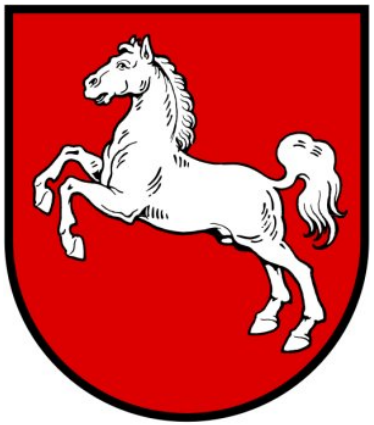
My UNB 1959 – 1971

Presentation by

Gottfried Konecny

Emeritus Prof.

Leibniz University
Hannover, Germany

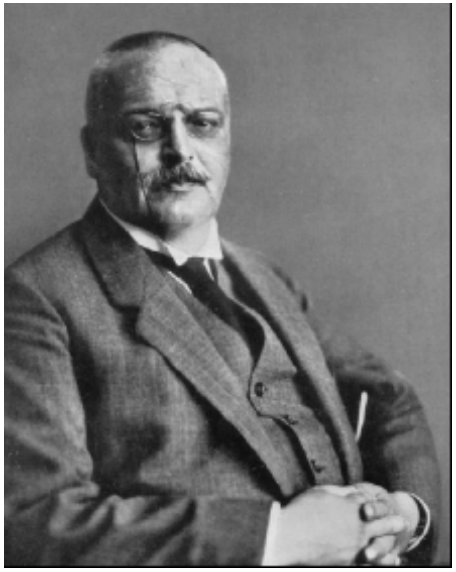


My Teachers

Richard Finsterwalder
1899 – 1963
Professor of Photogrammetry
1930 – 1948
Technical University Hannover, Germany
1948 – 1963
Technical University Munich, Germany

Frederick J. Doyle
Professor of Photogrammetry
1953 - 1963
Ohio State University
(Heiskanen, Hirvonen, Hallert)

Richard Finsterwalder
1899 – 1963



Alois Alzheimer
1864 - 1915

UNB a historical University

Sir Thomas Carleton, Governor of New Brunswick,
1785, Approval of Petition to install an Academy for Empire Loyalists

Sir Howard Douglas, 1828, Kings College,
first degrees

The University had a good reputation

Lord Beaverbrook, Vice Chancellor and President Colin B. Mackay

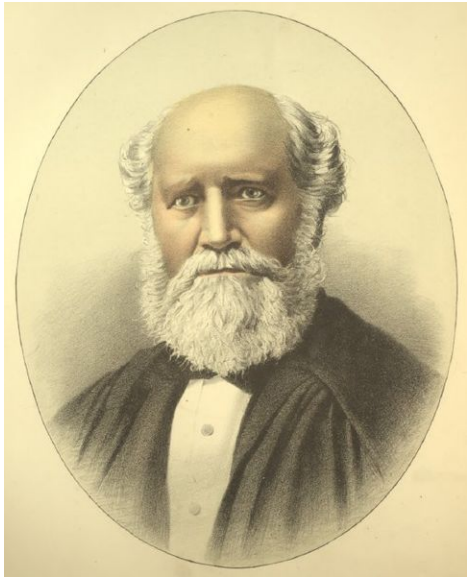
Princess Elizabeth visit 1951

John F. Kennedy Honorary Doctorate 1957

Princess Margret visit 1958

Robert F. Kennedy Honorary Doctorate 1967

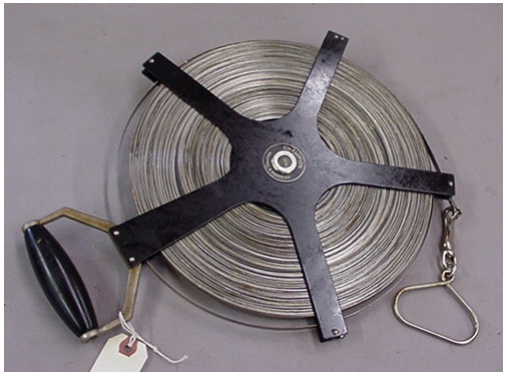
UNB, a historical place for Engineering Education with Surveying



Bryden Jack 1840 -1885, Mathematics Professor, President 1861 – 1885, First Civil Engineering Course 1854

First Impressions 1959

Not much has changed in surveying since Bryden Jack



But there was a will for change:

Ira Beattie, Head of the Civil Engineering Department, Faculty of Engineering, UNB

Willis F. Roberts, Director of Surveys Province of New Brunswick

Bill H. Hilborn, Professor of Photogrammetry, Faculty of Forestry, UNB

The Train to the Canadian Institute of Surveying Symposium on Survey Education 1959

There were 4 participants leaving Fredericton Junction at 10 p.m.:

- **Willis Roberts**
- **Ira Beattie**
- **Bill Hilborn**
- **Gottfried Konecny**

Result:

- **after discussing all night and arriving in Montreal in the morning we did not remember what was said**
- **but we agreed we would do something about survey education**
- **on the return trip we wrote a brief to the President Colin B. Mackay and to Dean Jim Dineen, quoting E.H.Thompson about the „dead hand of civil engineering to surveying“**
- **they agreed to start the program**

1959 Canadian Institute of Surveying
Symposium on Survey Education in Ottawa

Front row: 2nd from left: Ted Blachut, National Research Council
5th from left: Sam Gamble, Director of Surveys Govt. of Canada
7th from left: Angus C. Hamilton, Oranizer of Symposium
Second row: left behind Sam Gamble: Prof. E.H.Thompson, Univ. College London

Ira Beattie´s Statement at the Symposium in Ottawa 1959

Prof. Beattie: At the present time, the major source of professional persons for federal survey services seems to be the civil engineering graduate. In New Brunswick very few such persons at present enter the land survey field, partly because other job opportunities and the required apprenticeship, and partly because the Provincial Department of Lands and Mines can better be supplied by graduates in forestry.

Eight years ago the Department of Civil Engineering of the University of New Brunswick added photogrammetry and expanded somewhat the coverage of the established fields of surveying. Two years ago we realized that we were not filling the

needs of the engineer going into surveying. After some study we felt that it would be impossible to properly prepare all civil engineers for specialized surveying.

We decided that the first step was to obtain the services of a qualified surveying engineer to upgrade our present courses and to guide us in setting up a specialized curriculum. We now have such a person on our staff.

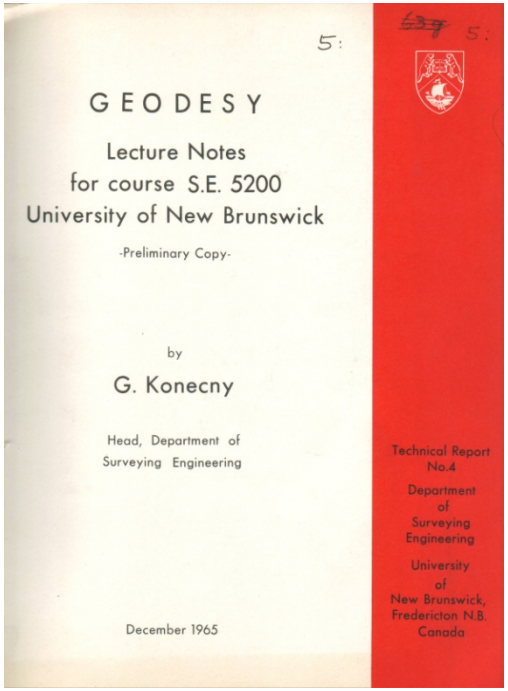
Our President and Dean are sympathetic in principle to the idea of higher education in surveying. A group of our graduates and others in the profession have encouraged us. We feel, therefore, that the time is near when we may introduced survey education at a more advanced level. We believe that the needs of the Land Survey Association can also be met by this proposed curriculum. This branch of surveying within New Brunswick has many well qualified men among its ranks, several of whom are graduate foresters or engineers. However, there are phases of cadastral surveying which will require men with special knowledge in growing numbers. The association will, I am sure, welcome such trained men with open arms.

Colin B. Mackay
President UNB 1960

James Owen Dineen
Dean of Engineering 1960

Problem number 1:

The approved program had to start in 1960, but here was only one staff member, me for surveying, photogrammetry and geodesy.
I had taught the first two in Munich, but thank god there was new Literature in geodesy in the 25 hour per week teaching program
for the first 5 who signed up for the Surveying Engineering program from 3 years Civil Engineering:


GEODESY

Lecture Notes
for course S.E. 5200
University of New Brunswick

-Preliminary Copy-

by

G. Konecny

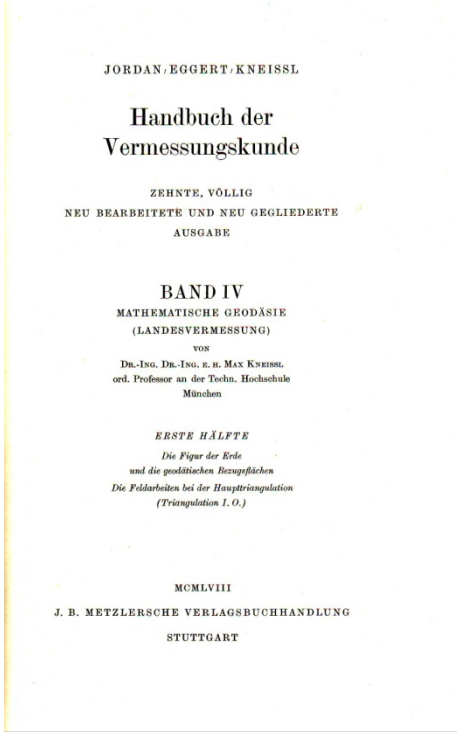
Head, Department of
Surveying Engineering

December 1965

Technical Report
No.4

Department
of
Surveying
Engineering

University
of
New Brunswick,
Fredericton N.B.
Canada


JORDAN/EGGERT/KNEISSL

Handbuch der
Vermessungskunde

ZEHNTE, VÖLLIG
NEU BEARBEITETE UND NEU GEGLIEDERTE
AUSGABE

BAND IV
MATHEMATISCHE GEODÄSIE
(LANDESVERMESSUNG)
VON
DR.-ING. DR.-ING. E. H. MAX KNEISSL
ord. Professor an der Techn. Hochschule
München

ERSTE HÄLFTE
Die Figur der Erde
und die geodätischen Bezugsflächen
Die Feldarbeiten bei der Hauptriangulation
(Triangulation I. O.)

MCMLVIII
J. B. METZLERSCHE VERLAGSBUCHHANDLUNG
STUTTGART

Problem number 2:

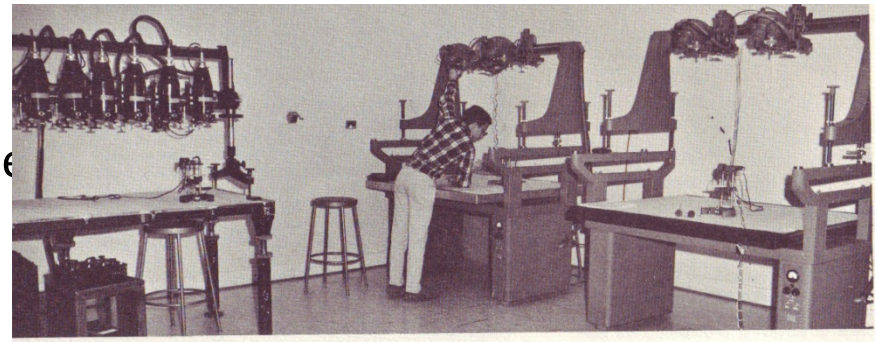
Recruitment of Staff for 1961/1962

Peter Wilson, native of the U.K., B.Sc. U of Natal, South Africa
M.Sc. Ohio State U. (later Dr.Ing from Stuttgart,
but became German Civil Servant)

Gerhard Gloss, native of Germany, B.Sc. from ITC Delft
(later M.Sc. from ITC)

Problem number 3:

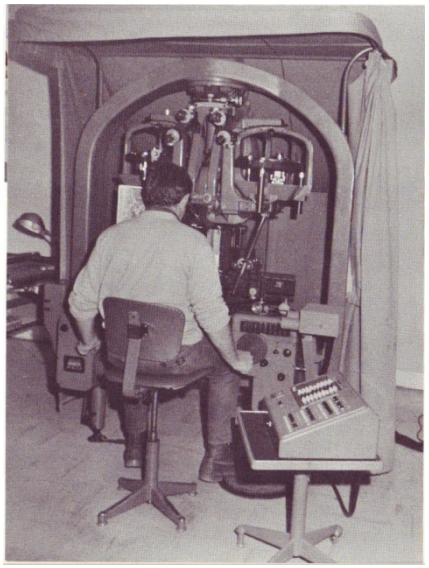
improvement of equipment:
e.g. Photogrammetry



Multiplex and Balplex Plotters in the Elementary Photogrammetry Laboratory.

