



CANADIAN MINERAL ANALYSTS
ANALYSTES DES MINERAUX CANADIENS

FROM

1969

ON

To Communicate Analytical Technology in the Canadian Mining Industry
Pour Répartir la Technologie Analytique dans l'Industrie Minière du Canada

CANADIAN MINERAL ANALYSTS

1969 - CONFERENCE SITES - 1993

The 25th annual C.M.A. meeting is somewhat of a milestone in the affairs of an organization and certainly reflects an ongoing interest.

It all started in	1. Noranda	1969	
Followed by	2. Noranda	1970	
	3. Haileybury	1971	
	4. Haileybury	1972	
	5. Sudbury	1973	
	6. Kirkland Lake	1974	
	7. Thunder Bay	1975	
	8. Timmins	1976	
	9. Flin Flon	1977	
	10. Noranda	1978	
	11. Kelowna	1979	
	12. Bathurst	1980	
	13. Sudbury	1981	
	14. Thunder Bay	1982	
	15. Kamloops	1983	
	16. Timmins	1984	
	17. Val d'Or	1985	
	18. Kamloops	1986	
	19. Winnemucca	1987	(1st SMA/CMA joint)
	20. Noranda	1988	
	21. Timmins	1989	
	22. Vancouver	1990	(2nd CMA/SMA joint)
	23. Ottawa/Hull	1991	
	24. Val d'Or	1992	
	25. Winnipeg	1993	

April 28th, 1992

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 John Gillies -

commercial firms invited to our first meeting in 1969 were
 and Perkin-Elmer, thus such firms as Mines Array Supplier, etc.
 be present until our second annual conference to which all Labs &
 across Canada were invited. The only input by other analysts and
 papers was at the meeting I called for Oct. 3rd, 1969.

Letter from J. Gillies - founder of the CMA.

April 28th, 1992

Your letter requesting information relating to the formation of the Canadian Mineral Analysts arrived this morning.

