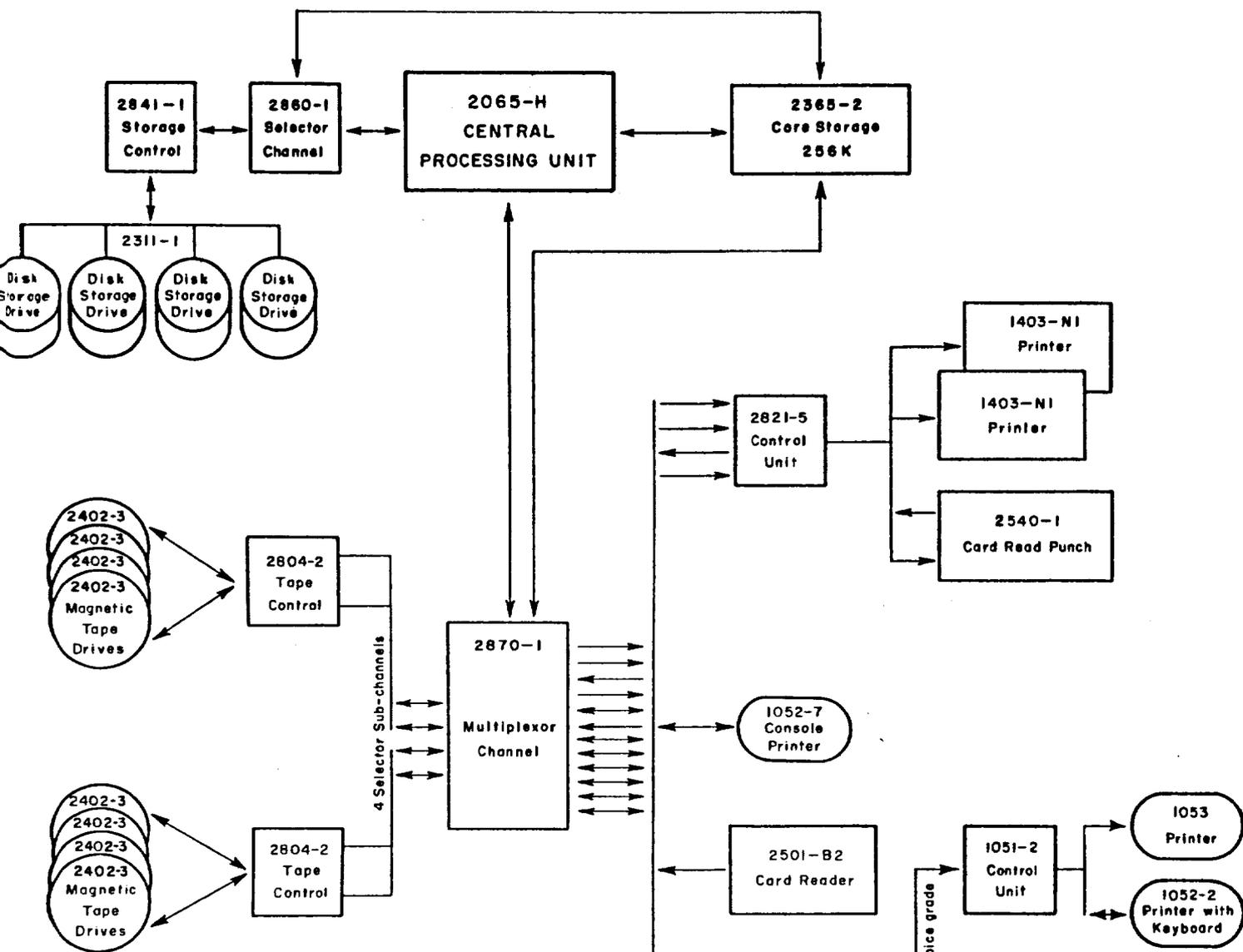
## 5. Non-Numeric Applications

Many interesting applications are being developed in problems with no obvious connection with the arithmetic or logical facilities so far described. These include the use of computers to play games such as checkers or chess, in the writing of poetry or music, and in language translations. Computers are being used to provide at least rough translations of several foreign languages into English. Before long, computers will be able to store vast dictionaries of words and grammar rules and so turn out useful translations many times faster than human translators.