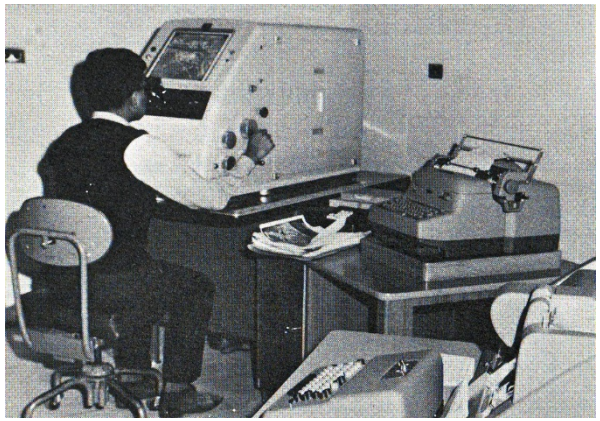
elementary teaching was possible with

1940´s and 50´s, but precision equipment was needed for serious tasks:



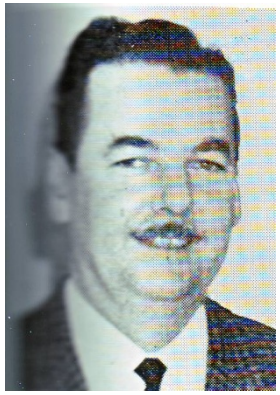
the Wild A5 was acquired by a donation from Wild (now Leica)

the Zeiss Stereocomparator was purchased for start in analytical photogrammetry



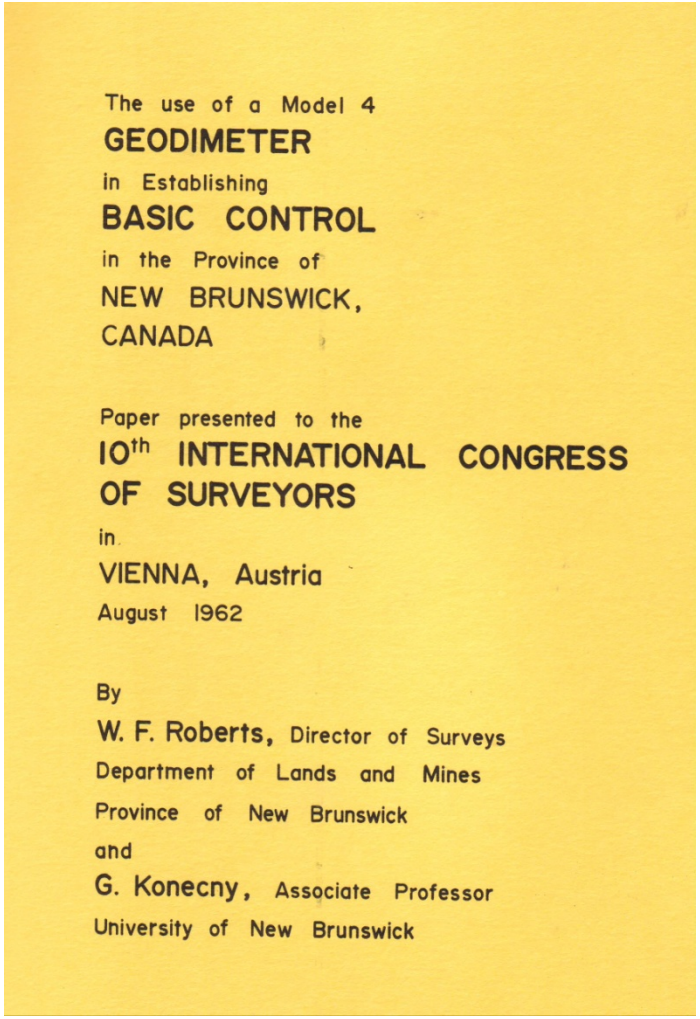
Problem number 4:

Recruit future students for survey tasks of the province and of Canada:



The Director of Surveys of the Province of N.B. W. F .Roberts initiated a new control survey program with the tellurometer and the geodimeter by monumented traverses using UNB students giving them a summer job;

the results were communicated to the FIG Congress 1962 in Vienna

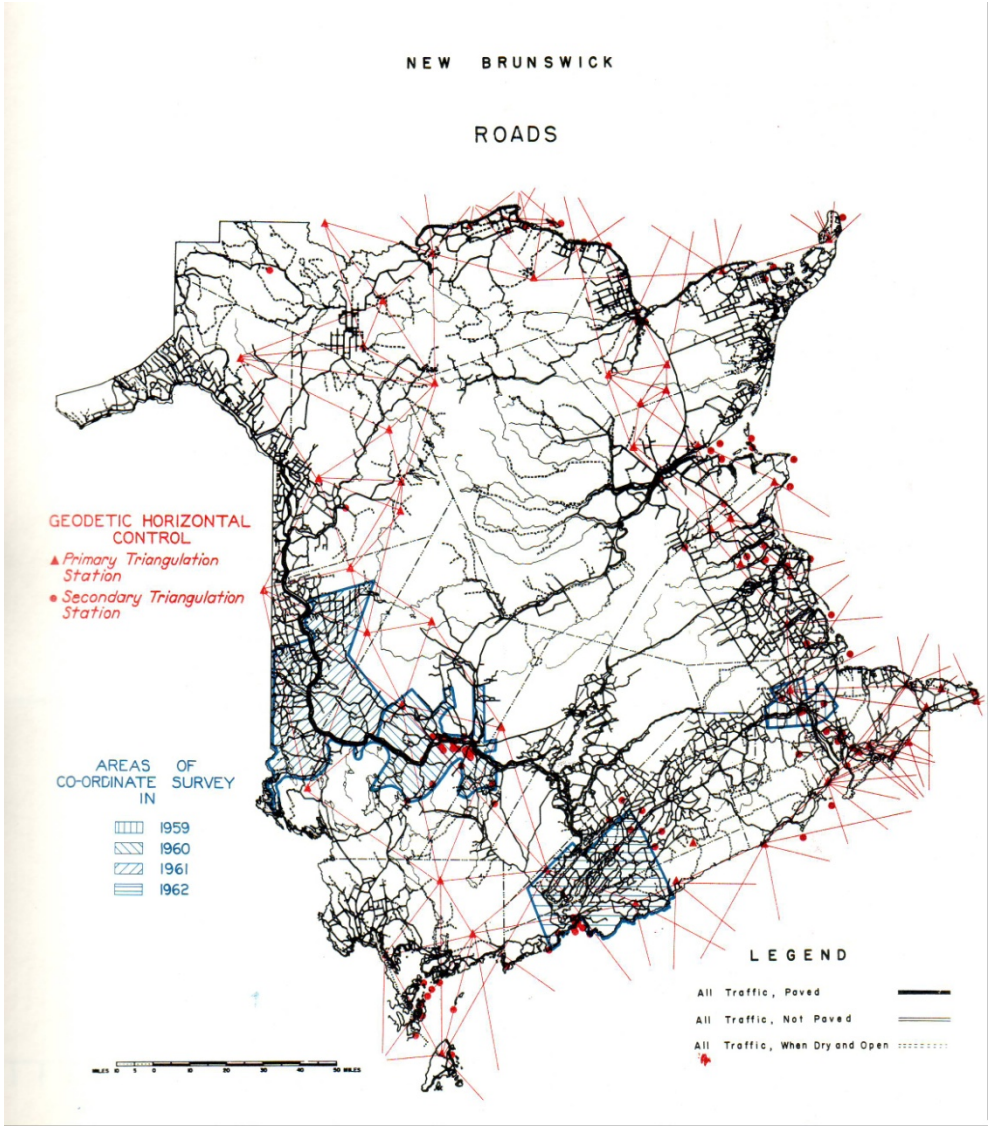


The use of a Model 4
GEODIMETER
in Establishing
BASIC CONTROL
in the Province of
NEW BRUNSWICK,
CANADA

Paper presented to the
10th INTERNATIONAL CONGRESS
OF SURVEYORS
in
VIENNA, Austria
August 1962

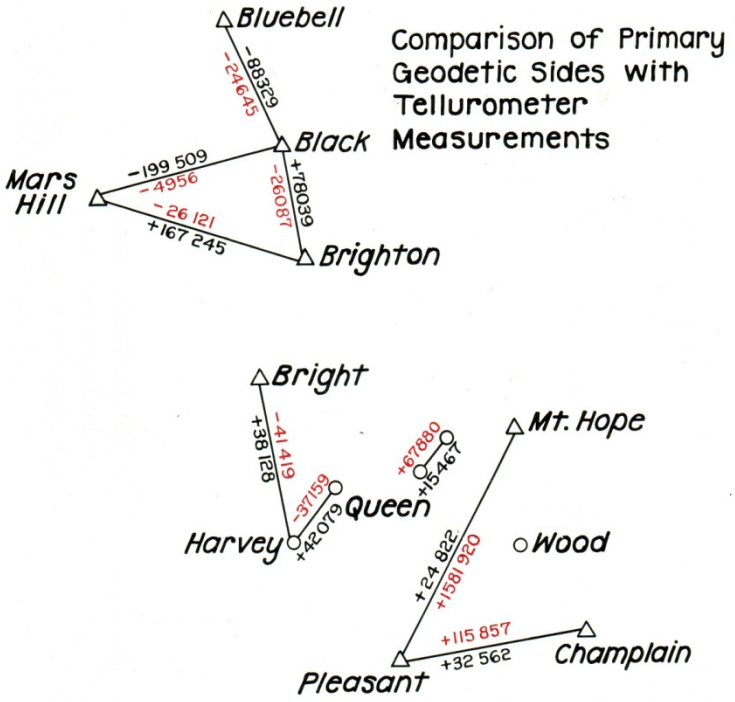
By
W. F. Roberts, Director of Surveys
Department of Lands and Mines
Province of New Brunswick
and
G. Konecny, Associate Professor
University of New Brunswick

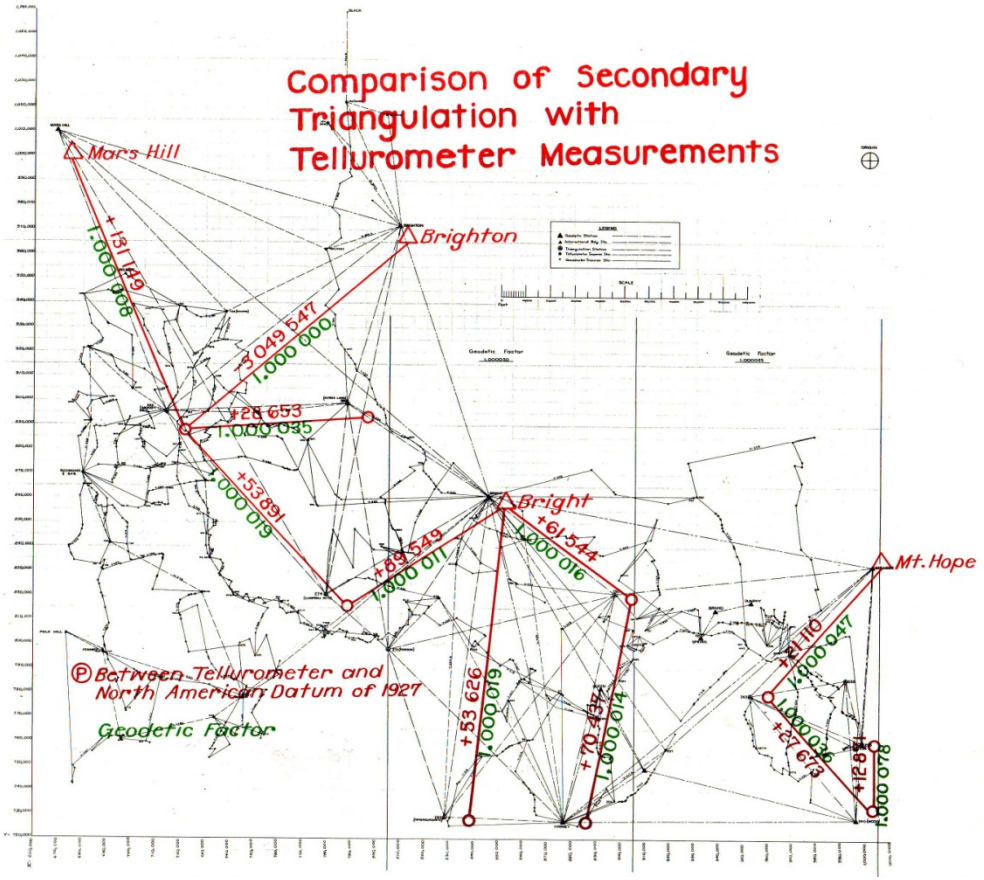
Results of the Control Surveys



The North American Geodetic Network was unsuitable for the control needs of the Province, which extended along the roads

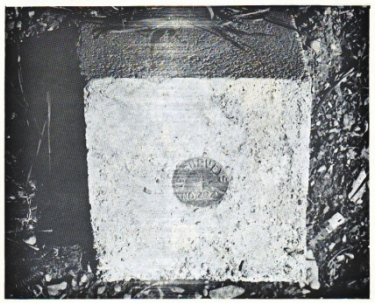
Results of the Control Surveys





at the edge of the North American Geodetic Network established by triangulation, the control was also inaccurate (1:30 000)