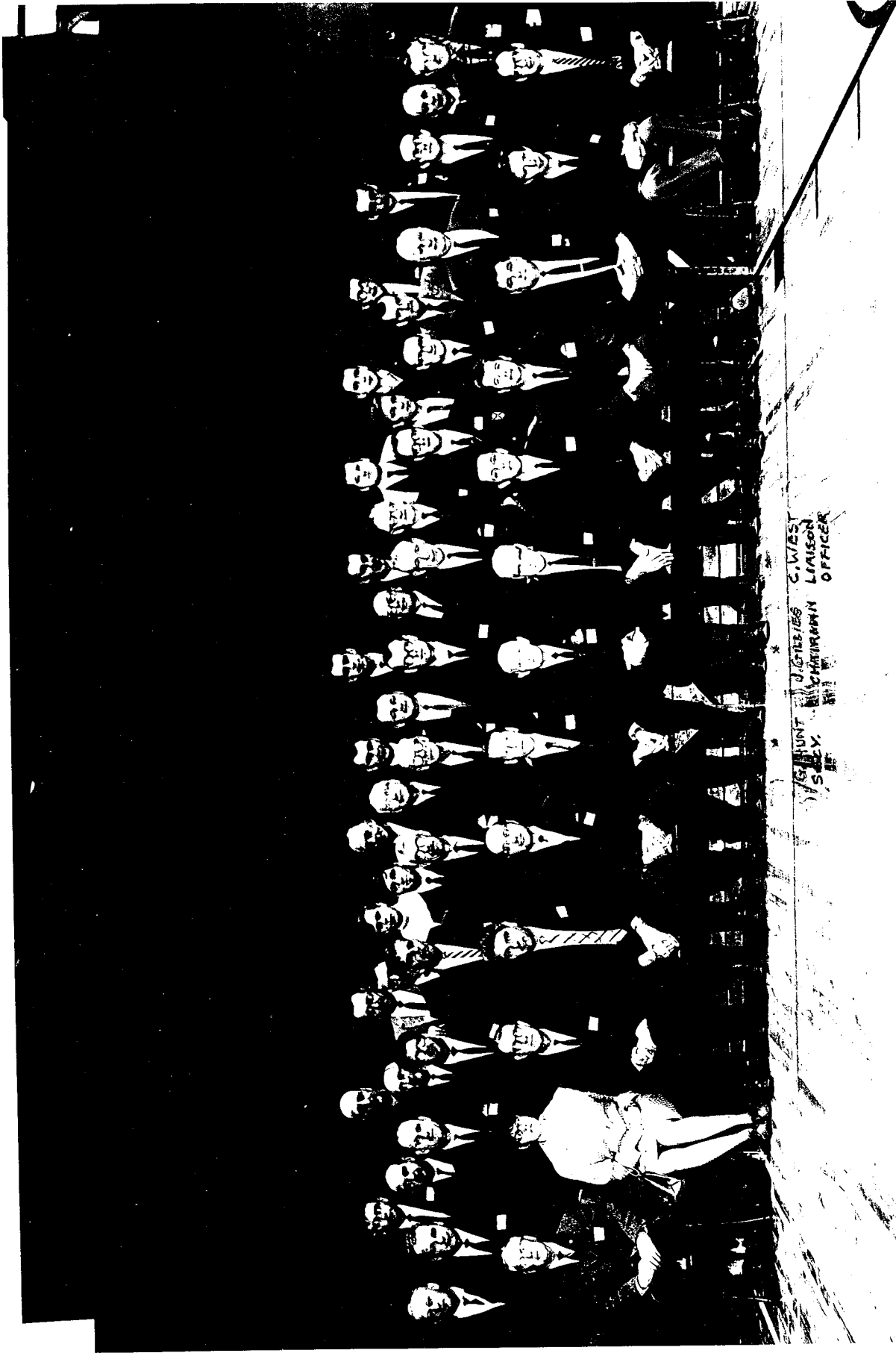
My participation in attempting the formation of a society for chemists, analysts, and assayers dates back to the late 1930's, then again after the war in the 1948-49 era, and later in the early 1960's. On each occasion I found that management people were not totally prepared to accept the idea due to the fact that their interests were primarily in engineering societies. However, in 1965 I became a member of Noranda's management as General Manager of all of Noranda's 22 laboratories and Chief of their Environmental and Industrial Hygiene Services. I then found a more receptive audience at the management level to the idea of a society for chemists and analysts.

After visits to most of Canada's mining and metallurgical operations, relating to Environmental and Trace Element problems and the importance of meeting governmental standards, it was soon obvious to top level people in the industry that closer liaison between labs was indeed essential. The response was such, that I immediately sent out letters to every mine manager and research centre in Canada informing them of the actions I proposed taking. Every mine manager responded in approval of such actions, and the Mines Branch in Ottawa replied by sending their Chief Liaisons Officer, Charles West, and Assistant, Jerry Hunt, to extend the help of the Branch in providing secretarial duties and printing facilities; needless to say I was more than happy to accept their kind offer, should we be successful in our proposal.

On June 11th, 1969, I sent out the enclosed memo to mine managers in Northwestern Quebec and Northern Ontario, to determine the interest in the immediate areas to Noranda. The response was unanimous in favour, which prompted me to call our first meeting for October 8th, 1969, in Noranda, Quebec. Several papers were presented, and then questions were called for "re" the interest in my proposal to form a society for analysts. The response was unanimous in favour of such an endeavour, thus at long last on Oct. 8th, 1969, in Noranda, Quebec was born the organization named "Canadian Mineral Analysts". Needless to say, as the prime instigator, and then as Chairman for the 1969 inaugural and the following two annual assemblies (1970 - 1971), representing labs from all the Provinces and territories in Canada, I am genuinely pleased with the progress made over the years, fulfilling the purpose for which the C.M.A. was formed. Much credit is due the Mines Branch in Ottawa for supplying, for a number of years, printed manuals of papers presented and minutes of the annual meetings.