## Central Data Processing Service Bureau

The Central Data Processing Service Bureau (CDPSB) was created in accordance with a recommendation of the Glassco Commission to provide a central computing service for federal government departments. Establishment of the Bureau was regarded as a necessary alternative to the uneconomic acquisition of a number of medium-sized computers by various government departments. Such dispersed computers might not be utilized fully and almost certainly would not be wholly compatible in programming languages and computing techniques. The Bureau was created to provide a service to government departments which might otherwise feel that they must acquire a computer even if they could not load it fully. It was not the intention to prevent those departments having a legitimate need from acquiring their own facilities.

The Bureau was created in September 1964 and initially provided a service in which surplus time on existing government computers was offered to other government departments. However, if it were not possible to satisfy the requirements on government installations, time on commercial or university

K.J. Radford

# IBM 360/65 COMPUTER SYSTEM

2841-1 Storage Control

2860-1 Selector Channel

2065-H CENTRAL PROCESSING UNIT

2365-2 Core Storage 256K

2311-1

Disk Storage Drive — Disk Storage Drive — Disk Storage Drive — Disk Storage Drive

2402-3 / 2402-3 / 2402-3 / 2402-3 Magnetic Tape Drives

2804-2 Tape Control

2870-1 Multiplexor Channel

4 Selector Sub-channels

2402-3 / 2402-3 / 2402-3 / 2402-3 Magnetic Tape Drives

2804-2 Tape Control

2821-5 Control Unit

1403-N1 Printer

1403-N1 Printer

2540-1 Card Read Punch

1052-7 Console Printer

2501-B2 Card Reader

1051-2 Control Unit

Sub-voice grade

1053 Printer

1052-2 Printer with Keyboard

192 Sub-channels

2701-1 Data Adapter — Voice Grade

2701-1 Data Adapter — Voice Grade / Voice Grade

2701-1 Data Adapter — Switch — Telpak / Telpak / Telpak

●DISK STORAGE:
Transfer rate: 156K bytes per sec.
Average access: 97.5ms
Storage: 7 25 million bytes each
Removable disks

●MAGNETIC TAPE DRIVES:

|  | 6 DRIVES | 2 DRIVES |
|---|---|---|
| Transfer rate | 90K | 90K |
| Density | 800 bpi | 200,556, or 800 bpi |
| No. of tracks | 9 | 7 |
| Read | Forward and backward | |
| Simultaneous activity | 1 read and 1 write on each control unit | |

●READER (2501-B2) — maximum: 1000 cpm ⎫ 2501 and 2540
●READER (2540-11) — maximum: 1000 cpm ⎬ include column binary
●PUNCH (2540-1) — maximum: 300 cpm ⎭ Selector stacker on 2540 only.

●PRINTER: 957 to 1400 lpm
132 print positions
Upper and lower case available

●MULTIPLEXOR — maximum transfer rate: Total — 670K bytes per sec.
Tapes — 640K bytes per sec.
Other devices — 110K bytes per sec.

●CORE STORAGE CYCLE: 0.40 to 0.75 $\mu s$. per 8 bytes

●CENTRAL PROCESSOR — Basic machine cycle: 0.20 $\mu s$. per 8 bytes

●SELECTOR CHANNEL — maximum transfer rate: 1,300K bytes per sec.

K.J. Radford

Figure 1.

computers was provided. This service commenced in April 1965 and is still available. During the first complete fiscal year, the Bureau provided computer time worth $721,000 to departments which did not have their own installations. Of this total, 55% was provided on existing government computers, thus making use of surplus time and effecting a substantial economy.

## Establishment of Central Installation

Early in 1965, it became apparent that the availability of surplus time on existing computers would decrease and that the Bureau must obtain a central installation of its own to satisfy the growing needs of federal government departments. At this time, two major developments in computing techniques were on the horizon:

(a) multi-programming, which was seen as facilitating the sharing of an installation between a number of users;