Elements of the Provincial Control Survey



N. B. Coordinate Survey Monument
Size: Top 8 x 8", Bottom 16 x 16", Depth 4 ft., Base 2 x 2 x 2.5 ft.

monumentation

Wooden Instrument Tower of 30 ft. height
Within Forest Service Steel Tower

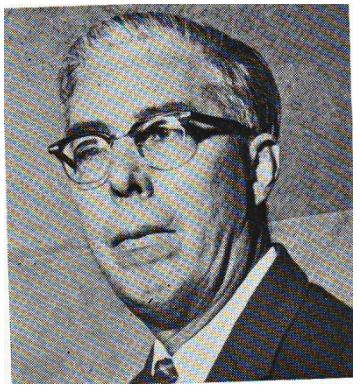
observation towers to connect to North American Geodetic Net

Tellurometer MRA - 2

traverse observations along the roads

LGP - 30 Electronic Computer

The LGP30 Computer at UNB



Archie McLaughlin

Deputy Survey Director & nighttime programmer

GEODIMETER TRAVERSES

Trav. No.	D (miles)	L (miles)	D/L	No Of Legs	d/L	d/Q	Ⓔ	Ⓝ	Ⓠ
291	2.5	2.5	1.00	3	+0.40	R 0.07	32 494	+ 33 000	+ 188 000
292	2.5	3.7	0.68	5	-0.24	L 0.06	97 927	- 55 000	- 220 000
293	2.1	2.1	1.00	5	+0.67	R 0.51	13 096	+ 16 500	+ 21 500
294	1.6	2.3	0.70	4	-0.16	L 0.23	42 473	- 52 500	- 36 500
295	6.0	6.8	0.88	12	+0.94	R 0.90	27 558	+ 33 500	+ 35 000
296	6.8	8.3	0.82	7	+0.77	L 2.44	17 121	+ 46 500	- 14 700
298	11.3	12.8	0.88	13	-0.80	R 2.76	23 631	- 74 500	+ 21 600
300	7.0	8.8	0.80	17	+0.94	R 1.01	33 935	+ 39 000	+ 36 000
302	2.2	2.6	0.85	5	+0.40	R 0.27	28 644	+ 29 000	+ 43 000
303	5.1	7.0	0.73	3	+1.08	L 0.58	29 689	+ 25 000	- 46 500
304	3.6	4.3	0.84	10	+0.51	R 0.16	42 685	+ 37 000	+ 118 000
306	6.5	8.4	0.77	13	+0.79	R 0.35	51 866	+ 43 500	+ 98 000
307	7.2	10.5	0.69	20	-0.07	L 1.32	42 222	- 543 000	- 28 000
308	0.8	0.9	0.89	2	-0.01	L 0.01	53 362	- 420 000	- 46 500
311	9.0	11.0	0.82	15	+1.32	R 0.43	41 727	+ 36 000	+ 110 000
312	3.2	3.9	0.82	4	-0.14	R 0.08	130 331	- 120 000	+ 211 000
313	5.5	6.4	0.86	6	+1.24	R 0.75	23 408	+ 23 000	+ 38 500
316	3.8	6.6	0.58	10	+0.40	R 1.22	26 975	+ 50 000	+ 16 500
321	4.7	5.1	0.92	6	+0.46	R 0.31	48 210	+ 54 000	+ 80 000
322	2.2	4.8	0.46	4	+0.31	L 0.08	79 368	+ 37 000	- 145 000
323	5.7	7.7	0.74	10	+1.24	L 0.38	31 449	+ 24 000	- 79 000
324	4.1	4.4	0.93	3	+0.61	R 0.21	35 862	+ 35 000	+ 103 000
326	2.4	2.4	1.00	3	+0.58	R 0.29	19 885	+ 22 000	+ 44 000
326A	0.8	0.8	1.00	2	+0.41	L 0.03	9 725	+ 10 000	- 140 000

Traverse Computations

Recruit Students from Overseas through CIDA:

Chief Oluwole Coker, then Director of Federal Surveys of Nigeria, came to UNB on advice of Sam Gamble, to arrange for a CIDA program in cooperation with UNB. Many Nigerians now hold responsible positions in their country.

Olayonka Adekoya, a brilliant B.Sc. and M.Sc. graduate of UNB became his successor in later years.

In fact UNB designed an additional CIDA sponsored one year Diploma Program for Professionals from Developing Countries

Problem number 5:

Start Research:

Art Wightman: Provincial photogrammetrist:
„what have you done in Munich?“
Answer: „Survey Glaciers“
Art Wightman: „But we have no glaciers in New Brunswick“
Consequence: Application for Research Grant to NRC to Survey Glaciers in Western Canada, grant of phototheodolite

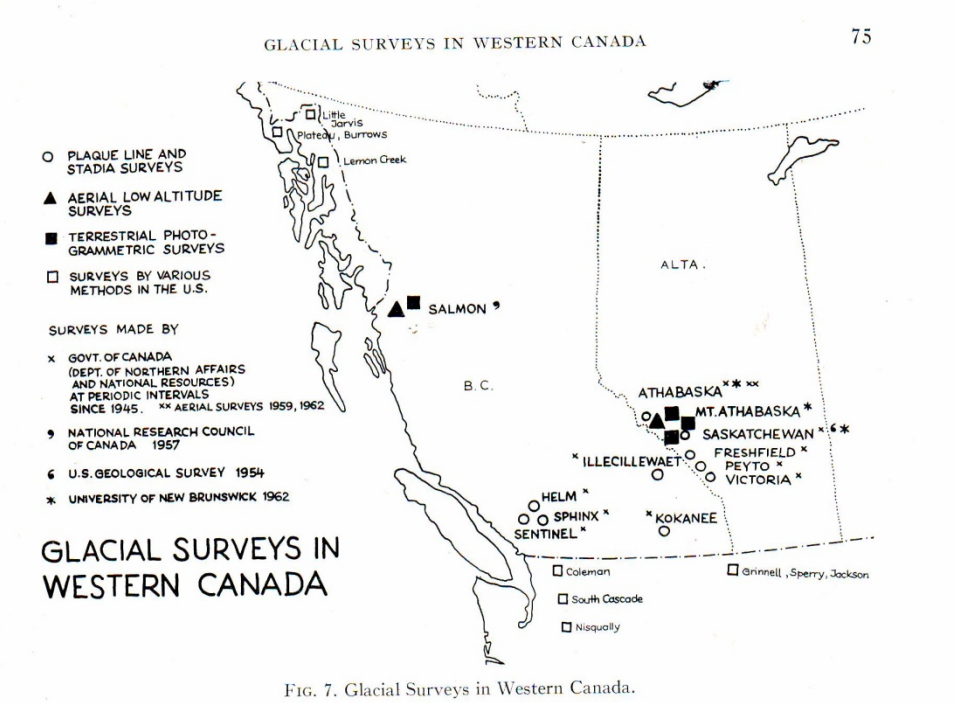
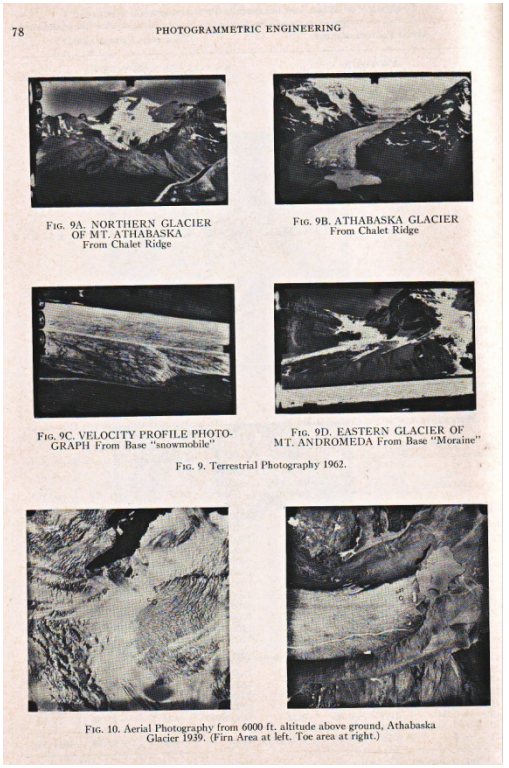


FIG. 7. Glacial Surveys in Western Canada.



Results of Glacier Surveys in Western Canada

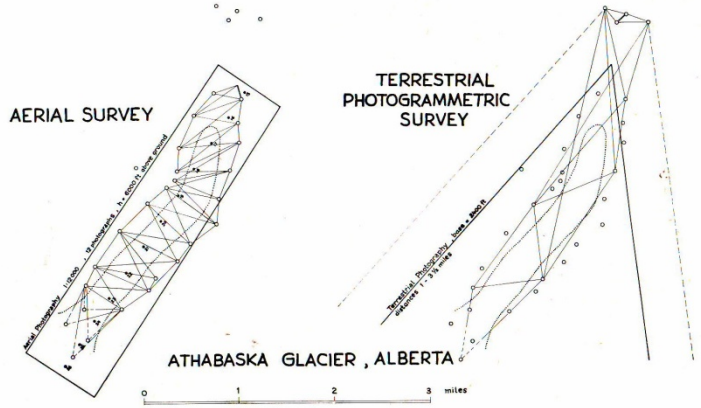


FIG. 11. Comparison of Coverage and Ground Control for Aerial and Terrestrial Photography.

the Department for Northern Affairs & Natural Resources had conducted glacier survey by aerial phortogrammetry. This turned our to be less accurate for height changes and considerably more costly.

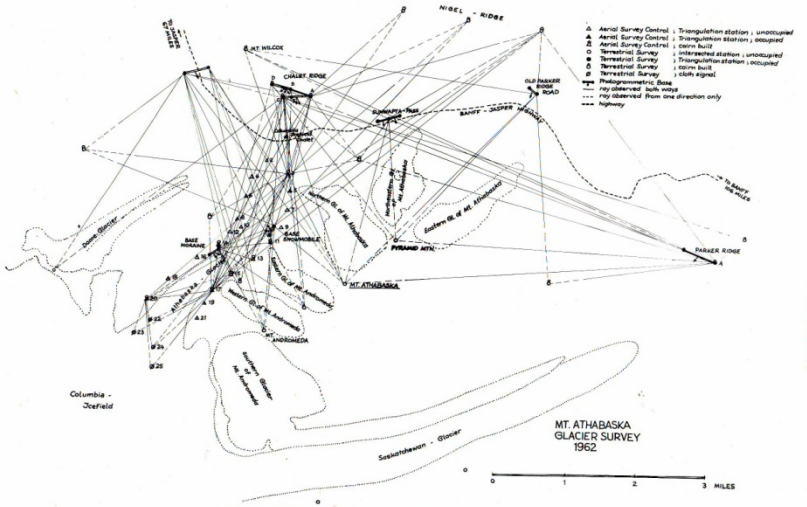


FIG. 12. Mt. Athabaska Glacier Survey Triangulation Net 1962.

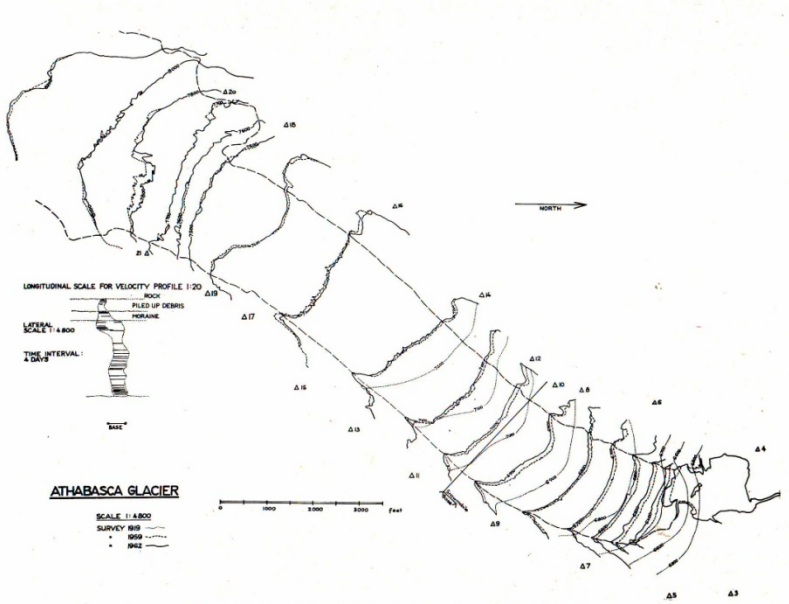


FIG. 13. Retreat of the Athabaska Glacier between 1919, 1959 and 1962.

Spinoffs of Glacial Surveys in the Rockies:

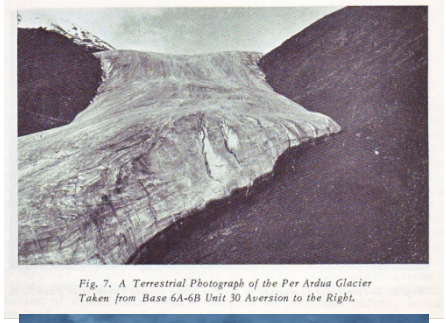


Fig. 7. A Terrestrial Photograph of the Per Ardua Glacier Taken from Base 6A-6B Unit 30 Aversion to the Right.