To the Mines Branch and the many Mining Company executives across Canada we owe a debt of gratitude for their support in my establishing a society where chemists and analysts could participate.

A picture is enclosed of participants in the first meeting.



DR. J. G. GIBBS, CIVILIST
S. J. HUNT, CHAIRMAN
S. J. SULLY, LIAISON OFFICER

Dec 3, 1969. First meeting of analysts and assayers in the formation of I. N. C. A. Montreal, Quebec.

104
June 11, 1969

TO: Mine Managers, (North-Western Quebec and Northern Ontario).

FROM: J. Gillies, Gen. Supervisor of Laboratories, Noranda Mines Limited, (Representing interested Chemists, Analysts and Assayers in Ontario and Quebec).

SUBJECT: A Proposed Meeting to be held in Noranda, Quebec, to discuss the formation of an "Analytical Information Centre" or "Analytical Association" to serve the Mining Industry.

A copy of this memo is being mailed to Mine Managers in Northern Ontario and North-Western Quebec, and to the Extraction Metallurgy Division, Mines Branch, Ottawa.

In a recent survey of opinions, expressed by Mining and Metallurgical Engineers contacted in Canada, there was general agreement that the mining industry in general and laboratories in particular would benefit considerably were there available a reliable source of information on methods, lab instruments and equipment, etc. Every lab is confronted, sooner or later, with a methods problem; the solution may be within the area of a short distance telephone call. The development of new instrumental methods and the success achieved in improving classical chemical methods now enable laboratories to report more accurate and rapid assay results at less cost than by applying the conventional time-consuming procedures of the previous decade.

Certain mineral elements which were regarded as having no useful practical purpose or commercial value not long ago are now in demand. Not enough emphasis can be placed on the importance of accurate assay values to exploration and metallurgical projects. Without precise analysis no meaningful significance can be attached to the products of the project. An active, intelligent and progressive information centre for mining industry laboratories could become a very useful bank of practical up-to-date methods, instrument advice, and equipment maintenance suggestions and recommendations.

National and International analytical chemistry and spectroscopy societies hold symposiums in metropolitan centres at which papers on new techniques are presented, followed by a discussion period, and frequently supported by an exhibition of instruments and lab equipment. However, personnel in the smaller labs and assay offices, because of distance (location), work-load, and duties of personnel, seldom have the opportunity of attending these symposiums. It, therefore, seems advisable to introduce to the North Country a "symposium" of suitable papers, thereby enabling lab analysts and assayers to discuss the presented material, voice their own analytical problems, and learn of new instrument and equipment possibilities. Participation at such assemblies and getting acquainted with other analysts should open up information channels of considerable benefit to all concerned.

CANADIAN MINERAL ANALYSTS 1969 - CONFERENCE ATTENDANCE

THE FOLLOWING LIST INCLUDES THOSE IN ATTENDANCE FOR ALL OR PART OF THE FIRST CMA CONFERENCE HELD ON OCT. 8, 1969 IN NORANDA.

(The underlined persons presented papers or spoke up.)

