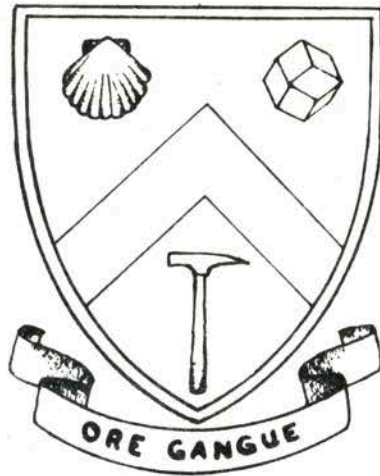


# CONCENTRATES



ORE GANGUE

1961-'62



annual  
publication of the  
ore gangue,  
geological society,  
university of saskatchewan.

ORE GANGUE  
1961-62 EXECUTIVE

President -	M. Rutherford
Secretary -	A. Clark
Treasurer -	N. Kopperud
Social Director -	J. Cherry
Third year Engineering Representative -	G. Thamer
Third year Arts Representative -	M. Larson
Concentrates Editors - Assistants -	N. Dircks and D. Poliquin D. Boechler, R. Bross, J. Cherry, A. Clark, P. Copper, L. Hakl, D. Hogg, L. King, N. Kopperud, M. Larson, A. Minty, M. Rutherford
Typists -	Mrs. L. Sins Mrs. R. Stirling
Illustrations -	Elaine Dircks

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E. Wholberg, G. Krueckl, D. Boechler.  
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D. Hogg, Dr. G. Caldwell, C. Muirhead, T. Faulkner,  
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Dr. W. O. Kupsch, Dr. N. Wardlaw, Dr. A. R. Byers.

Missing: Dr. L. C. Coleman, Prof. F. H. Edmunds, R. Bross,  
J. Cherry, P. Copper, L. Hakl, W. Janoshewski,  
J. McCleary, D. Mader, B. Mertz, H. Morton,  
E. Sealy, Z. Hajnal, R. Johnson.



61-62



61-62



## EDITORIAL

The date is March 19th, we have just finished preparing the 'Concentrates' for typing and printing. The last segment to be done is this editorial. We hoped that by making it the last task, impressions of the year's work, thoughts and ideas we have collected, and the extra time would all help to mould this into a worthwhile contribution.

First of all, we have noticed the beneficial results on students from talks by noted people in the field of geology. We also noticed student's surprise and interest upon hearing Dr. MacKenzie's intimate account of people we know only as authors of imposing text books. From this we concluded that something should be done on the student level to improve communication with other geological institutions.

Specifically we are thinking of contact between our own Ore Gangue and the Geological Societies of our closest neighbors, the Universities of Alberta and Manitoba. We feel that much would be gained in broadening the scope of the students and increasing the number of their acquaintances in the field of geology. By visiting these departments students could see different ideas in organization, courses, text books and interests.

The excursions to these Universities could be set up in the form of an "exchange weekend". This could include a tour of the geology department, several formal talks by professors and students, sports competition and a social gathering such as a meal and dance. We hope the new executive will contact the Geological Societies of these universities to get their opinion on such an interchange.

Another direction in which we feel the Ore Gangue should venture next year is into intramural sports. This year a hockey team was entered and it was seen that we do have the talent and interest of the members for sports here. For several other team sports volleyball, basketball, and football, we should not have too much difficulty raising a team. In particular such an arrangement would familiarize the 2nd and 3rd year students earlier in the year with fellow members and the Ore Gangue staff. Flexibility in the first year would be desirable so that we enter only where interest lies and not tackle sports where a wholesale draft of participants is required.

Such arrangements can be made through the Engineering and Arts College sports set-up. This would have to be looked into before the 1962-63 term and would likely come under the jurisdiction of the Social Director. The introduction of sports would perhaps make a sound plank in the platform of any aspirant for this position.

## The Department of Geological Sciences 1961-1962

F. H. Edmunds

Congratulations go to Dr. Mawdsley on his appointment as Dean of Engineering. His loss to the Department is not as great as it might have been because of the close contact he retains as Dean and also as a member of the geological staff. This is a very strenuous year for Dr. Mawdsley who, in addition to taking over the Deanship and continuing as Director of the Institute for Northern Studies, is President of the Canadian Institute of Mining and Metallurgy. In the latter capacity he is travelling extensively and will have visited most of the thirty-eight branches of the Institute. He has been very actively involved in reorganization work which will have far reaching effect in improving the functions and services that the Institute renders to the mineral industry of Canada.

On becoming Head of the Department I am conscious of the responsibilities and am grateful that Dr. Mawdsley's council is available to me. With the assistance of a congenial, most able, and energetic staff I am confident that the Department will maintain its eminent position as one of the outstanding undergraduate and graduate geology schools of Canada.

It is appropriate here to make reference to certain changes that are being made in the undergraduate courses. They are designed to improve the overall training and include the introduction of a Palaeontology class in the third year Geological Engineering course and a Field Geology class. The introduction of Palaeontology will necessitate some reorganization of the fourth year to take effect in the 1963-64 session. Academic and administrative approval has been obtained for the Field Geology class to begin in 1963. It will be held in the Little Rocky Mountains and will be of three weeks duration immediately following spring examinations. This class will be taken by all Geological Engineering, Honours Arts and Science and those Arts and Science students who are specializing in geology. For the Arts and Science students it will replace the spring survey camp.

Last summer Professor R. F. Palmer, a mining graduate of McGill, joined the Department staff. He came to us after having been manager of the Helen Mine of the Algoma Steel Company for a number of years. We are very fortunate to have Professor Palmer whose wide experience in Canadian and South African mines, understanding of the training requirements needed for mining personnel, and genuine interest in students, auger well for the establishment of an outstanding Mining Engineering course.