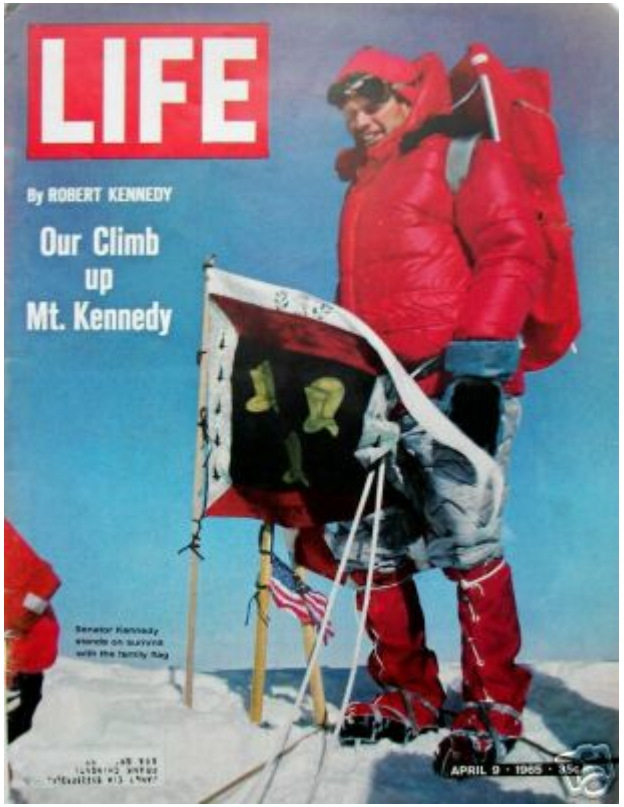
1) Terrestrial Photogrammetric Survey at the Iddiki Damsite in Kerala, India, a Colombo Plan Canadian Assistance Project in 1964. The dam is 200m high in the Dekkan, providing irrigation to Tamil Nadhu, rather than letting the water run off into the Arabian Sea.

2) Glacier Surveys in the Canadian Arctic on Ellismere Island in 1965.
(Per Ardua Glacier, Otto Fiord, Ward Hunt Iceshelf)

3) NSF Research Program on Juneau Icefield 1965 – 1972 and

4) National Geographic Expedition to Mount Kennedy, Yukon 1965

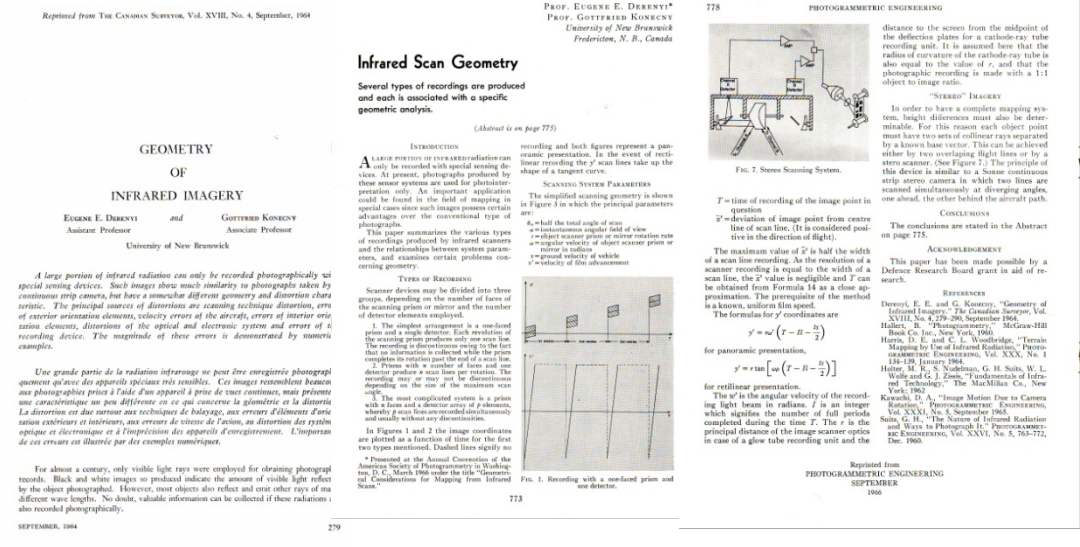
The Mt. Kennedy Expedition 1965



Problem number 6:

establish a graduate program:

Eugene Derenyi
completed his M.Sc.,
then became a staff
memeber and
completed his Ph.D.



Reprinted from THE CANADIAN SURVEYOR, Vol. XVIII, No. 4, September, 1964

GEOMETRY
OF
INFRARED IMAGERY

EUGENE E. DERENYI and GOTTFRIED KONECNY
Assistant Professor Associate Professor
University of New Brunswick

A large portion of infrared radiation can only be recorded photographically wi special sensing devices. Such images show much similarity to photographs taken by continuous strip camera, but have a somewhat different geometry and distortion chara teristic. The principal sources of distortions are scanning technique distortion, erro of exterior orientation elements, velocity errors of the aircraft, errors of interior orie tation elements, distortions of the optical and electronic system and errors of t recording device. The magnitude of these errors is demonstrated by numeri examples.

Une grande partie de la radiation infrarouge se peut être enregistrée photograp quement qu'avec des appareils spéciaux très sensibles. Ces images ressemblent beaucou aux photographies prises à l'aide d'un appareil à prise de vues continues, mais présente une caractéristique un peu différente en ce qui concerne la géométrie et la distortio La distortion est due surtout aux techniques de balayage, aux erreurs d'éléments d'orie tation extérieurs et intérieurs, aux erreurs de vitesse de l'avion, au distortion des systèm optique et électronique et à l'imprécision des appareils d'enregistrement. L'importan de ces erreurs est illustrée par des exemples numériques.

For almost a century, only visible light rays were employed for obtaining photograp records. Black and white images so produced indicate the amount of visible light reflect by the object photographed. However, most objects also reflect and emit other rays of ma different wave lengths. No doubt, valuable information can be collected if these radiations also recorded photographically.

SEPTEMBER, 1964

279

PROF. EUGENE E. DERENYI*
PROF. GOTTFRIED KONECNY
University of New Brunswick
Fredericton, N. B., Canada

Infrared Scan Geometry

Several types of recordings are produced and each is associated with a specific geometric analysis.

(Abstract is on page 775)

INTRODUCTION

A LARGE PORTION OF INFRARED radiation can only be recorded with special sensing devices. At present, photographs produced by these sensor systems are used for photointerpretation only. An important application could be found in the field of mapping in special cases since such images possess certain advantages over the conventional type of photographs.

This paper summarizes the various types of recordings produced by infrared scanners and the relationships between system parameters, and examines certain problems concerning geometry.

TYPES OF RECORDING

Scanner devices may be divided into three groups, depending on the number of faces of the scanning prism or mirror and the number of detector elements employed.

1. The simplest arrangement is a one-faced prism and a single detector. Each revolution of the scanning prism produces only one scan line. The recording is discontinuous owing to the fact that no information is collected while the prism completes its rotation past the end of a scan line.
2. Prisms with *n* number of faces and one detector produce *n* scan lines per rotation. The recording may or may not be discontinuous depending on the size of the maximum scan angle.
3. The most complicated system is a prism with *n* faces and a detector array of *p* elements, whereby *p* scan lines are recorded simultaneously and usually without any discontinuities.

In Figures 1 and 2 the image coordinates are plotted as a function of time for the first two types mentioned. Dashed lines signify no

* Presented at the Annual Convention of the American Society of Photogrammetry in Washington, D. C., March 1966 under the title "Geometrical Considerations for Mapping from Infrared Scans."

recording and both figures represent a panoramic presentation. In the event of rectilinear recording the y' scan lines take up the shape of a tangent curve.

SCANNING SYSTEM PARAMETERS

The simplified scanning geometry is shown in Figure 3 in which the principal parameters are:

α_0 = half the total angle of scan
ω = instantaneous angular field of view
r = object scanner prism or mirror rotation rate
n = number of faces of object scanner prism or mirror
v = ground velocity of vehicle
v' = velocity of film advancement

FIG. 1. Recording with a one-faced prism and one detector.

773

778 PHOTOGRAMMETRIC ENGINEERING

FIG. 7. Stereo Scanning System.

T = time of recording of the image point in question
$\bar{x}'$ = deviation of image point from centre line of scan line. (It is considered positive in the direction of flight).

The maximum value of $\bar{x}'$ is half the width of a scan line recording. As the resolution of a scanner recording is equal to the width of a scan line, the $\bar{x}'$ value is negligible and T can be obtained from Formula 14 as a close approximation. The prerequisite of the method is a known, uniform film speed.

The formulas for y' coordinates are

$$y' = v_f' \left(T - H - \frac{\Delta t}{2}\right)$$

for panoramic presentation,

$$y' = r \tan\left[\omega \left(T - H - \frac{\Delta t}{2}\right)\right]$$

for rectilinear presentation.

The w' is the angular velocity of the recording light beam in radians. I is an integer which signifies the number of full periods completed during the time T. The r is the principal distance of the image scanner optics in case of a glow tube recording unit and the distance to the screen from the midpoint of the deflection plates for a cathode-ray tube recording unit. It is assumed here that the radius of curvature of the cathode-ray tube is also equal to the value of r, and that the photographic recording is made with a 1:1 object to image ratio.

"STEREO" IMAGERY

In order to have a complete mapping system, height differences must also be determinable. For this reason each object point must have two sets of collinear rays separated by a known base vector. This can be achieved either by two overlapping flight lines or by a stereo scanner. (See Figure 7.) The principle of this device is similar to a Sonne continuous strip stereo camera in which two lines are scanned simultaneously at diverging angles, one ahead, the other behind the aircraft path.

CONCLUSIONS

The conclusions are stated in the Abstract on page 775.

ACKNOWLEDGEMENT

This paper has been made possible by a Defence Research Board grant in aid of research.

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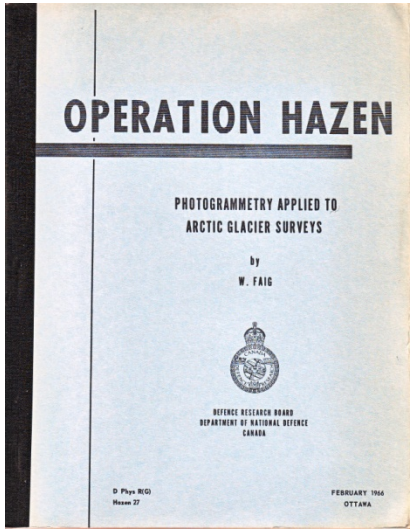
Reprinted from
PHOTOGRAMMETRIC ENGINEERING
SEPTEMBER
1966

Wolfgang Faig
completed his M.Sc.,
then he returned to
Germany for his
Dr.Ing. degree and
came back to UNB
after an appointement
at the U. of Illinois



OPERATION HAZEN

PHOTOGRAMMETRY APPLIED TO
ARCTIC GLACIER SURVEYS

by
W. FAIG

DEFENCE RESEARCH BOARD
DEPARTMENT OF NATIONAL DEFENCE
CANADA

D Phys R(G)
Hazen 27

FEBRUARY 1966
OTTAWA

this work broke new ground for satellite remote sensing.

Wolfgang was responsible for documenting the results of the Arctic Surveys

Problem number 7:

Organize scientific Conferences: Geodetic Adjustments

First row, left to right: W. F. Roberts, Gottfried Konecny, Hellmut H. Schmid, M. Hotine, U. Uotila. Second row: J. W. Walker, G. H. Gloss, R. B. McEwan, D. Hickman, S. Veres, Peter Wilson, L. A. Gale, Angus C. Hamilton, E. Emenike. Third row: Sybren H. deJong, H. E. Jones, C. Hoganson, A. McLaughlin, E. E. Derenyi, Michel Creusen, W. Faig, R. Parent. Last row: Gordon Gracie, Harold J. Welch, R. C. Gunn, R. Rapp, H. Klinkenberg, P. Henderson, C. Bacon, L. F. Gregerson, C. D. McLellan, D. Nagy.