(b) remote job entry, which would allow access to a central computer facility by user departments in a manner which would enable them to retain control over the processing of their work.
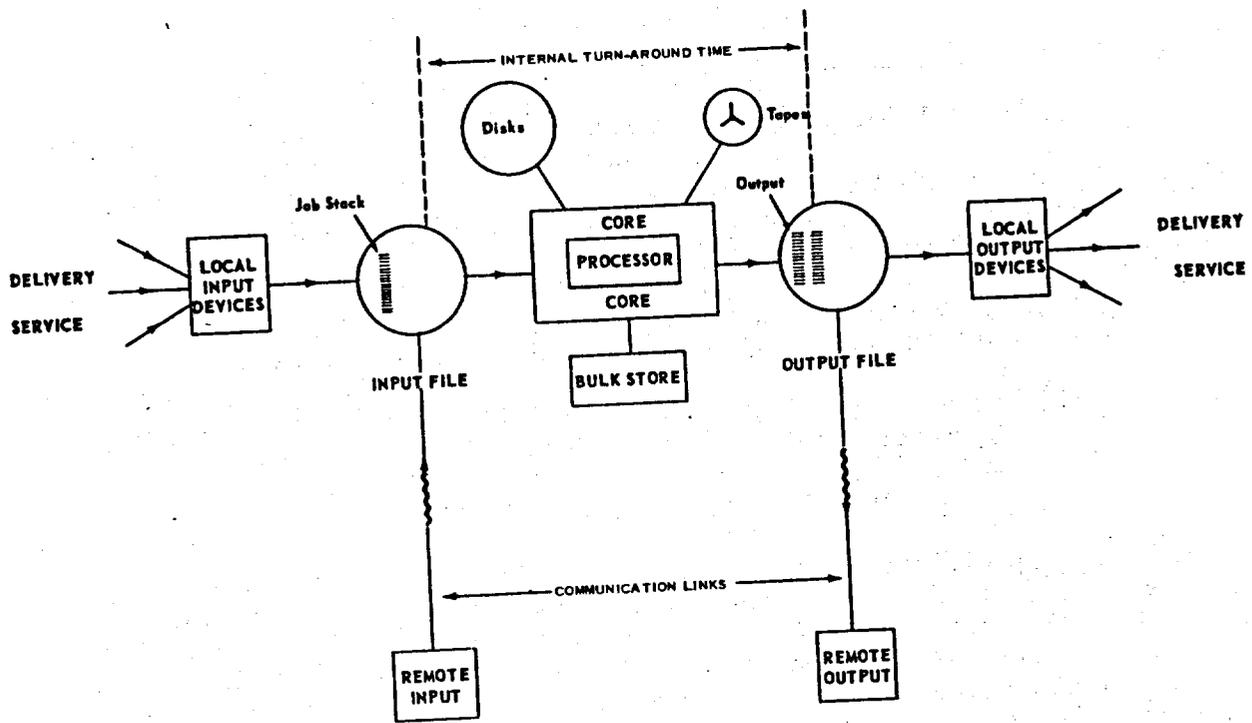
Accordingly, specifications were written, tenders were called and in November 1965, after a considerable period of evaluation, the Bureau ordered an IBM System /360 Model 65 Computer. The initial configuration of this computer installation is shown in Figure 1. The emphasis in design was on flexibility of operation and on the capability of expanding its power without a major system reorganization.

A schematic diagram of the Bureau installation, which will go into operation in August 1966, is shown in Figure 2. The heart of the processing system is the powerful Model 65 central processor. Jobs awaiting processing are held in a job stack on the input file. Once a job has been selected for processing, it is transferred into core memory for execution. During execution, data may be transferred to and from magnetic tape or disk files as specified by the user. After processing, resulting data are placed on the output file for transfer to the appropriate output devices.

## Procedure for Utilization of the Service

Users can have access to the Bureau installation by one or more of the following methods:

(a) Direct access to the input and output files via a communication link from suitable terminal equipment installed in the user's own data centre. Such a link allows jobs to be transferred directly on to the input file and will allow the output to appear directly on a printer at the user's data centre.

K.J. Radford

INTERNAL TURN-AROUND TIME

Disks

Tapes

Job Stack

Output

DELIVERY

SERVICE

LOCAL
INPUT
DEVICES

CORE

PROCESSOR

CORE

LOCAL
OUTPUT
DEVICES

DELIVERY

SERVICE

INPUT FILE

BULK STORE

OUTPUT FILE

COMMUNICATION LINKS

REMOTE
INPUT

REMOTE
OUTPUT

THE BUREAU INSTALLATION – SCHEMATIC DIAGRAM

Figure 2.

(b) Attendance at the Bureau installation and entry into
the system via the local input/output devices. This
allows the user to bring card decks and control cards
to the installation and have these decks placed in the
input file. The user may examine printed output after
completion of his job. Suitable office space is provided
for programmers who wish to be in attendance at the
installation.

(c) Use of the Bureau pick-up and delivery service. This
service collects material for processing from the user
and transports it to the installation, where it can be
fed into the system for processing. Printed results and
other output will be delivered to the user after process-
ing.

Jobs arriving in the system from both local input devices and remote
stations are stored on the input file prior to processing. Each job must be
accompanied by job control information supplied by the user. This information
is fed into an automatic scheduling system, which extracts suitable jobs from
the input file for processing. The scheduling system is designed to ensure
optimum utilization of the processing resources available at the installation
and to provide the most efficient processing of user programs.