John Anderson Thomson, a charter member of the Ore Gangue, has been with us this session instructing in both geology and surveying. We were very fortunate in being able to persuade him to leave the flesh-pots of Yellowknife and winter in Saskatoon. We trust that we shall be able to benefit from his experience in future years.

At the beginning of this term we welcomed Dr. W. S. MacKenzie of Manchester University. He is with us for four months as a Nuffield Fellow. Dr. MacKenzie, an eminent petrologist, is giving an advanced

course to graduate students and staff. While here he is collaborating with Dr. Smith of the Saskatchewan Research Council in writing a book on the feldspars.

I would like to take this opportunity to extend best wishes to all the old Ganguesters and an invitation to visit us whenever possible. They will find our quarters considerably changed, although we have not yet achieved a building of our own. To those graduating this year my sincere wishes for a successful future in their chosen field.

Canadian Institute of Mining and Metallurgy

J. B. Mawdsley

As President of the Institute for the year 1961-62, I have had occasion to find out much about this important Canadian Society. So far this year (March 16th) I have visited nineteen of its thirty-eight branches, as well as attending the Annual Meeting and two of the Divisional Meetings. This has taken me from Victoria to St. John's and north to Yellowknife and Chibougamau, and has given me the opportunity of learning of its importance.

In the Institute's Charter granted by Parliament in 1898 two of its purposes read as follows:

First, to promote the arts and sciences connected with the economical production of valuable minerals and metals, by means of meetings for the reading and discussion of technical papers, and the subsequent distribution of such information as may be gained through the medium of publications.

Fourth, to encourage and promote these industries by all lawful and honourable means.

The Institute has tried faithfully to do all this, and as well not to neglect mutual association and comradeship which has always been an important element with those working in the mineral industry. It is actually the chief representative in Canada of those employed in, or associated with, the mineral industry on the professional level, and tries through its publications to further their technical knowledge as best it can.

Like all organizations in these rapidly changing times it is finding it increasingly difficult to satisfy everybody. This is not surprising when one considers the recent great advances in the Canadian economy and in technology. The volume of technical papers has doubled in the last eight years. The problems are complicated for the Institute by the great variety of specialists that are now found in the mineral industry. Due to their divergency of interests there are now seven, largely autonomous, Divisions: Metal Mining, Coal Mining, Metallurgy, Geology, Industrial Minerals, Petroleum and Natural Gas, and Electrical-Mechanical. These are now served by one monthly Bulletin



and Transactions and occasional special volumes such as Structural Geology of Canadian Ore Deposits and The Milling of Canadian Ores.

The Institute is governed by a Council of forty-seven, composed of: the President, three Past Presidents, a Vice President and five Councillors from each of the six geographic Districts and the seven Chairmen of the Divisions. It is an able, representative and democratically elected group, well capable of guiding the Institute. Last fall it decided to meet the problems of two of the Divisions in a piece meal fashion. It granted \$2500 to the Metallurgy Division to help them stage their Divisional Meeting in Hamilton next fall and publish their symposium of papers. It also set aside \$25,000 to be spent over two years to recruit and satisfy the great number of potential members involved in the oil and gas industry in Western Canada that are not now in the C.I.M. but in its American counterpart. As a result of this a very experienced person, Mr. J. G. Ditchburn, has been appointed western field secretary to be resident in Calgary and part of his duties will be to edit a Petroleum and Natural Gas Division Quarterly that will contain Canadian papers of special interest to members of this Division.

It was obvious to the Council that the above did not adequately deal with all aspects of the Institute. Accordingly it was moved and passed that the President collect all relevant data and appoint an ad hoc committee to bring to Council recommendations for the betterment of the Institute in all its functions. As a result of circularizing the top brass, no less than twenty-eight briefs and letters containing many critical and useful suggestions are now being mulled over by the small ad hoc committee. It is obvious on many counts that many of the Institute's members feel changes are in order but that they are right behind this organization, which represents the bulk of the professional members of the Canadian mineral industry.

Among the changes that may eventually come out of this and subsequent related studies, one, is keep their entities but possible group the present seven technical divisions into three or four Sections; and, second, for each of these Sections to issue possibly separate Quarterly transactions, as well as issue a monthly bulletin of general interest containing in each issue two or three of the most interesting papers from the transactions, abstracts of the rest and of other papers of interest to the mineral industry in Canada, and news of the branches etc. Under this scheme a member would be entitled to the bulletin and the transactions of his Section.

The membership of C.I.M. is 6,000, a sixth the size of the 36,000-member American counterpart, the A.I.M.M. However, the population of the United States is ten times that of Canada, so in proportion to population C.I.M. is larger.

The Institute has always been keen about its Student Members. This year there are 682 Student Members, of which 24 are members of the Ore Gangue. Instead of the regular dues of \$20 a year the students pay two dollars and receive the bulletin, which

costs a good deal more than two dollars to produce, and other privileges. At Sectional, Regional and Annual Meetings they also receive special consideration, and there are prizes for an important Student Essay competition. A Student Member has the privilege of starting to associate with his seniors in the mineral industry, and its publications will aid him in his studies and future development. The breadth of interest of its members will help to assure, as the years go on, that his views will not be narrow and limited to his specialty, but rather that he will see the nationally important Canadian mineral industry in true perspective while developing his special professional skills and usefulness in his chosen field.

#### Mawdsley-Edmunds Scholarship Fund

In the University year 1960-61 the Ore Gangue decided to honour Dr. Mawdsley and Professor Edmunds for their many years of hard work in the Geology Department at this University. They did so by establishing a scholarship named after them. Largely through the work of Dr. Byers, Murray Roed, John Cherry and Terry Colin, the first steps in establishing the Mawdsley-Edmunds Scholarships were overcome that year. The 1961 graduating class pledged themselves generously and this year we see past graduates responding in the same spirit.