Noranda Mines Limited - Horne Div.	<u>E. Goodwin, Chemist</u> <u>D.J. Semple, Chief Chemist</u> D. Perkins, Chemist
Nornda Mines Limited	<u>J. Gillies, Gen Super of Labs</u>
Campbell Chibougamau Mines Ltd.	J. Malette, Chief Assayer
Cobalt Refinery	D. Quirt, Lab Technologist
Copperfields Mining Corp. Ltd.	D. Wilson, Metallurgist
Dome Mines Ltd.	R. Cooper, Assistannd Assayer
Ecstall Mining Ltd.	D. MacFarlane, Chief Assayer
Falconbridge Nickel Mines Ltd.	<u>J. Tweed, Chief Assayer</u>
Haileybury School of Mines	<u>L.C. Green, Chief Chemist</u> <u>C.C. Cornett, Chief Chemist</u> <u>J. Chilibeck, Instructor</u> <u>J.D. Frey, Dean</u>
Jones & Laughlin Mining Co. Ltd.	G. Goode, Metallurgist
Kam-Kotia Mines Ltd	R. Pang, Chief Assayer
Lake Dufault Mines Ltd.	L.A. Tegel, Research J. Cahill, Chief Chemist R. Deshaies
Lamaque Mining Co. Ltd.	A. Williams, Metallurgist
Macassa Gold Mines Ltd.	T. Graham, Asst. Mill Super.
Manitou-Barvue Mines Ltd.	Bill Dowey, Mill Super. J.P. Jolicoeur, Metallurgist <u>P. Lukey, Chief Assayer</u>
Mattagami Lake Mines Ltd.	<u>W. Hyndman, Chief Chemist</u>
McIntyre Porcupine Mines Ltd.	E. McPhail, Chief Assayer
Mines Branch, Extraction Metallurgy	R. Nice, Mill Metallurgist <u>G. Hunt, Scientific Officer</u>
Mines de Poirier Inc.	C.S. Stevens, Industry Liaison G. Ladouceur, Asst. Mill Super. A. Poirier, Chief Assayer
Molebdenite Corp. of Canada Ltd.	L. Roy, Mill Super.
Noranda Mines Ltd. - Geco Div.	<u>H.H. McDonald, Chief Chemist</u>
Normetal Mines Ltd.	L. Roberts, Chief Assayer G.L. Williamson, Mill Super.
Opemiska Copper Mines (Quebec) Ltd.	G.E. Hornsby, Chief Assayer
Orchan Mines Ltd.	A. Peterson, Chief Assayer
Pamour Porcupine Mines Ltd.	S. Belanger, Chief Assayer
Patino Mining Corp.	I. Meaney, Chief Assayer
Perkin-Elmer Corp.	G.E. Peterson, Specialist
Philips Electronics Equipment	C. Whitelaw, Application Eng.
Quemont Mines Ltd.	L.R. Gatehouse, Chief Chemist C.I. Lawton, Mill Super. D. Paille, Mill Technician D.Gordon Campbell, Metallurgist
Sherman Mines	S. Nunn, Mill Super.
Sherritt Gordon Mines	A. Perron, Chief Assayer
Sigma Mines (Quebec) Ltd.	E.J. Marcotte, Mill Super.
Upper Canada Mines Ltd.	H. Newington, Chief Assayer
Wright-Hargreaves Mines Ltd.-Wasanac	B.B. Fraser, Chief Assayer H.W. Hughes, Mill Super.
Geological Survey	John Lynch Jim Fogarty Eldon Hornbrook

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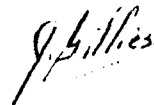
It is therefore proposed that a meeting be held at Noranda, Quebec, in October (date to be stated later), at which time several papers will be presented and discussed. In the afternoon of the same day the question of establishing a methods group or association will be discussed. We naturally hope there will be representation from all mines in Northern Ontario and North-Western Quebec.

The Mines Branch, Ottawa, have kindly consented to supply a secretary for the meeting; a copy of the proceedings will be printed and mailed to Mine Managers and representatives.

Please give this memo your kind consideration. We would appreciate a reply by September 1st as to your decision regarding representation at the proposed meeting. Locations for future meetings should also be considered by representatives at the October assembly.

There will be no admission charge to the meeting; however, each person will pay for his or her own transportation, meals, and accomodation.

R.S.V.P. Before September 1, 1969.



Address replies to:

Mr. John Gillies,
Gen. Supervisor of Laboratories,
Noranda Mines Limited,
NORANDA, Quebec.