Problem number 8:

attract high level researchers:

Adam Chrzanowski, Mining Surveyor,
from Krakow, Poland

Ed Krakiwski, Geodesist with Ph.D. from
Ohio State University, native of Alberta

Peter Angus-Leppan,
Professor of Geodesy
University of New South Wales,
Sydney, Australia for a sabbatical

Problem number 6:

attract high level researchers:

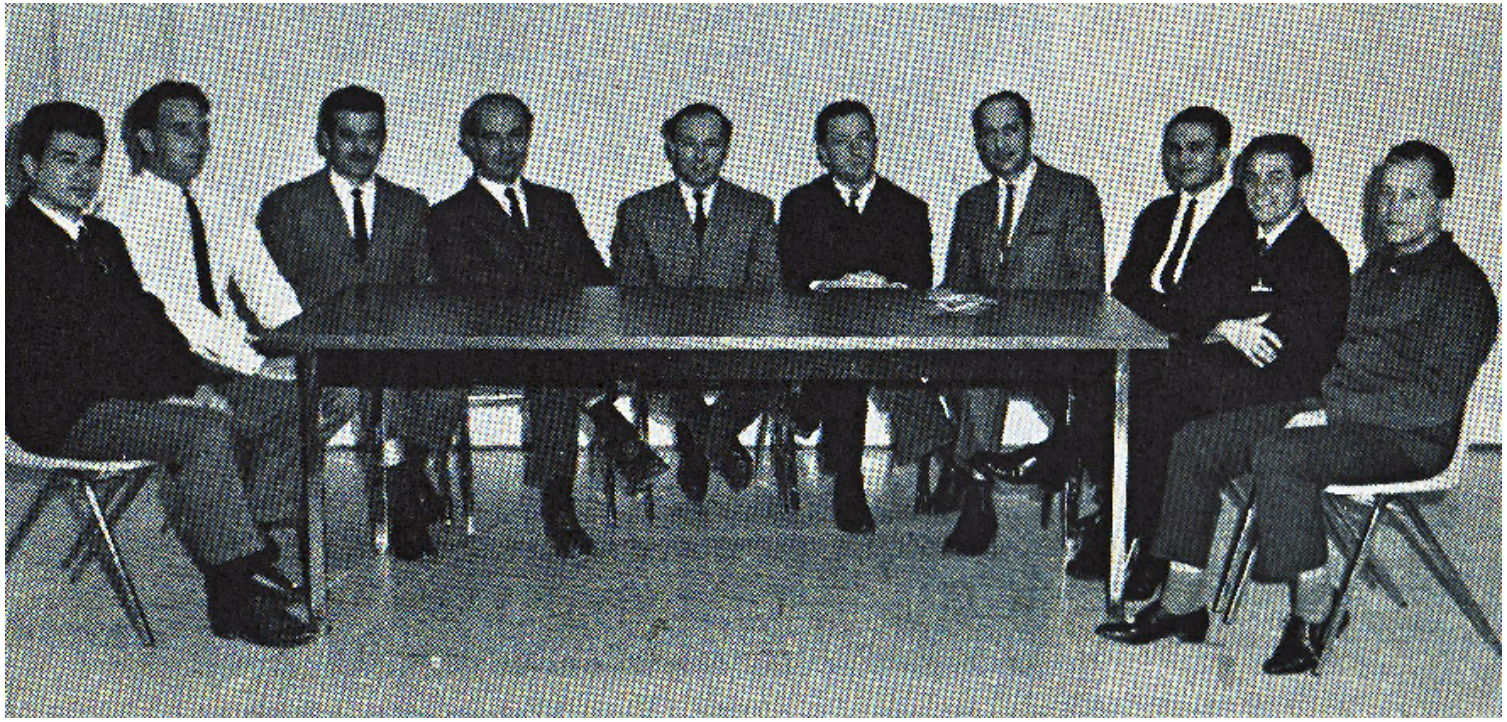
Klaus-Peter Schwarz, Dipl.Ing. , U. Bonn completed his M.Sc., before going for Dr.Ing. Studies in Berlin and Graz being a Research Fellow at UNB and becoming Professor of Geodesy at the University of Calgary

Peter V. Angus-Leppan, Professor for Surveying and Geodesy, University of New South Wales, Sydney, Australia, who spent a sabbatical year at UNB

Problem number 9:

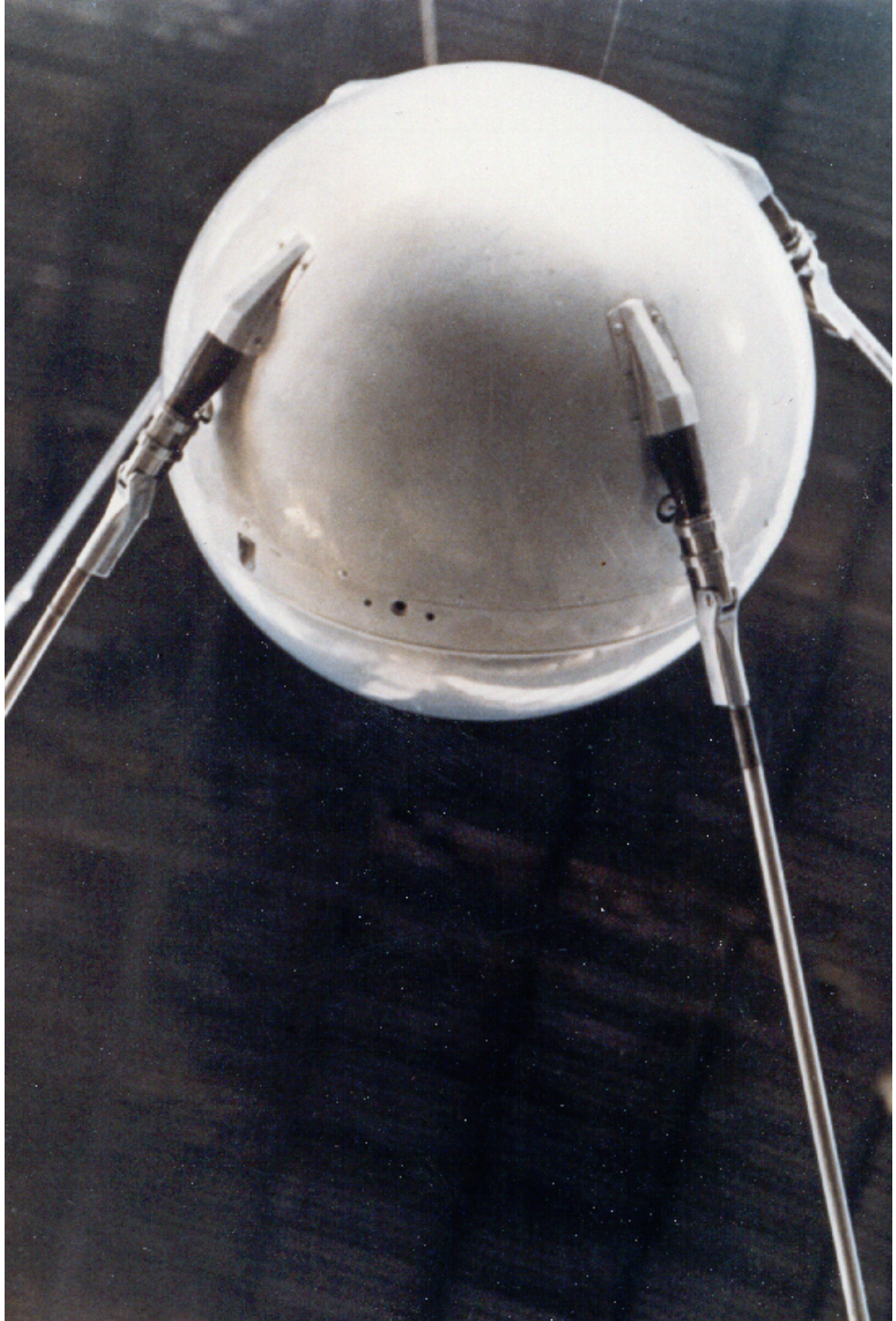
become a department to attract even more qualified staff:

We were lucky: I obtained a good offer to move to Ohio State University, and President Colin B. Mackay as well as Dean Dineen convinced me, that a Department at UNB plus a sabbatical at NASA might even be a better challenge:



Ed Krakiwski, John Allman, Rafael Sanchez, Adam Chrzanowski, Gottfried Konecny, Egon Dorrer, Eugene Derenyi, Sam El Masry, Gerhard Gloss, Guyla Alpar

The Beginning: Sputnik 1957



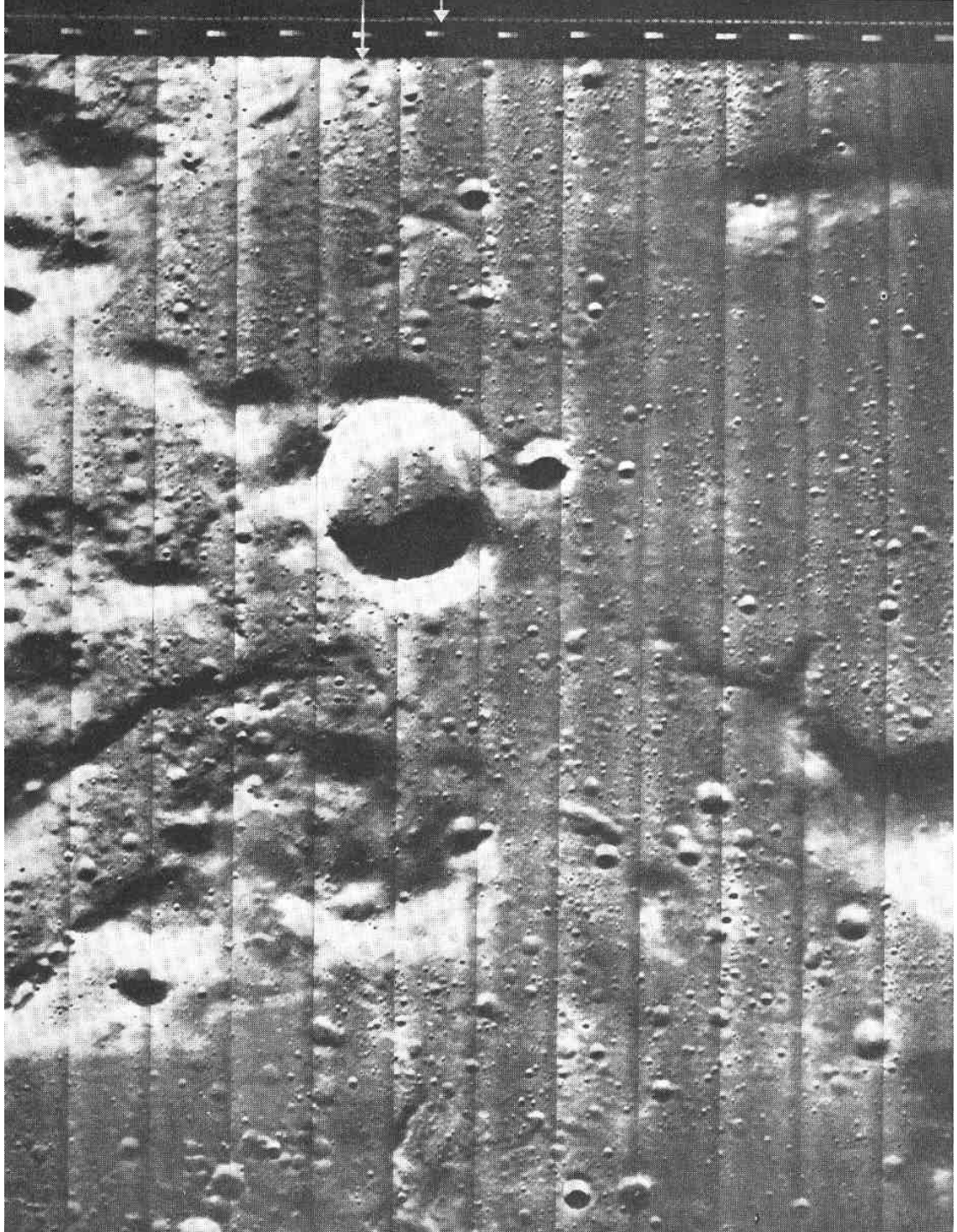
Race to the Moon 1960 – 1970
between USA and USSR

A trip to the moon? Or at least a sabbatial in Houston?