Prior to this academic term, the past Ore Gangue members formed an executive to oversee the forming of the Mawdsley-Edmunds Scholarship Fund. The executive divided Canada into regions and picked a past Ore Gangue member in each to act as regional chairmen. These men have undertaken to visit all the old members and it is up to the present Ore Gangue to contact all 1961 graduates and do our part.

Earlier this year, the Ore Gangue arranged for the purchase of numerous items such as paper, pledge cards and blank cheques for the scholarship fund. More recently we approached the graduating class of 1962, and they generously pledged the same amount as the 1961 graduates.

M. Rutherford,  
Ore Gangue President

#### Field Trip

Thanksgiving weekend in Malta, Montana, was a busy time for visitors and residents alike as the University of Saskatchewan geology students invaded the quiet little town on their field trip. About forty students and seven professors took part in the trip, which left Saskatoon at 8:30 a.m. on the morning of October 6.

Dr. W. O. Kupsch described the geology of the land along the route during the journey to Malta. The prairie in particular was very interesting when seen from a geologist's point of view. Stops were made at Swift Current Creek and at a point a few miles from Malta to observe the geology firsthand.

The group was treated to a meal upon arrival by the Malta Chamber of Commerce, and were welcomed to the town by the Mayor of Malta and the President of the Chamber of Commerce. Each member of the group was presented with a quartz crystal by the Mayor "as a little souvenir of your visit".

The Mayor added that it had been arranged that any member of the group who wanted to go to the football game between the Malta Mustangs and the Fort Benton Longhorns that same night could get in for half price; almost everyone took him up on the offer. Once at the game, the group proceeded to demonstrate their impartiality by cheering for Fort Benton during the first half, and for Malta during the second half. After the game, many of the fellows went to the high school victory dance where they captivated the distaff side of the crowd with their sophistication, good looks, and open pocketbooks.

After the dance, the Geology boys went on a tour of the various cultural establishments in town, notably those with a two o'clock curfew. The fellows showed the astounded natives their amazing absorptive capacity for culture.

Next morning during breakfast many were showing symptoms of having absorbed an excess of culture. However, all were on their way to the Little Rockies at 7:00 A.M.

The first official part of the field trip was a traverse up Ruby Gulch. After this traverse, the group split into two parts, the hard-rock specialists staying at Ruby Gulch while the soft-rock section went to Morrison Dome.

The hard-rock party went through the abandoned Ruby Gulch gold mine, observing the mine buildings themselves, the structure of the gold-bearing rock, and the old glory hole. The soft-rock section did a traverse to Morrison Dome, making out a complete lithological description of each formation encountered on the traverse.

After the geology for the day had been finished, the group went back to Malta, where they spent the night soaking in some more culture, and generally fraternizing with the natives.

Sunday morning the group went back to the Little Rockies, and started the day off with a walk up Mission Canyon. The afternoon was spent preparing a stratigraphic section of Brown's Gulch. The Gulch is ideal for this type of traverse since a complete geologic section from Pre-Cambrian to Cretaceous is present within the space of a mile.

The weather for the field trip was consistent - consistently poor. It snowed all night before the Ruby Gulch traverse and melted for the next two days.

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## ORE GANGUE ACTIVITIES

### Weiner Roast

An event which has become an annual affair, the Ore Gangue weiner roast, was scheduled for the early part of October. Initial interest was high but the persistence of very disagreeable weather during the week prior to the planned date of Friday, October 20, resulted in several cancellations.

On Friday afternoon though, the temperature rose, the sky cleared and the event was officially "on" again. About a dozen couples were on hand when Big Red unleashed the Ford and led the caravan out to Beaver Creek. The starlit night, crackling fire, fine refreshments and gay banter made it all worthwhile.

### Ore Gangue Baseball Pool

Once again a few hearts were warmed by Ore Gangue baseball pool prizes, even if they were not warmed by the outcome of the '61 World Series.

Typical of the Ore Gangue, participation was excellent. Suitable prizes were won by L. Kasmar and T. Bence.

New York won over Cincinatti by a score of 4:1.

### Basement Clean-Up Campaign

During the fall term, the Ore Gangue members undertook the major task of cleaning up the basement area of the department. Professor Palmer supervised the operation, and why anyone would purposely sweep up in the wake of a hurricane still isn't too clear. Recruitment of able workers was aided with a high pressure tactic press gang.

The basement area had long been an eye-sore as well as a fire hazard. At one time several years ago the basement was flooded to a depth of three or so feet. As a result, most of the contents were in a highly rotted and deteriorated condition. However some still useful material, including well records and samples, was salvaged and placed on rearranged shelves to ease the task of sorting the material by the professors.

Recementing of the floor, walls, and supporting pillars is to be undertaken and when completed, the basement will once again provide much needed storage space.

### Float

In the 1960 Homecoming Parade, the Ore Gangue entered a float - its first one for some years. The entry won first prize in the Stunt section of the Parade. Accordingly, this year's Ganguesters were quite enthusiastic about the idea of continuing this event.

Things were well planned; materials and ideas accumulated. The intention was to build an oil derrick which would function mechanically, possibly pumping ale instead of hydrocarbons. There was no shortage of ideas concerning modification, frills and details. The "Mongrel Oil Co." (trade mark - a snarling red wolf) were to be sole owners of the gusher.

On Friday evening about twelve hours before the parade the float builders assembled with materials and refreshments at the Exhibition grounds where most of the other floats were being assembled. Before long it was noticed that the flat bed on which the float was to be constructed was not present. It was then learned that due to an unfortunate set of circumstances, the truck would not arrive until the following day.

Now, Ore Ganguesters are never defeated, but this was a serious set-back. However, within minutes their objectives were set on new goals. Constructive criticism of the other floats, boat racing, the female segment and cool beer were worthwhile diversions.