JG/1a

Excerpts from the:
**Proceedings of the First Annual Meeting
of the Canadian Mineral Analysts
held at Noranda, Quebec - October 8, 1969**

Introduction

The meeting was held in the Curling lounge of the Noranda Recreation Centre and 55 attended, among whom were assayers, chief chemists, metallurgists, mill and smelter superintendents, researchers and educationists. Over 36 different gold, base metal and iron mines and smelters and associated industries were represented. Except for one mine representative from Manitoba, (Sheritt Gordon Mines) all mines represented were from Northern Ontario and Northwestern Quebec.

The primary function of the meeting was to establish an organization among assayers, chemical analysts and analytical chemists to promote better communications among all those engaged in the analysis of minerals, mined and processed in Canada, especially as pertains to instrumental analysis and the requisite instrumentation and analytical methods involved.

From the paper **Application of Absorption Spectroscopy To Geological Material** by **G.A. HUNT**: Scientific Officer, Chemical Analysis Section, Extraction Metallurgy Division, Mines Branch, Department of Energy, Mines & Resources.

. . . The Survey's Analytical Chemistry Section, a unit of the economic Geology and Geochemistry Division . . . have made extensive use of A.A.S. for over four years. . . Metal concentrations are read out directly on a teletypewriter from samples presents automatically and in sequence. Data is converted to punch cards for record-keeping purposes. . . .

From **Instrumental Analysis And Chemistry Courses** offered at the School of Mines, Haileybury, Ontario presented by **J.J. CHILIBECK**:

. . . In closing I would like to express my opinion that a considerable amount of time and money is needlessly wasted in our laboratories in developing methods that have already been tried and proven elsewhere or that outdated techniques are being used simply because there is not enough free exchange of information or liaison amongst educational institutions, the industry and government. . . .

Excerpts from the:
Proceedings of the First Annual Meeting
of the Canadian Mineral Analysts
held at Noranda, Quebec - October 8, 1969

From A Study Of Opinions Concerning The Progress Of Instrumentation Technology And Its Impact On Mining Industry Laboratories by
J. GILLIES: General Supervisor of Laboratories, Noranda Mines Limited.

It is a mistaken assumption that in instrumental analysis the analyst or chemist pushes the button and the machine does the work. In most instrumental work a high order of technique is required and considerable skill is needed to interpret results. The application of instruments to analytical work loads requires the services of a specialist and this particularly applies to x-ray fluorescence and atomic absorption. Methods research and development are not areas for incapable operators. The accuracy of some instrumental methods depends on the accuracy with which the classical or wet chemical analysis can be made. Therefore improvements in classical methods of analysis will lead to further improvements in the accuracy of instrumental analysis. . . .

. . . It may well be that dry sample, non-flame atomic absorption techniques will someday replace present solution vapour methods in routine metallurgical analysis.

Another matter of much interest within and without the mining industry is pollution control. Government health departments and industry are making a substantial effort to control pollution of water, air and soil. Many of you here today have become aware of these programs and probably will be involved in pollution control measures as prescribed by environmental health authorities. . . .

Excerpts from the:
**Proceedings of the Sixth Annual Meeting
of the Canadian Mineral Analysts held at
Kirkland Lake, Ontario - September, 1974**

From **Programmable Calculators In The Analytical Laboratory** by
G.N. KILLORAN: Chairman, Department of Chemistry, Northern Col-
lege of Applied Arts & Technology, Kirkland Lake.

The daily hassle shared by both small and large laboratories alike is the analysis of raw data and test results. The equipment is becoming capable of producing results very quickly but transcribing the results into prepared lab reports is quite often the slower point now. While the larger laboratory can usually afford a computer for data processing, the small lab must seek other equipment. With the coming of the programmable calculator a happy medium has been reached between the computer and the slide rule which fits requirements for most of the problems that a chemical encounters.

Question: What kind of money are we talking about for these programmable calculators?

Mr. Killoran: For the calculator without the typewriter, you're talking in the order of four or five thousand dollars. But it is still in the same price range as an atomic absorption unit, for instance. I think you would probably find that you can certainly increase your output as far as reports go, and so on. It's almost like having another typist available, once you have the programmable calculator set up, reports can be typed up and it can even type letters for you if you wish. It can be programmed by virtually anyone. If you can use an ordinary calculator, and do the calculations you want to do, you can write a program just as easily, or almost as easily. It's not something where you have to go and see a computer expert and have him do the program for you.