My former teacher Fred Doyle and me, we both had offers to go to UNB;
When he preferred to go to the USGS, he asked me:
„Do you want to spend a year on the moon?“; I said „yes“ and came back to UNB afterwards

In the USA
Mapping of
Lunar Landing
Sites

by
Lunar Orbiter
1-5
1966-1967



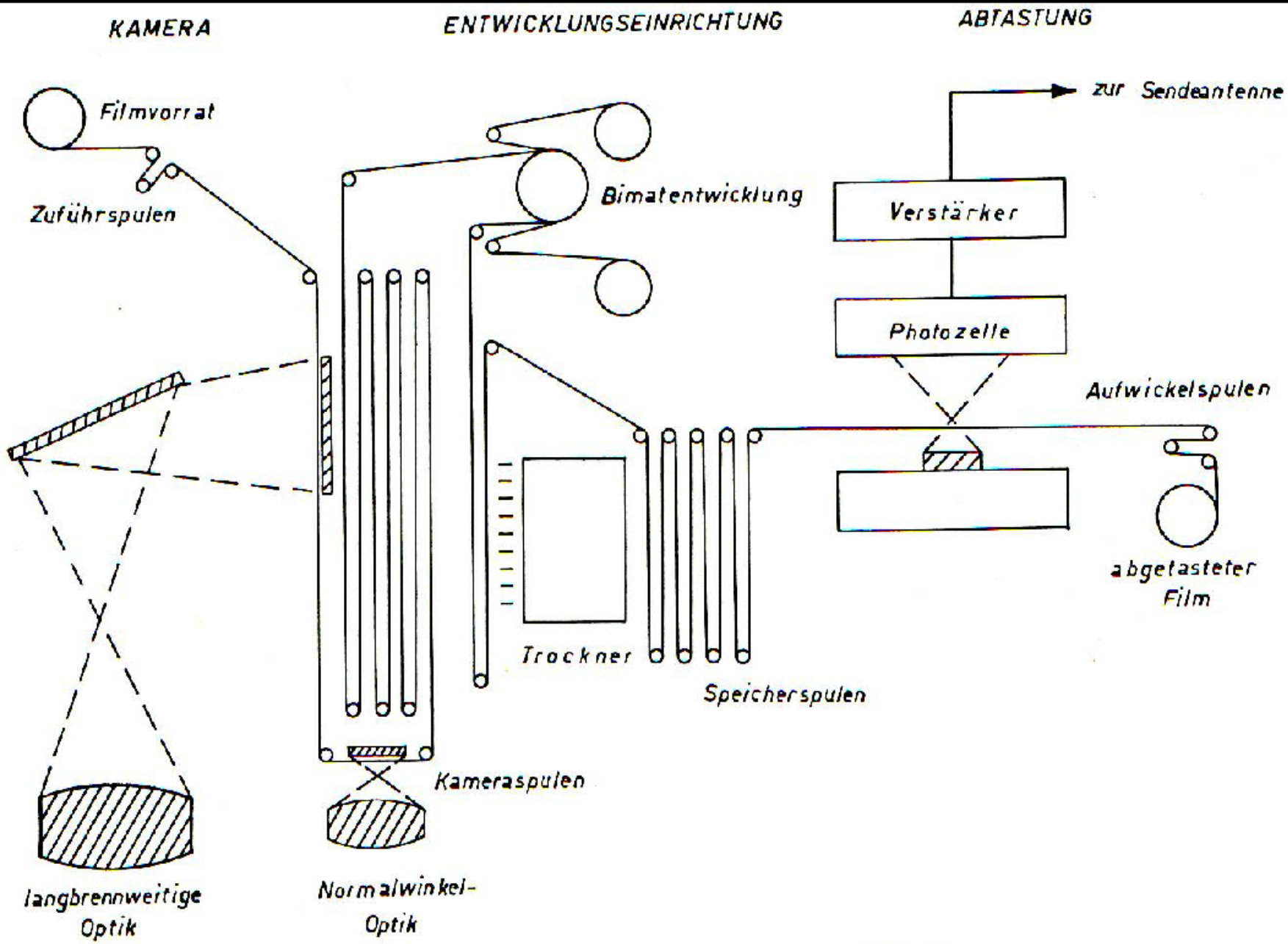


Fig. 17. Kammersystem des „Lunar Orbiter".

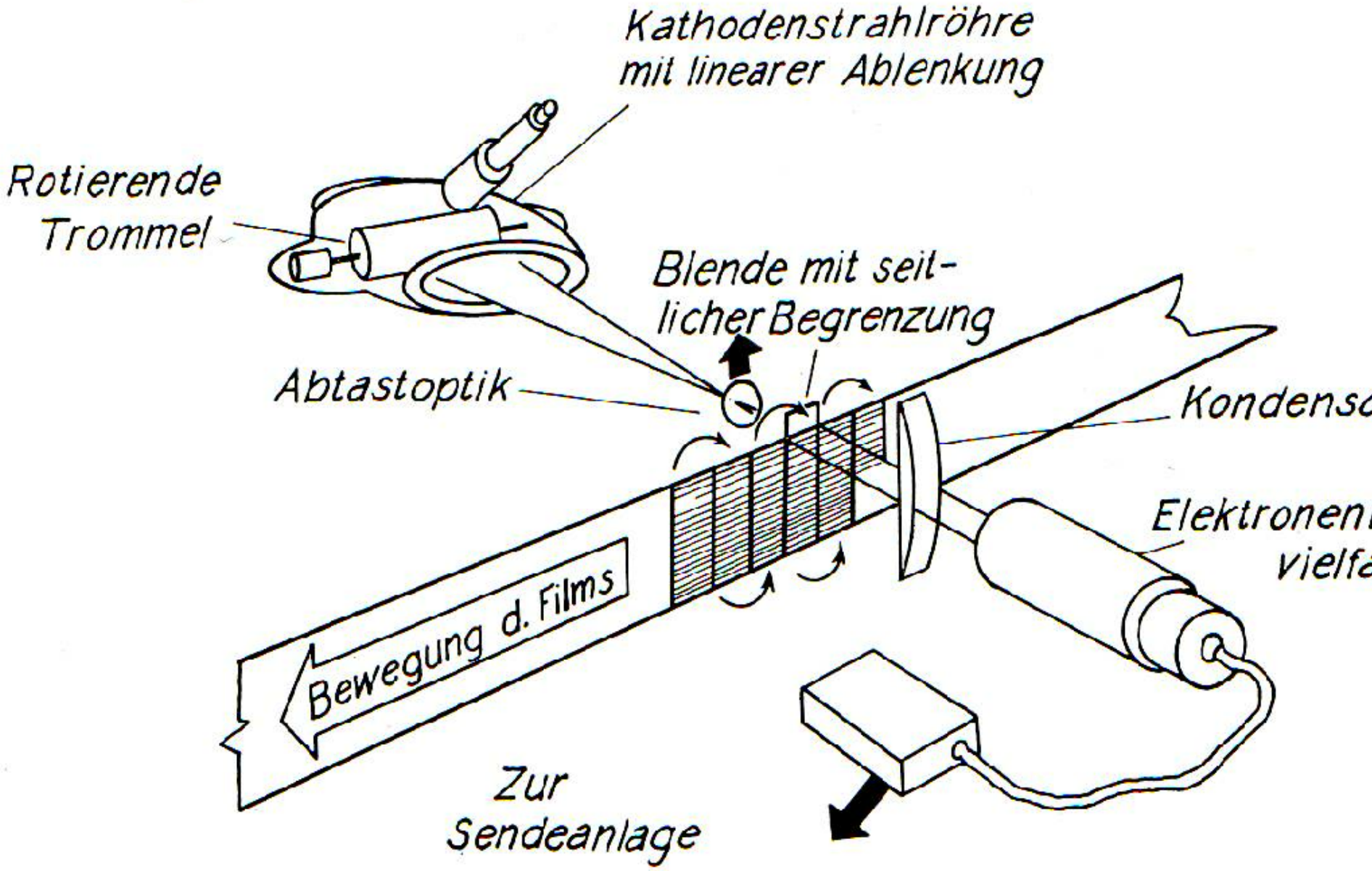
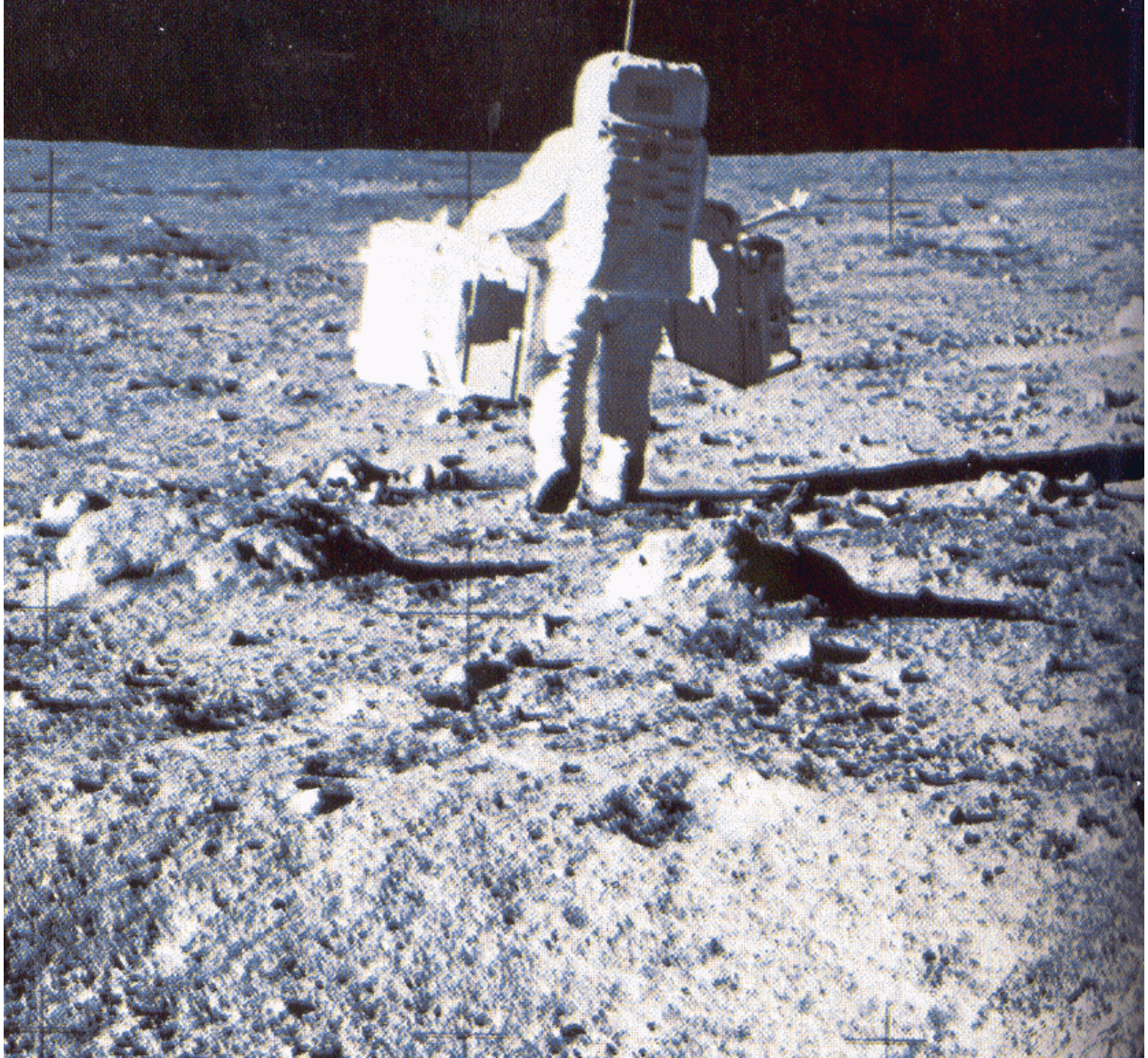


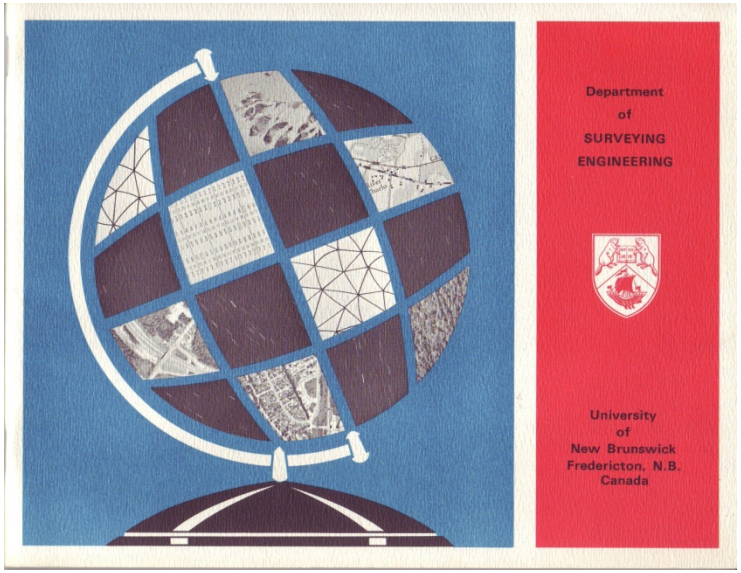
Fig. 18. Abtastsystem des Lunar Orbiterfilms.