### Geological Engineering Queen

As has been the tradition in the Engineering building for decades, various candidates are chosen to compete for the Engineering Queen crown. The judges are any member of the Engineering Society who wishes to vote and the winner is announced at the Engineering Dance, "The Beersmen's Brawl".

The candidates are chosen by each of the various types of engineers, and, as usual, this fall the geologicals, geophysicists and petroleumists banded together to choose a candidate. Many potential candidates were considered and rejected until finally an interview was arranged with the President of the Nursing Society. At this meeting, the group of 4th year geologicals and petroleumists present pressed for permission to interview every girl in Ellis Hall. (This would be a tremendous undertaking but these gentlemen believe the success only results from perseverance and stamina.) However, the Nursing President insisted that her plan be followed. Accordingly, that evening a group of nine gathered at Ellis Hall to choose a candidate from those presented by the Nursing Society. Miss Loretta Inkson, a 3rd year Diploma nurse was chosen, and in the Queen contest was chosen as one of the Princesses.

### The Fall Banquet

The Ore Gangue Society held their annual fall banquet on November 17, 1961, at Bob Lynns.

The first social function of the year was properly initiated earlier in the afternoon by an "armchair" tour of one of the city's major industries. The new type of tour proved very popular with the Ore Gangue since it left more time to enjoy the product.

In keeping with tradition, members and staff gathered for a cocktail hour and hearty sing-song, and then enjoyed a buffet style meal.

Following the dinner, Dr. Coleman gave an interesting travelogue, featuring Venezuela. His talk was illustrated by a fine collection of slides.

To conclude the event, Ore Gangue members and their charming partners danced to music provided by an exclusive orchestra.

### The Spring Banquet

On Saturday evening, March 10, Ore Ganguesters were placed in a new environment - one of smooth, cool refreshments, comfortable chairs, interesting speakers, and at times the wail of a trumpet leading a new twist number. All these activities were confined in the relaxing atmosphere of the Saskatoon Golf and Country Club. It was soon noticed that the Ganguesters were having no difficulty adapting and as one extrovert put it, "Man, I could survive like this forever."

Mac Rutherford, Ore Gangue president, gave the toast to the Queen. Following this an excellent turkey supper was served. Bob Berven toasted the grads, to which Doug Mader replied on the grads behalf. Ivar Zemmels gave the toast to the faculty; Dr. Caldwell replied by relating a few anecdotes.

The guest speaker of the evening was Dr. W. S. Mackenzie from the University of Manchester. Dr. Mackenzie did not show any slides or movies, nor discuss phase equilibrium, both of which were expected. He did however present an extremely interesting and enjoyable account of his impressions of Canada, along with episodes from his past history. As well he related several of his personal experiences with some of the leading men in the field of experimental petrology. Bowen, Tuttle, Balk and Deer became very human through his descriptions, rather than the formidable text-book personalities we usually think of them as.

Dancing and refreshments were the order from 9:30 until 2:00. Shortly after the band departed the Ganguesters headed home after a very enjoyable evening.

THANKS TO

Mrs. Sins: Librarian, secretary and consultant on all departmental matters. Also thanks for the role played every year in preparing the "Concentrates" for publication.

Ernie Hawkins and Cy Pannel: Lab Technicians, who help to keep the department in equilibrium, for thin section and lab preparation work and other unheralded tasks.

Dave Churchill: Department Photographer and dark room expert for reprinting and palaeontology section work.

All contributors of articles for the Concentrates.

CONGRATULATIONS TO

Professor Edmunds: on his appointment to Head of the Department of Geological Sciences.

Dr. Mawdsley: on his appointment to Dean of Engineering and also as President of the Canadian Institute of Mining and Metallurgy.

Malcolm Rutherford: receiver of this year's Leadership Award.

The 1961-62 Ore Gangue Executive for a job well done.

John Cherry and Jim Dick: summer essay winners in Engineering and Arts respectively.

Doug Boechler and Duane Poliquin for making the winter carnival a colorful event.

Bob Berven and Lloyd Manz for their efforts in trying to keep the Malta entertainment establishments open - permanently.



## Ore Gangue Sports

### Hockey

Once again the "Ganguesters" took to the ice lanes. Their entrance into intramural hockey was explosive. Although the win-loss record stood at 3-2 it was the indomitable spirit of the Ganguesters which caught the sport world's fancy. This spirit was at its best when they lost their final intramural game to miss the playoffs. Although short-handed they twice battled back from one goal deficits before going down to a 3-2 loss against an all star Education team.

Thus the curtain fell on a successful season. As a famous Premier of Saskatchewan once said upon viewing Alberta's oil - "You can't beat geology!"

### Bonspiel

The Ore Gangue held another successful bonspiel this winter. Ten rinks participated. The bonspiel was played on four consecutive Saturdays beginning January 27.

Liquid stimulants were offered as prizes to the winners of both the "A" and "B" events.

Mac Rutherford and his team Lorne Kasmar, Tim Coates and Lee Forsythe won the "A" event.

In the "B" event, skip Bud Hodgson and his men Jeff Sample, Al Clark and Lloyd Manz fought to victory in an extra end.

No reports are available on the effect of the prizes on the winners.

## Ore Gangue Elections

### Elections for 1962-63 Term

A new flood of posters decorated the walls of the Geology Department in mid-March in preparation for the spring elections. Positions opened to nominations were for President, Secretary and Treasurer. Election campaign speeches were heard March 12. Al Clark, a presidential candidate, felt that much more should be done in the way of promoting fellowship among the Ore Ganguesters and publicizing of the Ore Gangue, both on and off the campus. Lee Forsythe, the second candidate for the presidency, assured his audience that the Ore Gangue could be led to become an even more beneficial and effective organization in the future.