From **A Panel Discussion: Does The Modern Analytical Laboratory
Require More Specialists And Dedicated Instrumentation Or Is It
Only A Matter Of Degree?**

DR. BILL WOLFE: I'm just going to point out that a lot has happened in 10 years or 15 years. It's pretty hard to visualize in 1958 what it was going to be like now. And if you want to look ahead in another 10 or 15 years it's not too hard to imagine that a lot of geological samples, exploration geochemical samples, will be being analysed right on the spot without seeing a laboratory.

Excerpts from the:
Proceedings of the Tenth Annual Meeting
of the Canadian Mineral Analysts held at
Noranda, Quebec - November, 1978

From **The Classical Fire Assay** by M.A. McGUIRE: Newmont Exploration Limited, Danbury, Connecticut.

. . . .Fire assaying has always been considered more of a back room art than a science. The reason for this is partially due to the high degree of practical knowledge and manipulative skills needed to complete a successful fire assay. The theoretical chemistry pertaining to the fire assay has never been completely investigated. This has left us with a process based upon some fundamental principles, which depends upon experience and observation alone, without due regard for theory. The fire assay remains as a prolific subject for basic research.

In his classical text, De Re Metallica, written in 1556, Agricola offered this ageless advice on the fire assay:

It is necessary that the assayer who is testing ore or metals should be prepared and instructed in all things necessary in assaying, and that he should close the doors of the room in which the assay furnace stands, lest anyone coming at an inopportune moment might disturb his thoughts when they are intent on work.

Excerpts from the:
**Proceedings of the Eleventh Annual Meeting
of the Canadian Mineral Analysts held at
Kelowna, B.C. - October, 1979**

From the welcoming talk by **JAMES T. FYLES**: Senior Assistant Deputy Minister, Ministry of Energy, Mines and Petroleum Resources.

. . . .One of my early experiences in the Slocan while still a student undecided about going into geology was at Zincton when my boss and I visited the new young geological engineer on the property. In answer to my boss's question as to what he was working on, he replied, "Helping the assayer and fumigating the bunkhouses." This reply shows the relative importance the manager of that mine placed on analyses as compared to geology. Actually, the grade of the ore and concentrates and the health of the workers are more significant to the generation of cash flow than is the understanding of the geology of the deposit, although ultimately, the geology will catch up with the manager if the extension of the reserves becomes critical. . . .

From the after dinner talk by **GORDON R. HARRIS**: Mine Manager, Brenda Mines Ltd., Peachland, B.C.

. . . .To pay a tribute to the profession of mineral analyst.

Ultimately, the accuracy of your work in determining the precise amount of whatever substances we happen to be seeking to recover, and indeed the exact amount of elements which we are certainly not looking for, determines the feasibility of a new project and the continuing viability of an operating one. . . .

Anecdotes as told by Jim Tweed (founding member and managing secretary) at the 20th CMA meeting in 1988.

Allow me to digress briefly to an earlier time, or to what is called at times the good old days which in reality were not that hot.

I refer to an operation in the mid 1930's where a new gold mine was struggling to go into operation. They had a log cabin assay office with one electric furnace in a low ceilinged room. The crusher room was a separate small building large enough to house two crushers, a set of rolls, two pulverizers all driven by an overhead line shaft. There was also a riffle set up. This small building had many windows on three sides. It was mid winter with temperature minus 30 degrees, all the windows were open and the operator had an icicle hanging from his respirator, when the manager walked in and asked him if he was cold, to which he replied that he was damn near frozen. The manager asked why were all the windows open to which the operator replied that it was the only way he could see what he was doing because of the dust. There were air hoses to blow out the machines, but no dust collection system.