In the initial operations at the Bureau installation, a scheduling
algorithm will be employed which tends to favour short jobs over long ones
and yet promotes longer jobs as a function of their waiting time. The scheduler
also performs such functions as asking for mounting of tape or disk files prior
to selecting a job for processing. It will not allow a job to be executed until
these set-up requirements have been met.

It should be emphasized that this installation will not be operating
in a time-sharing mode. The service provided might better be described as
multi-user job processing with remote job input. Because of the fast turn-
around on short jobs, it offers a programmer a unique opportunity for program
development. It is the biggest step we feel we can take at the present time
towards true time sharing systems which are still, in our opinion, in the
research stage.

We consider that acceptance of the system will depend on the
following factors:

(a) maintenance of quick access to the facilities and
fast turn-around for customers' jobs;

(b) provision of an efficient service, such that the
customer retains control of his work; and

(c) maintenance of strict privacy with regard to customers'
operations and data.

K.J. Radford

The overall turn-around time on a job (the time interval between completing the preparation of a job by the user and the receipt of the processed results) is made up of a combination of factors. One of these factors can be called the "internal turn-around time" of the processor, the time between entry of the last component of a job into the input job stack and the termination of main processor assignment to the execution of the job.

The internal turn-around time experienced by any particular job will depend on such things as its expected execution time, the job mix and the total load on the installation at time of entry of the job. In general, internal turn-around time will vary according to conditions prevailing at the time of entry. The turn-around time experienced on any particular occasion may be thought of in the statistical sense as being drawn from a distribution of values ranging over all possible conditions.

To obtain the "overall turn-around time" on a job, a user must add to this internal turn-around time, the time required to place his data and program on the input job stack on the disk and the time to retrieve his printed output from the line images stored on disk during execution. To a large extent, the magnitude of these two time elements is determined by the method of access to the installation. This gives the user some control over his overall turn-around time by virtue of his choice between use of communication links, personal attendance at the installation or use of the delivery service.

Choice of the method of communicating with the system will, in many cases, be influenced by cost and users can, no doubt, derive a relationship of cost to overall turn-around time for their own particular situations.

Service to Departments

The Bureau operates on a cost-recovery basis and departments are charged for service provided. A pricing structure has been devised for the installation on the principle that customers should be charged for that portion of the installation which they use or deny to others. This radical departure from the conventional method of charging for computer time is made possible by the multi-programming capability of the installation. The pricing structure represents a prime means of influencing programming techniques in order to ensure the more efficient use of the facility. In initial operations, SPOOL (Simultaneous Peripheral Operations Off-Line) will be charged at a low hourly rate and will be used for such jobs as card-to-tape and tape-to-printer. The charge for job processing will be at an hourly rate based on the amount of core used and on the time of CPU assignment. This rate will be applied by job step rather than for the job as a whole. The use of tape and disk drives will be charged extra. There will be a flat set-up charge applicable to any job requiring the mounting of magnetic tapes or disks. However, we will make available on-line storage on disk at a most attractive rate to provide a much preferable alternative to set-up from the point of view of the installation.

K.J. Radford

Managers considering possible uses for computer services in their operations should first of all acquaint themselves with the "Manual on the Conduct of a Feasibility Study for an Electronic Computer and Supplement #1", published by the Management Analysis Division, Civil Service Commission. Next, it would be useful to discuss their problems with members of CDPSB, particularly on possible use of surplus time on computers in service.

In programming, departments are encouraged to retain their staffs of analysts and programmers to process departmental workload using the central computer as an extension of their own installation. However, the Bureau can provide programming assistance to departments which have not yet had the opportunity to build up sufficient staff for this purpose.

While the majority of initial users of the central service will probably be from within the Ottawa area, direct communications links to the central installation from other centres in Canada will probably be set up. Present government-leased telephone lines between Ottawa and Toronto, Hamilton, Montreal, Quebec City and Halifax provide an immediate capability of this kind. Present plans to extend the coverage of leased lines will improve access from other regional centres. Choice between direct communications links from these centres and delivery of data by other means (such as air freight) will be dictated by the nature of the application and by considerations of cost. If requirements arise, facilities can be set up in other centres to operate in a manner similar to the Ottawa installation.

The Bureau's role under this concept of operations is that of custodian of the central equipment, with the task of providing advice on needs and service to all users according to their requirements; in short, a utility supplying information-processing power, just as an electrical utility supplies electrical power to its customers.

K.J. Radford

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