man
on
the
moon

1969



The new building
– Head Hall –
home of the new Department



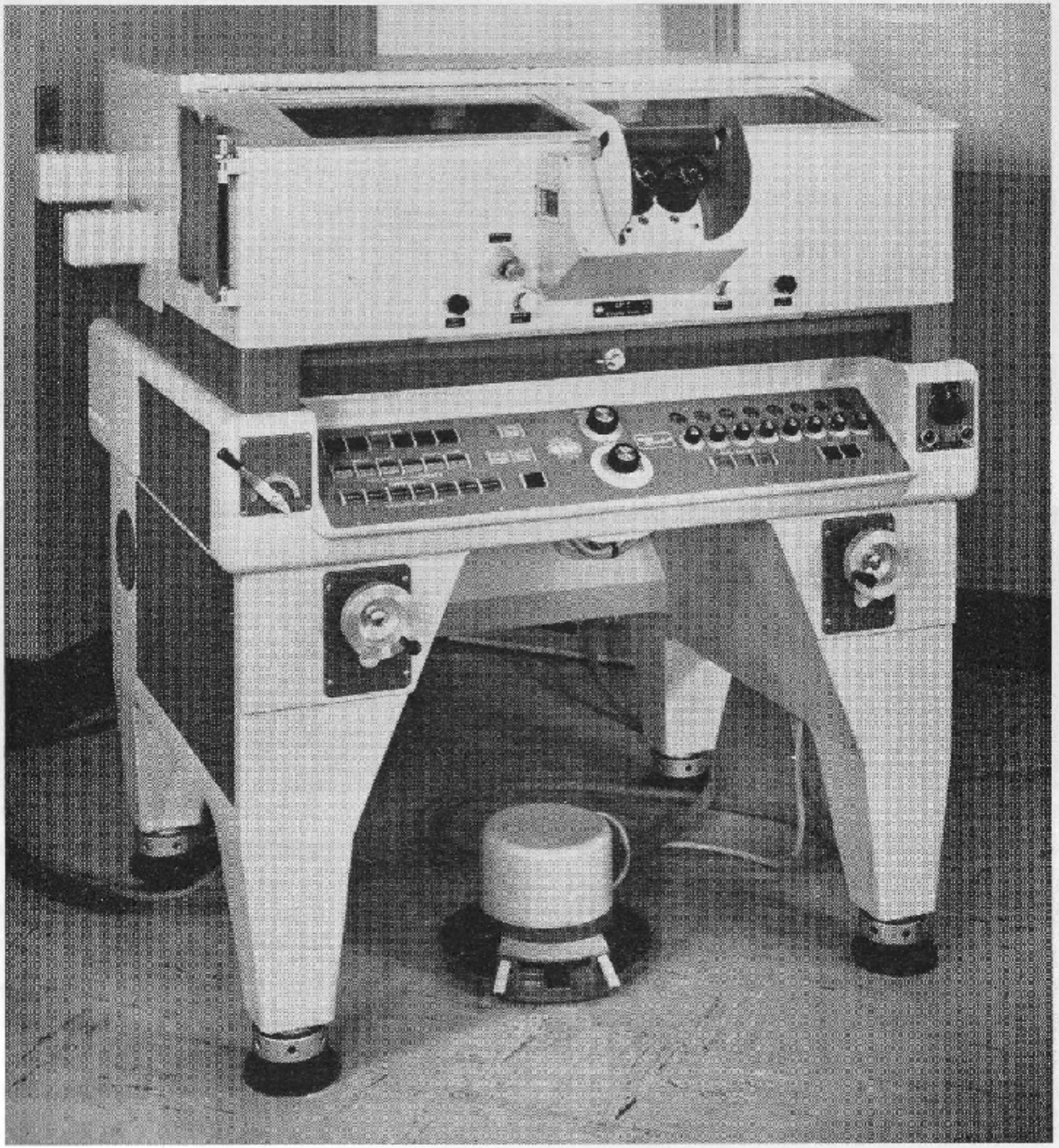
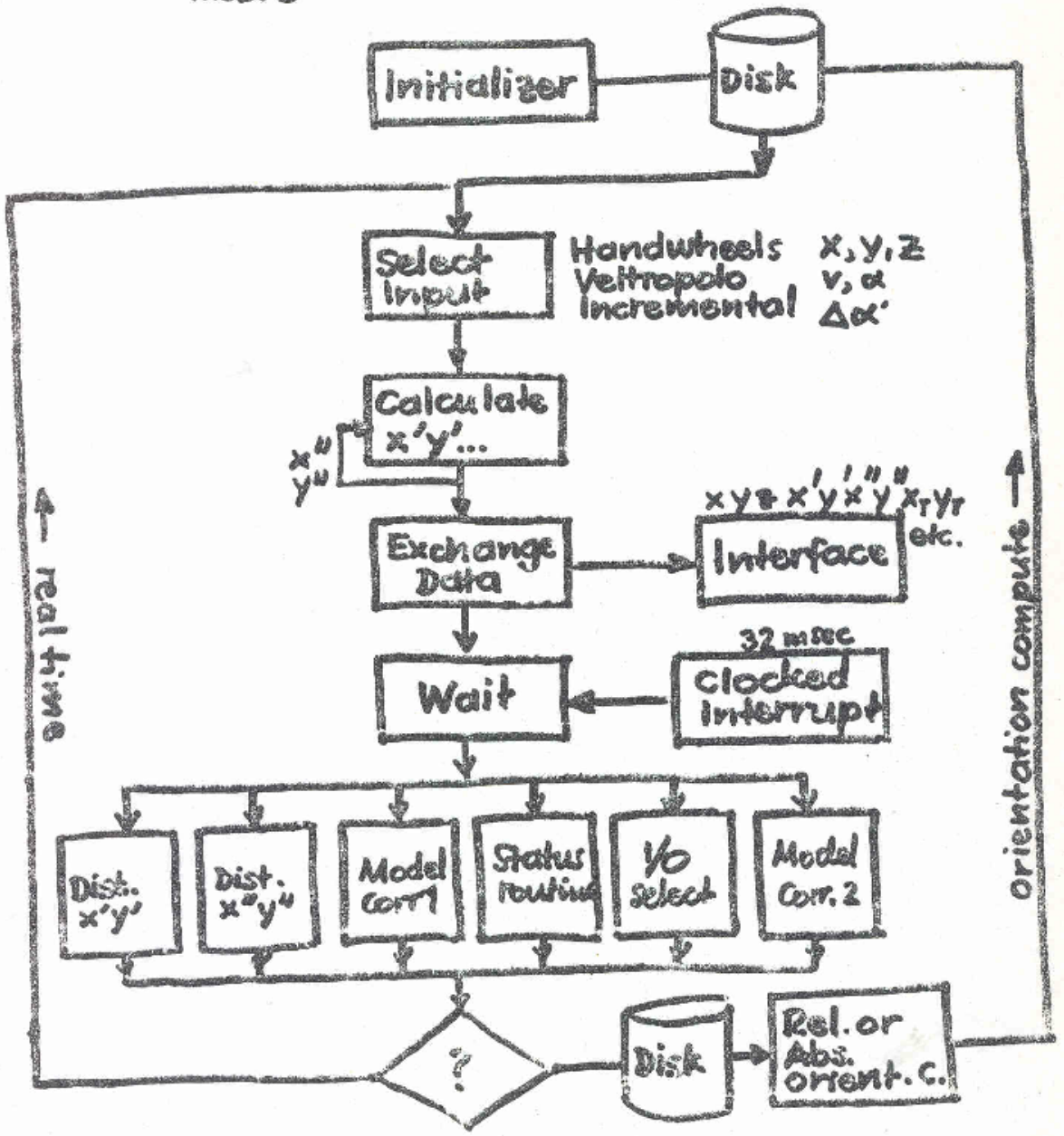


Fig. 9a. Meß- und Beobachtungsgerät des Analytischen Plotters AP/C von O.M.I.

Fig. 9b. Rechner des AP/C.

AP/C PROGRAM STRUCTURE

MOD. 3



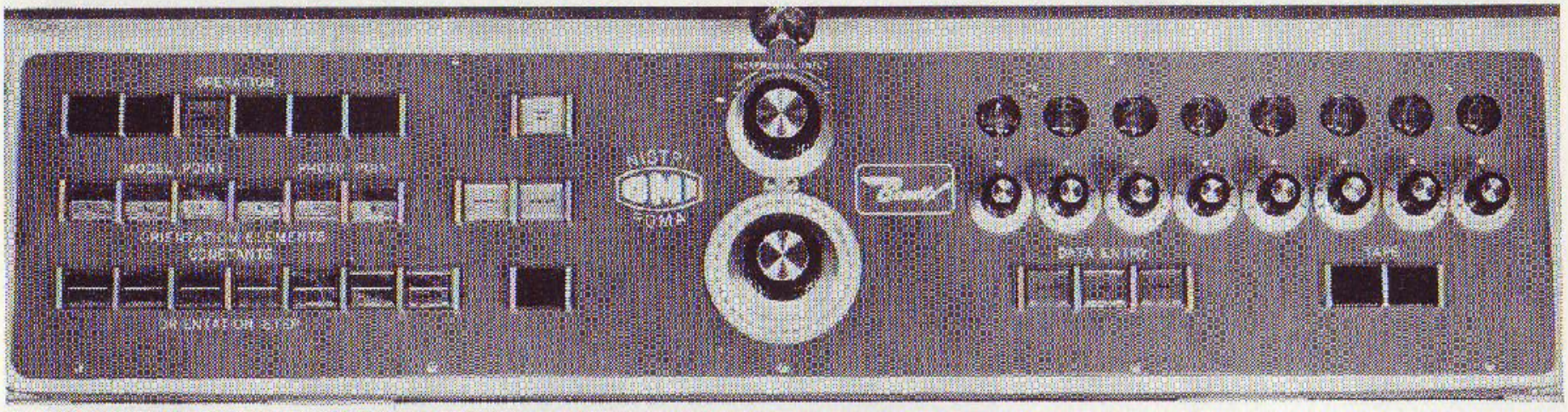


Fig. 9c. Bedienungspult des AP/C.

Some of the research activities: the Analytical Plotter

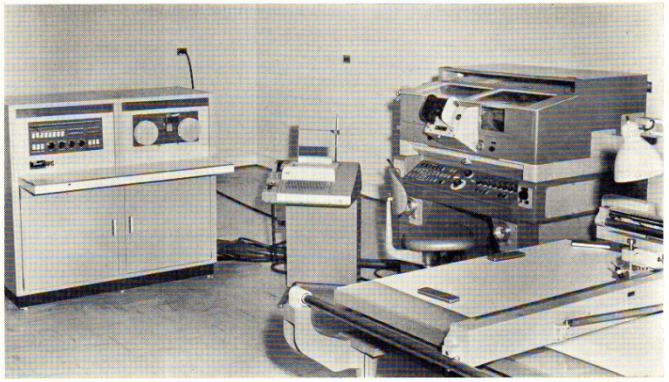


Fig. 1 The O. M. I.-Bendix Analytical Plotter AP-2C

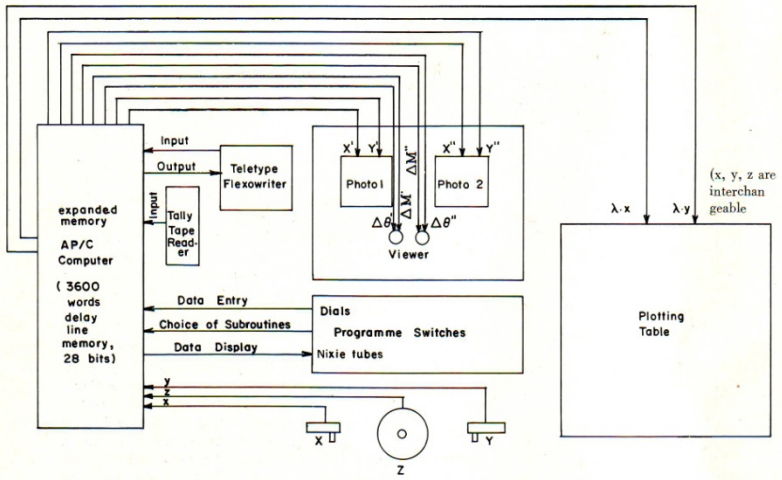


Fig. 2 Functional Diagram of the Analytical Plotter AP-2C

MACHINE LANGUAGE PROGRAMS AND ROUTINES FOR THE COMPUTER OF THE O.M.I.-BENDIX ANALYTICAL PLOTTER AP-2C

Part 1

by

G. Konecny

and

S. E. Masry

August 1969

Department of Surveying Engineering

University of New Brunswick

Fredericton, N.B.