The manager along with his assistant manager, a chap called Robbie, decided that they would get the show on the road by doing some gold assays by fire assay. Eventually they did have a tray of twenty-four pots to be fused in the furnace. We are all aware that all samples received by the assay office are accompanied by an ID such as a paper tag with whatever symbol printed on it usually a number.

Forty minutes after the twenty-four pots were put in the furnace they were ready to come out and poured into a 24-place cast iron mold.

The manager said, "I will take these out," so putting on a pair of asbestos mitts and grabbing a pair of crucible tongs he opened the furnace door and grabbed a red hot pot full of molten slag and melted lead button, stared at the 24-place cast iron mold and said to Robbie in total confusion, "Where will I put this one?" Robbie asked him what number it was, whereupon the manager on looking into the molten slag stated that it did not have a ticket in it!!!!

Ultimately at 9 PM they did finish twenty-four assays which represented eight samples as they were all done in triplicate.

Experience is a great teacher, we have come a long way since the inception of CMA twenty years ago. I doubt that anyone in those early formative years realized how popular and helpful CANADIAN MINERAL ANALYSTS would be in the Canadian mining business.

In conclusion it is hoped that we as an organization will continue to serve a need.

THE AFTERNOON SESSION

FORMATION OF THE CANADIAN MINERAL ANALYSTS

Mr. Gillies opened the afternoon session by introducing the subject of the possible formation of a society of analysts. He reviewed briefly past attempts to form such a group and indicated the reasons for their failure. A number of reasons why the formation of such a group would be advantageous to the Canadian Mining Industry were mentioned, in particular, provision for an Information Centre, and a Methods Manual for the Mining Industry, containing representative methods from each mine.

Mr. Gillies then asked Mr. C. S. Stevens to describe the reaction he had received from Mine Managers and other people in responsible positions with regard to the need for such an organization and the support it would receive from the mining industry.

Mr. Stevens outlined his findings on the need for the formation of an analytical group. He expressed the opinion that channels of communication within the mining industry, and between the mining industry, outside industry and university, could be greatly improved. It was apparent that most of the mine personnel with whom he had spoken shared this opinion. Mr. Stevens stated that the Mines Branch would be willing to provide a recording secretary for such a group and would take care of printing the proceedings of the meeting.

Mr. Gillies then asked for comments from representatives of the various mines and mining areas who were attending the session.

Mr. Len Green, Chief Chemist, Ecstall Mining Ltd., discussed the need for information within the industry and the difficulty in obtaining this information. He felt that an analysts' group should be formed and that possibly it could be affiliated with the Chemical Institute of Canada.

Mr. Jim Tweed, Chief Assayer, Dome Mines Ltd., then spoke about difficulties they had in developing a satisfactory A.A. procedure for gold determination on several hundred samples daily. He expressed the opinion that an information-bank of chemical procedures could have simplified the problem considerably for them and would be of great value to other laboratories which were setting up such a procedure now or would be doing so in the near future.

Mr. Don Semple, Chief Chemist, Noranda Mines Ltd., also spoke of the need for exchange of ideas and procedures between laboratories in the mining industry. He stated his strong support for the formation of an analysts' organization.

Mr. Gillies then asked for comments from some of the Mill Superintendents in the audience and brief remarks were made by Mr. S. Nunn, Mill Superintendent, Sherritt Gordon Mines Ltd.; Mr. C. Lawton, Mill Superintendent, Quemont Mines Ltd.; and Mr. A. Williams, Metallurgist, Lake Dufault Mines Ltd. Each expressed strong support for the formation of an analysts' group.

Mr. George Peterson, Instrumentation Specialist, Perkin-Elmer Corp., then commented on the advantages possible from the formation of an analysts' organization and mentioned a few problems connected with the possibility of the group associating with larger analytical groups as opposed to choosing to remain autonomous. He suggested the inclusion of an instrument and equipment exhibit of particular interest to the mining industry, in conjunction with the annual meeting.