Nominated for the position of Secretary were Murray Larson and Walter Hartzell and for Treasurer were Jeff Sample, Bud Hodgson and Blaine Scott.

Successful candidates were:

President	-	Al Clark
Secretary	-	Murray Larson
Treasurer	-	Bud Hodgson

Congratulations to the new executive and may they be able to maintain and promote the interest of the Gangsters in their organization.

The positions of Social Director and Concentrates Editor will be filled early in the Fall term.



Treasurer's Report

The Ore Gangue Treasury maintained a relative equilibrium by starting out with nothing and ending up with nothing. Since the purpose was not to make money, but to give the Ore Gangue members a full \$2.00 worth of educational and social activities, we succeeded!

Ore Gangue Operation

		Dr.	Cr.	Bal.
1961				
Sept.	Fifty-nine members . . . . .			88.50
Oct.	Float Deficit. . . . .	5.92		82.58
	Printing Membership Cards. . . . .	13.61		68.97
	Baseball Pools . . . . .		14.65	83.62
	321 forms. . . . .		8.00	91.62
	Printing 321 forms . . . . .	4.01		87.61
Nov.	Fall Banquet . . . . .		24.68	112.29
	Envelopes for Secretary. . . . .	1.03		111.26
	Weiner Roast Loss. . . . .	2.00		109.26
Dec.	Christmas Cheer Raffle . . . . .		19.50	128.76
	Ore Gangue Christmas Cards . . . . . 10.71			
	Less printing . . . . . 9.43		1.28	130.04
	Flowers for Cathy Muirhead . . . . .	5.00		125.04
1962				
Jan.	Interest (1) . . . . .		4.52	129.56
	Loss on Ore Gangue Jackets . . . . .	4.00		125.56
Feb.	Loss on Curling Prizes . . . . .	3.00		122.56
	Film Rental. . . . .	1.75		120.81
	Ore Gangue Hockey Sticks . . . . .	2.50		118.31
Mar.	Spring Banquet . . . . .	98.14		20.17
				<hr/>
		Balance	Cr.	\$ 20.17
				<hr/>

Concentrates

Cash on Hand . . . . .		250.47
Fifty-nine members . . . . .	29.50	279.97
Subscriptions. . . . .	85.75	365.72
Jubilee Donations (2). . . . .	47.75	413.47
Scholarship Donations (3). . . . .	13.00	426.47
		<hr/>
	Balance	\$ 426.47
		<hr/>

- (1) Concentrates and Operating fund in same account, therefore interest represents total bank balance.
- (2) Jubilee Donations to be turned over to the Department of Geological Sciences to pay for Jubilee edition of Concentrates.
- (3) To be turned over to the Scholarship Committee, U. of S.

GUEST SPEAKERS and STUDENT SEMINARS

Guest Speakers

Dr. E. Hall

The Ore Gangue was indeed pleased to have Dr. Hall as its first speaker of the year. After briefly discussing the organization of the Geological Survey of Canada, he outlined the many and varied programmes now being undertaken by the G.S.C. In each of these programmes Dr. Hall discussed the part the student or recent graduate would be taking in the G. S. C.'s work.

Dr. J. B. Mawdsley

Dr. Mawdsley was elected President of the Canadian Institute of Mining and Metallurgy early last year and is presently the Dean of the College of Engineering. Dr. Mawdsley outlined the problems of group representation in the rapidly expanding field of geology. We were made aware of the many services and privileges provided to the student members by the C.I.M.M. The talk was concluded with an interesting travelogue of a trip made by Dr. Mawdsley and several other scientists through Northern Canada.

Mr. P. Almond

A post-graduate of our University, Mr. Almond represented the Iron Ore Company of Canada. He gave us a slide illustrated talk concerning his Company's operation in the Labrador Trough. His discussion touched on the departmental organization of the Company, several being open pit operations, research projects, and future plans.

Dr. Deutsch

Dr. Deutsch is the chief geologist with Imperial Oil. A proponent of continental drift and polar migration, Dr. Deutsch gave a slide illustrated talk which summarized the history of these theories and some paleomagnetic evidence which is used to support them.

Mr. H. D. Strain

The Ore Gangue's final guest speaker of the year was Mr. Strain, chief geologist at the Esterhazy Potash Mine. He presented an interesting talk, illustrated by slides and a movie, on the development of the mine and the problems involved. The numerous questions answered by Mr. Strain after the talk gave evidence to the interest in his speech.

Student Seminars

During the winter most of the senior and graduate students gave seminars on various topics. Many of the talks were related to the individual's previous summer's work.

Elwood Wohlberg and Malcolm Rutherford gave descriptions of their work in connection with the Coronation Mine Project.

Ed Zederayko and Ivar Zemmels gave accounts of their activities in the Arctic Islands.

Blaine Scott and Gerry Bates discussed their activities in connection with mineral exploration in the Northwest Territories.

Ted Faulkner gave a very informative talk on Lateral Secretion of Ore Deposits.

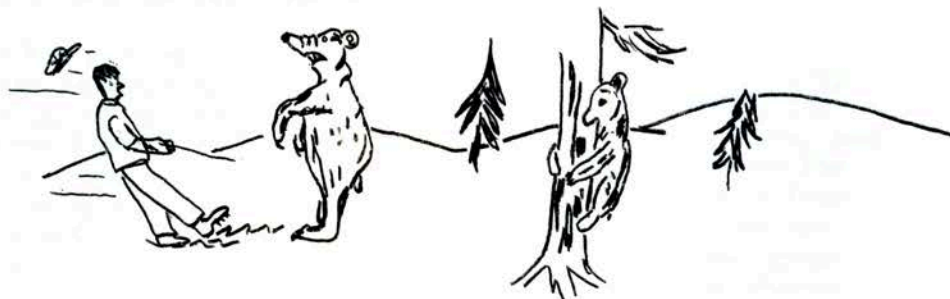
Paul Copper and Alan Clark gave accounts of their work in the Rocky Mountains of British Columbia.