Canada

Photogrammetry Series No. 1

SHEET 4
LINE 00

FUNCTION Program Pr. 1

WORD	OP CODE	LINE	OPERAND WORD	NEXT WORD	OPERATION AND REMARKS
136	7 6	00	142	143	D_{14} = (00 - 142)
142	0 5	00	000	108	DATA INST. FOR D_{14}
143	0 5	27	000	149	SELECT D_5
111	7 1	29	003	116	A LEFT 3 TO DROP THE FIRST 3 BITS
116	7 1	28	024	139	A RT. 24 bits
139	0 5	27	000	149	SELECT D_5
114	7 1	29	006	122	A LEFT 6 bits
122	7 1	28	022	140	Rt. 22 bits
140	7 4	00	145	146	C = 10 x 2^{21}
145	1 2	00	000	000	Data
146	6 1	29	021	169	DIVIDE 21 BITS
169	7 1	28	021	192	A RT. 21 BITS (REMAINDER)
192	1 2	24	193	194	Interchange A and B: A = First dig. in L.C.
194	0 2	02	194	195	TEST PUNCH READY
195	7 4	00	194	197	C = SPACE CHARACTER
196	6 0	00	000	000	DATA = SPACE CHARACTER
197	3 4	30	198	199	PUNCH C = SPACE CHARACTER
199	0 5	27	000	213	SELECT D_5: PUNCH FIRST DIGIT of L.C.
117	3 2	24	118	119	B to A
119	0 5	27	000	133	SELECT D_5: PUNCH SECOND DIGIT of L.C.
120	7 1	29	011	133	A LEFT 11
133	7 1	28	019	147	A RT. 19 IN A WORD TIME
147	7 4	00	149	150	C = CONST. 10^2 x 2^{17}
149	0 6	08	000	000	10^2 x 2^{17}

To avoid time optimized machine language programming, the APC Was interfaced with the IBM 360 Computer, which could be programmed In Fortran

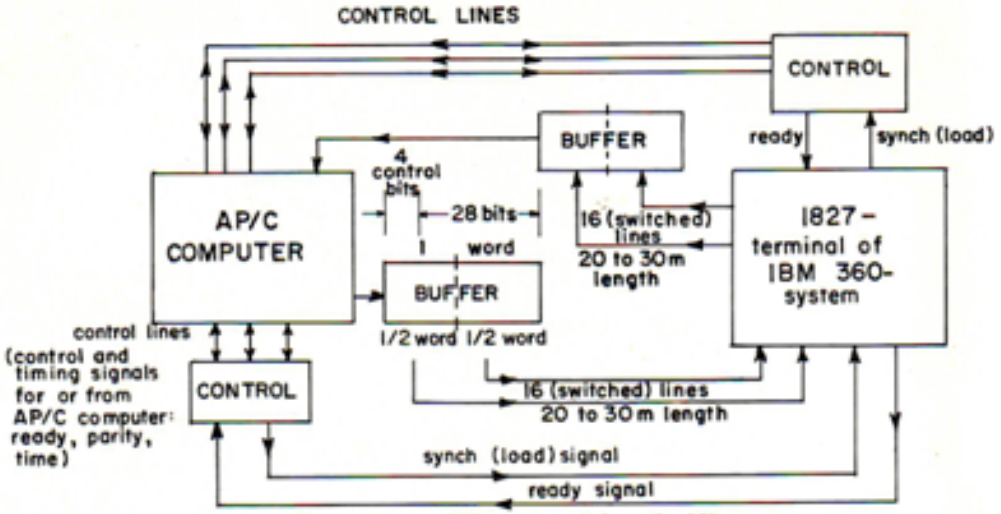


Fig. 4 Design of the AP/C computer link to the 360-system

Abstract

On order of the University of New Brunswick (Canada) O. M. L-Bendix has built an Analytical Plotter model AP-2C, which consists of an AP-2 viewer, an AP-2 plotting table and an enlarged memory AP/C computer. The instrument combines the flexibility of the AP-2 system with the versatility in programming of the AP/C computer. To improve the system limitations in computer storage, computing speed and the ease of programming the design for the interfacing with the University's IBM 360-50 computer is discussed with respect to its advantages, its cost, its uses and its design details. Valuable experiences are being gained in this interdisciplinary effort.

Problem number 10:

Organize International Conferences:

- Land Registration and Databanks (Willis Roberts) 1968
- Mining Surveying (Adam Chrzanowski) 1969

Participate actively in National Conferences:

- The Canadian Institute of Surveying Annual Convention, Halifax 1970

Proceedings of the Symposium

on

LAND REGISTRATION AND DATA BANKS

November 13 to 15, 1968

sponsored jointly by

The Canadian Institute of Surveying,
the National Advisory Committee on Control Surveys and Mapping

and the

Department of Surveying Engineering
University of New Brunswick

Reprinted in Canada from
THE CANADIAN SURVEYOR
Sessions 1 – 2, Vol. XXIII No. 1 March 1969
Sessions 3 – 6, Vol. XXIII No. 2 June 1969

Some Basic Features of an Environmental Integrated Data Bank

W. F. ROBERTS
Technical Director, Atlantic Provinces Survey and Mapping Program
Fredericton, New Brunswick

In establishing an environmental integrated data bank, it is important that a suitable common denominator or 'anchor' be selected to which the various files can be related. Logically, this common denominator would appear to be the individual land units because they are stable and unique.

Pour l'établissement d'une banque d'informations descriptives intégrées, il importe de choisir un dénominateur commun convenable par lequel les divers fichières peuvent être reliées. Logiquement, il semble que ce dénominateur commun doit être l'unité foncière individuelle, parce qu'elle est stable et distincte.

Introduction

The Atlantic Provinces Surveying and Mapping Program was designed to operate in four successive phases. The first phase is the precise establishment of monuments at predetermined intervals in each province. The second is the establishment of a provincial large-scale topographic map series at scales of 1:24,000 to 1:6,000. The third is a proposal to implement a computer-based land titles system, based on the Torrens principles. And the fourth phase is the implementation of a data bank.

The first two phases are within the surveying engineer's capability and considerable progress has been made. In phases III and IV, the surveying engineer is only one of a team; thus we are appreciative of this opportunity not only to communicate with members of other professions, but to have the chance to understand their problems. Finally, an up-to-date cataloguing of computer programs and software will benefit all participants.

Some basic features of an environmental integrated data bank

1) *A common denominator* — Data banks, as we loosely use the words today, seem to imply some tinge of falsehood when one looks deeply into the objective. It resolves itself mostly into data warehousing, in that the data stored and retrieved are similar and, in most cases, handled by the same agency. A bank, on the other hand, implies the

Problems in Land Registration and in Filing Environmental Data in Eastern Canada

ANGUS C. HAMILTON

Surveys and Mapping Branch, Department of Energy, Mines & Resources,
Ottawa, Canada

The two basic problems in the deed registration system – the problem of title and the problem of description – are illustrated by eight case histories. The problem of title is aggravated because the registry office has no responsibility for the legal effect of the documents in its files. As there is, for the most part, no check on the correctness, or the validity, of the contents of documents, it frequently happens that incomplete or erroneous descriptions are filed and these become the cause of further errors and misinterpretations. The descriptions in the case histories and most of the descriptions in Eastern Canada are vitiated by the lack of a control survey system to which the point of commencement and the dimensions can be related and tested for errors. In New Brunswick alone, an estimated 30 man-years of lawyers' time would be saved each year if the Torrens system were used in place of the deed registration system.

In the Canada Land Inventory system, the information on land use and land capability from some 3,000 map sheets is being transferred to computer files. At the Dominion Bureau of Statistics, the magnetic tape files containing all the information from the 1961 census are readily accessible in an operational system. Yet, the common denominator, the information on the boundaries of the parcels of land on which people live and on which they grow crops, is buried obscurely in land registration and land survey offices instead of being readily available on computer files comparable with those of CLI and DBS.

It is concluded that a network of survey control stations and an improved system of land registration are prerequisites for the development of an integrated environmental data bank system. It is also concluded that serious dialogue on the objections of such a system should begin as soon as possible.

Les deux problèmes de base de l'enregistrement des mutations – le problème du titre et celui de la description – sont illustrés par huit cas-types. Le problème du titre s'aggrave du fait que le bureau d'enregistrement n'est pas responsable de la portée juridique des documents enregistrés. Comme il n'existe d'habitude aucun contrôle sur l'exactitude ou la validité du contenu des documents, il arrive fréquemment qu'on enregistre les descriptions erronées qui deviennent causes d'autres erreurs et de contresens. Les cas-types montrent que dans l'est du Canada les descriptions sont viciées par défaut d'un réseau géodésique auquel le point de départ serait relié, et servant à contrôler les erreurs des dimensions. Dans le seul Nouveau-Brunswick, on

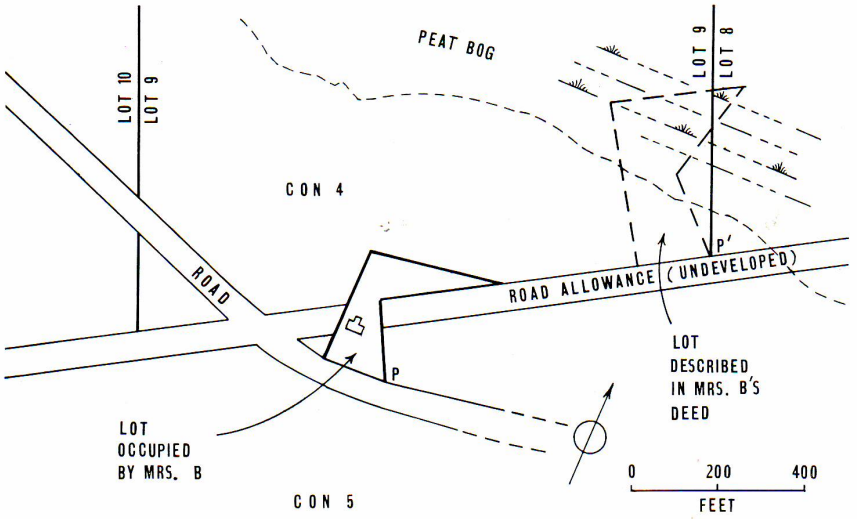


Fig. 2. The peat bog lot. Outline in solid line indicates position of lot as found by National Capital Commission surveyors; dashed line indicates position as described in deed.

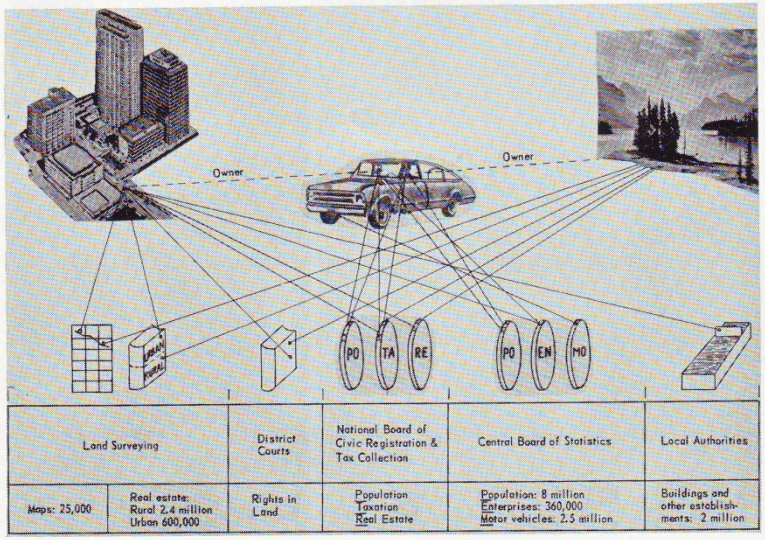


Fig. 1. Public data registration in Sweden. Maps, ledgers, magnetic tapes and punch cards are used.

The 1970 Halifax CIS Meeting

Al Daykin, Conf. Mgr.

Preface

The 63rd Annual Meeting of the Canadian Institute of Surveying takes place in Halifax from April 14 to 18, 1970. This is the first time such a meeting is held in Eastern Canada and only the second time that it is held outside of Ottawa.

The members of the Executive Committee planning this Convention have agreed that the best way to assure excellence of the program is to try to convey a message of lasting value to the membership of the Institute. This has led to the idea of a theme meeting which could analyze in general terms the problems facing the survey and mapping profession at large. Such a theme meeting is particularly timely from the viewpoint of Eastern Canada, where an approach to integrated surveys has been initiated by the Atlantic Provinces Surveying and Mapping Program supported by the Government of Canada. Its phases, Control Surveys, Mapping and Legal Surveys, form a good core of subjects around which an interesting program can be built. A special Maritime flavour is included by adding a session on Hydrographic Surveys.

While the general sessions of the meeting were organized as a theme meeting the Executive Committee recognized the importance of the independent work of the C.I.S. Technical Committees, and therefore simultaneous Technical Sessions on Control Surveys, Legal Surveys, Hydrographic Surveys, Photogrammetry, Photointerpretation and Remote Sensing and Cartography were arranged. The technical sessions, as opposed to the sessions on the main theme have the task of conveying detailed new information of interest to specialized groups in form of short papers and panel discussions. Prepublication of this material was not considered feasible.

Special thanks are due to Professor Andre Frechette and to Mr. Maurice Duval who organized the enormous effort to have all general papers translated to French or to English for prepublication.

The Executive Committee extends a warm welcome to all participants of the Halifax Convention:

For the Executive Committee:

Gottfried Konecny
Program Chairman

S. E. Daykin
Convention Manager

J. E. R. March
Convention Director

Table of Contents

Why does one leave such a challenging place, like UNB after 12 fulfilling years?

- **because the grass is greener elsewhere? No!**
  even in your home country?

- **because the administrative load as a head of the department became too big? Perhaps!**

- **because there is a challenge to start a second carreer as a scientist and engineer? Yes!**

- **was it the right move? professionally yes!**
  family wise perhaps!
  country wise perhaps!

Thanks to my 12 years at UNB I learned a lot

- **from Ira Beattie, from Jim Dineen and from Colin B. Mackay, have an open mind and support those who have ideas**

- **from Willis Roberts, you don´t have to know everything, but you can find one, who knows it better than you**

- **from Sam Gamble, you have to think big**

- **from Angus Hamilton, you have to analyze the situation and pursue what you believe to be right**

- **from my coworkers and from my students, have a frank discussion with them and accept their point of view**

a word from the South Indian Kural „dont´think of what you did in the past, but think what you can do for society today“ (Tamil Nadhu, 400 A.D.)