Mr. W. Hyndman, Chief Chemist, Mattagami Lake Mines Ltd., felt that formation of the proposed organization would be invaluable to mines which needed upgrading of analytical procedures.

Dean Frey suggested two ways in which the Northern College could help the association: 1) in providing library facilities at three campuses, Haileybury, Kirkland Lake and South Porcupine, and 2) providing campus facilities for the holding of future meetings of the group.

Mr. E. Marcotte, Mill Superintendent, Upper Canada Mines Ltd., spoke of the technical advantage he had found in being a member of the Canadian Mineral Processors. He expressed the feeling that the analysts' group would provide similar advantages for its members.

DECISION TO FORM AN ANALYSTS' GROUP

A vote was taken on the formation of an Analysts' Group and the meeting was unanimously in favour. Mr. Gillies then called upon Mr. Stevens for comments and to conduct the election of officers. The following were duly elected as officers and committee members to represent the analysts:

	<u>Executive Members</u>	<u>District Represented</u>
Chairman	Mr. John Gillies, Noranda Mines	Noranda area
Vice-chairman	Mr. Jim Tweed, Dome Mines	Porcupine area
Secretary	Mr. Gerry Hunt, Dept. of Energy, Mines & Resources	Mines Branch
	<u>Committee Members</u>	
	Mr. Jim Chilibeck, School of Mines, Haileybury	Haileybury, Cobalt, Temagami
	Mr. Jim Fogarty, Adam's Mine	Kirkland Lake
	Mr. Wes Hyndman, Mattagami Lake Mines	Matagami-Joutel

Committee Members

District Represented

Mr. Ron Klassen,
Sherritt-Gordon Mines

Manitoba,
Saskatchewan

Mr. Claire Cornett,
Falconbridge Nickel Mines

Sudbury area

Mr. Peter Lukey,
Manitou-Barvue Mines

Malartic-Val d'Or

Mr. Hugh McDonald,
Noranda-Geco Mine

Northwestern Ontario

Mr. Hunt, Mr. Stevens and Mr. Gillies commented regarding selection of a name for the group, following which a general discussion was carried out and resulted, on a motion by Wes Hyndman - seconded by Claire Cornett, in the selection of the name Canadian Mineral Analysts by an overwhelming majority.

A general discussion followed of the work-plan of the executive within the coming year. Suggestions were made concerning the location of the next meeting but this decision was left to the incoming executive.

On behalf of the members of the Group, Mr. Marcotte - seconded by Mr. Chilibeck, moved a vote of thanks to Noranda Mines for providing facilities for the meeting, following which the meeting adjourned.

THE CONSTITUTION
OF
THE CANADIAN MINERAL ANALYSTS

- Date: October 1, 1970
- Name: Canadian Mineral Analysts
- Membership: Membership in the C.M.A. is open to analysts and technical personnel directly connected with the analyses required in the mineral industry.
- Purpose: The purpose of the C.M.A. is to promote better communication among analysts and all those engaged in analytical procedures and the development of methods.
- Regulations:
- 1) The C.M.A. shall hold an annual meeting at a time and place acceptable to the membership.
 - 2) The Chairman, Vice-Chairman, Secretary and Treasurer shall be duly nominated and elected at each annual meeting and they shall constitute the executive of the C.M.A.
 - 3) The executive shall designate areas from which it will appoint representatives to act as liaison between the membership and the executive.
 - 4) The executive shall appoint a nominating committee and may from time to time appoint special committees from the membership for specific purposes.
 - 5) The membership fee shall be \$10.00. The annual dues shall be established by the general membership and reviewed at the annual meeting.
 - 6) The executive shall arrange for papers to be presented at the annual meeting.
 - 7) The business of the annual meeting shall be conducted in accordance with parliamentary procedure.
 - 8) Ordinary resolutions shall be passed by a majority vote of those attending the annual meeting. Changes in the constitution shall be passed by a two-thirds majority vote of those in attendance and shall be introduced at the annual meeting one year prior to the one at which the changes are contemplated.