Lloyd Manz and Doug Boechler gave a joint lecture on their work in the Yukon. They had entitled the talk, "The Stamping Grounds of the Flying Red Horse."

Lee Forsythe discussed his activities with the Department of Mineral Resources in Northern Saskatchewan.

Duane Poliquin and Norm Kopperud held an interesting discussion on equipment required for summer work in different types of geological work.

Jeff Sample would up the year's list of seminars with a slide illustrated account of his summer's work with the Geological Survey of Canada in the Ogilvie Mountains of the Yukon.



### A LOOK AROUND

Returning from the field last fall to start the 1961-62 term the geology students were awed by the changes that had taken place around the Department during the summer.

To begin with the old Mechanical Engineering Lab. was added to the Geological Sciences Department. The south half of it was remodeled into two offices, one for Dr. Kupsch and the other for Dr. Coleman, and a new combined Geophysics and Sedimentation Lab. California Standard Oil Co. provided a grant for equipment in the Sedimentation Lab. The north half has become the Petroleum Engineering Lab. It also contains three new offices, occupied by Professor Nind, Dr. Hall and Professor Palmer.

From all the haphazard collections of rocks and minerals Dr. Coleman has started to set up three standard reference collections for Mineralogy, Petrology and Economic Geology.

The advanced Petrology and Mineralogy Lab has doubled its powder diffraction capacity and equipment has been added for single crystal diffraction studies. There has been an increase in research optical equipment - two research microscopes, a universal stage, a refractometer and a calculator. The addition of this new equipment was made possible through grants given by: C.M. & S., Gunnar Mines Ltd., Eldorado Mining and Refining Ltd., McIntyre-Porcupine Mines Ltd., Ventures Ltd., Falconbridge Nickel Mines Ltd., Giant Yellowknife Gold Mines Ltd., and the National Research Council.

The main office was the scene of a renovation and Mrs. Sins now has a new desk.

Another addition that has just been completed is Dr. Byers' advanced structural lab. This lab will be used for testing strength of materials involving model experiments to reproduce fault and fold structures. Some of the money for this lab came from the Saskatchewan Research Council and the rest from the Department.

Last but not least is the new equipment in the Palaeontology Lab - one Lertz research microscope and photographic attachments for micropaleontological studies, one Croft parallel grinder for serial sectioning of macro fossils, one single lens reflex camera and stand for macro fossil photography. This equipment was bought with grants from the Saskatchewan Research Council, National Research Council and the Department. A gift of \$2000 worth of paleontological and stratigraphic books and papers was made by Dr. D. F. Squires of the American Museum of Natural History, New York, to Dr. W. G. E. Caldwell. Dr. Caldwell gave them to the Geology Library.

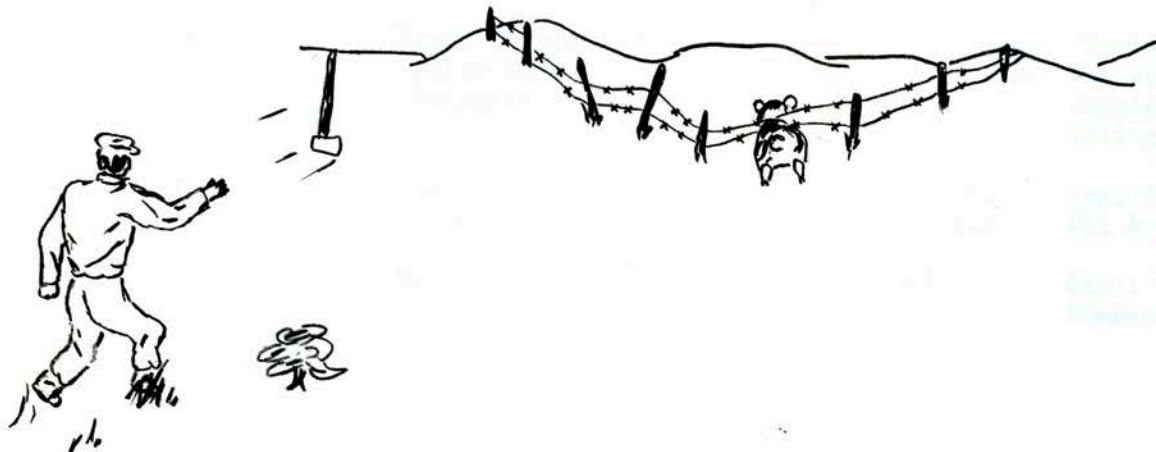
The Radioactive Contamination of The Geological Museum

**FLASH!** The antique isotope producing equipment in the geology museum has finally broke down. Disaster followed. The museum was found to have been contaminated with radioactive material.

Speedy sealing off of the museum kept the contamination confined. However, there was some suspicion that it was sealed off too quickly, for it was at this time that Mr. E. Zederayko disappeared. For several days scratching sounds were heard, seeming to come from the museum. Despite being curious, no one dared to break the seals and investigate. After several days the scratching became weak, then quit altogether.

In early March experts from Chalk River arrived to clean up the museum. Contaminated material was put in barrels and shipped back to Chalk River for burial. We wonder if Zed was included in this shipment. In any event, no official statement has been issued.

The Chalk River experts are finished scrubbing and pounding with air hammers now. The museum is still off limits but will be usable again by next fall.



GRADUATE AND MASTER STUDENTS - 1961

Graduate Studies

<u>Name</u>	<u>Thesis Topic</u>	<u>Summer '61</u>	<u>Summer '62</u>
O. Dixon	Middle Devonian Tabulate Corals of the N. W. T.	Cal. Standard	Cal. Stand.
Bill Ward	Colorado Group of South Western Saskatchewan	G. S. C.	Cal. Stand.
Norman Ruffing	Jurassic of Southwestern Saskatchewan	Union Oil of Canada	Undecided
Paul Copper	Devonian Atrypaceids from Mackenzie Territory	Shell Oil	Undecided
Malcolm Rutherford	Liquid Inclusions in Quartz of the Coronation Mine Area used to Determine Temperature of Formation	G. S. C.	G. S. C.
Yvonne Pocock	Devonian Schizophorids, Northwest Territories	-	Undecided
Blaine Scott	Trace Copper and Zinc, Overburden over Coronation Mine, Saskatchewan	D. M. R. (Sask.)	Undecided
Wylie Hamilton	Mineralogy of Bearpaw, Southwest Saskatchewan	Pan-American	Cal. Stand.
Ted Faulkner	Trace Elements of Coronation Mine and Nearby Sulphide Deposits	Thesis Work at U. of S.	Thesis work. Lab work and sample collecting.
Bev Pfeffer	Textures of Mississippian Carbonate Rocks	D. M. R. (Sask.)	Can. Pac. Oil & Gas
Barry Lahey	Middle Devonian Swift Current Platform Area	RCAF	Shell Oil Edmonton



ENGINEERING

- Bates, Jerry             '62 - Undecided  
                          '61 - Canadian Nickel Co., Yellowknife, N.W.T.  
Thesis - Ventilation in Metal Mines
- Bence, Ted               '62 - G. S. C. - geological mapping  
                          '61 - S. R. C. - Flin Flon  
Thesis - Ore Mineralogy of Chisel Lake Mine
- Bross, Ray               '62 - Pan Am., N. Alberta, geophysical exploration  
                          '61 - Imperial Oil, Slave Lake area  
Thesis - Seismic Sources
- Boechler, Doug         '62 - California Standard, Alberta - petroleum production  
                          '61 - Mobil Oil, Yukon  
Thesis - Operations Research Applied to Secondary Recovery
- Cherry, John            '62 - Mobil Oil - exploration in the Rockies  
                          '61 - Imperial Oil - exploration in the Arctic  
Thesis - Study of Surficial Deposits in Saskatoon Area
- Clark, Alan             '62 - California Standard - surface mapping in the Yukon  
                          '61 - California Standard  
Thesis - The Buff Beds of Paleozoic Age of N.E. British  
   Columbia
- Dircks, Norbert        '62 - Undecided  
                          '61 - Augustus Exploration, La Ronge - prospector  
Thesis - Permafrost Problems in the Mining Industry
- Eckstrand, Len         '62 - Inco, Thompson, Manitoba - mining engineering  
                          '61 - D. M. R. Stoney Rapids  
Thesis - Correlation of Grenodiorite with Quartz Diorite  
   of Flin Flon Area
- Hakl, Lloyd             '62 - California Standard - exploration geophysics  
                          '61 - Mobil Oil - exploration geophysics in Southern  
   Saskatchewan  
Thesis - Second Derivatives in Gravity Interpretation
- Kasmar, Lorne         '62 - Undecided  
                          '61 - International Minerals and Chemicals of Canada,  
   Esterhazy  
Thesis - LPG Miscible Slug Process - Considerations in  
   Design
- Kopperud, Norm        '62 - Iron Ore Co. of Canada, Schefferville  
                          '61 - Cominco, Kimberly  
Thesis - Underground Use of Ammonium Nitrate Explosives

- Krueckl, George '62 - H.B.M. & S. - exploration  
'61 - Cominco - base metal exploration - Kootenays and  
Vancouver Island  
Thesis - Metamorphosed Carbonate Rocks
- Mader, Doug '62 - Mobil Oil, Calgary  
'61 - Camp Easter Seal, Watrous  
Thesis - Graphic Method of Interpretation
- Manz, Lloyd '62 - Undecided  
'61 - Mobil Oil - exploration in the Yukon  
Thesis - Correlation of Bearpaw Formation in South  
Saskatchewan River Valley
- Poliquin, Duane '62 - H.B.M. & S. - exploration  
'61 - Cassiar Asbestos, Yukon  
Thesis - Prospecting Possibilities of the Tintina  
Mountains, Yukon



SUMMER ACTIVITIES OF THE STAFF - 1961

Dr. A. R. Byers

In early June I attended the Royal Society meeting at Montreal and presented a paper "Major faults in western parts of the Canadian Shield with special reference to Saskatchewan". During the latter part of the month a few days were spent at the Coronation Mine near Flin Flon. I then returned to the University to teach Geology 101 during the Summer School session. The remainder of the summer was spent in northern and southeastern Ontario visiting mining properties and looking at some of the local geology.

Dr. W. G. E. Caldwell

The early months of the summer were spent with the Shell Oil Company of Canada in Edmonton, when I devoted some effort to solving problems of Middle Devonian biostratigraphy in the Northwest Territories (a field of research in which I am particularly interested). It was pleasant to be able to continue a happy and rewarding association with Shell that has existed for a number of years. While in Edmonton, I was able to visit Jasper, and see again this delightful town in its most scenic setting. Dr. Charlesworth, formerly a faculty member of the Department, was mapping in the Jasper area at the time, and he kindly gave me a conducted tour of localities of geological interest.

After my marriage on 1 August, my wife and I flew to Montreal and sailed for Scotland on the C.P. "Empress of England." We spent a wonderful five weeks in Britain, and spent much of our time motoring through the Scottish highlands, enjoying mountain scenery of a kind very different from that of the Canadian Rockies. We returned by air to New York, and during a brief stopover there, visited many centres of interest in that city. We returned to Saskatoon for the opening of the session.

Dr. E. A. Christiansen

Ground-Water and Pleistocene Research in Saskatchewan in 1961

The systematic mapping of surficial deposits in Saskatchewan, which was initiated by the Saskatchewan Research Council in 1958, constitutes the core of all research on Pleistocene geology in Saskatchewan. Fieldwork was completed for the Willow Bunch Lake (72-H), Regina (72-I), and Wynyard (72-P) areas. Reports for these areas have been published or are in preparation. Field work is still in progress in the Great Sand Hills (72-K) and Kindersley (72-N) areas. Some of the systematic mapping is done by permanent employees of the Saskatchewan Research Council;

some of it by graduate students who are seeking the Ph.D. degree and who are supported by the Council in their field work.

Several more specialized research projects arose from the systematic mapping. Some of these are undertaken at the Saskatchewan Research Council; some at the Department of Geological Sciences, University of Saskatchewan; and some by both in co-operation. The study of heavy minerals in till, and of ostracods and gastropods in stratified material is now being pursued. Palynological investigations of peat bogs are continuing and it is expected that they, together with paleontological studies, will present a better picture of climatological changes in post-glacial time. Several new discoveries of buried wood were made, most of it postglacial. Radiocarbon dating is in full operation at a laboratory supported by both the National and the Saskatchewan Research Councils, and organic material from several places is being analyzed. A compilation table of all radiocarbon dates obtained from Saskatchewan materials till the end of 1961 is in preparation.

Taking stock of past accomplishments was done to some extent this year when Pleistocene geologists in Western Canada co-operated on a paper entitled "The Quaternary of Western Canada" which was presented at the Canadian Sedimentary Basins Symposium, held in September at Calgary. It provided a chance to come to grips with such problems as constructing a regional preglacial bedrock map showing topography and drainage.

The increasingly critical water shortage of the Prairies called for a stepped-up investigation of ground water. The Geological Survey of Canada took an inventory of water wells in the Saskatoon and Humboldt areas, thus providing many basic data. Drilling through the drift to bedrock was done in several places in the search for aquifers and it is expected that in coming years more money will be available for this type of exploration by the Saskatchewan Research Council as well as the Geological Survey of Canada. The number of observation wells established also showed a marked increase as did the geophysical surveys of surficial deposits. Gravity, seismic, as well as resistivity surveys are now being undertaken with special attention given to the detection of aquifers. Experiments on special problems, such as desalinization of ground water by the freezing method and the study of tritium content, are also directed toward an improvement of the effects of drought in Western Canada. Sources of surface water are not ignored, and instrumentation was set up to study the water budget of a small drainage basin near Saskatoon.

To encourage the use of known aquifers, more comprehensive reports on certain favourable areas, such as the buried Missouri River valley, were published by both the Saskatchewan Research Council and the Geological Survey of Canada. These and the many research projects connected with ground water not only increase our knowledge of Pleistocene geology but are also of great economic importance to Saskatchewan. That this is recognized by the Provincial as well as the Federal Governments is shown by the larger appropriations now available for this kind of work.

Dr. L. C. Coleman

A few days after I had given my examinations and graded them, I left for a two month visit to Venezuela. There I did some detailed mapping for the Ministerio de Minas e Hidrocarburos in the vicinity of some government owned gold mines in the El Callao area (about 150 miles south of Puerto Ordaz on the Orinoco River). While the object of my work was to find more ore, since the mines are operating at a loss, much of my interest was dampened when I became aware that the problems the mines face are more sociological and political than geological. While the satisfaction I derived from my work was greatly lessened by this, I did see some very interesting geology.

I returned to Saskatoon during the last week in June just in time to help my wife move into a new house. Despite the numerous jobs that had to be done as a consequence of our move, I managed to spend most of the balance of the summer at the Department curating mineral and rock collections, constructing atomic models of minerals, preparing courses for the coming year, and conducting some research on synthetic pyroxenes.

During August, I managed to get back to the field for a week when I visited Dr. J. R. Smith and his S.R.C. party at Amisk Lake. It was the first time I had been in the field in Saskatchewan and I was most impressed with some of the interesting geological features and problems that exist in that area.

Prof. F. H. Edmunds

This is not going to be a blow by blow description of my summer or even of the time spent in northern Saskatchewan, but mainly a few comments on the very enjoyable association that Dr. Mawdsley and I had in the field with three biologists. The expedition was under the auspices of the Institute for Northern Studies and the first ten days were devoted to gaining general knowledge about various aspects of northern Saskatchewan. On this we were accompanied by a geographer, a mining engineer and a pedologist. The eight of us established ourselves in a house in Uranium City which had been put at the disposal of the Institute by the Department of Natural Resources. Interesting episodes, while in Uranium City, were visits to Eldorado where Don Douglas, one of our geological engineering graduates, is manager. He gave us V.I.P. treatment.

After shedding the high priced help or 'brain trust' as Dr. Mawdsley called the three experts, the remaining five of us flew across Lake Athabasca and established camp in the sand dune area near the William River delta. Two of the biologists, Dr. Bob Nero of the Regina campus and Mr. Ralph Carson of the Natural History Museum, are bird men and were constantly on the alert for sounds. They associated with some specific bird every kind of chirp, and their spotting ability was a perpetual amazement to the geologists. The area is one of particular

interest to ornithologists because the gravel plains, which are extensive in parts of the dune area, are nesting places of the Arctic Tern. At the time of our visit the young terns were hatched but still earth-bound and Nero and Carson were able to catch and band about one hundred of them. Dr. Mawdsley and I walked across the gravel plains many times and were frequently dive-bombed by the adult terns in their anxiety to protect their grounded young. Though we never saw the young, we knew they were near us and we could see their tracks. The frustration and humiliation of this was that two geologists were not able to distinguish a bird from a stone.

In one area we visited, remote from the sand dunes, Nero and Carson discovered that three-toed black-backed woodpeckers had taken over a patch of forest that had been partially burnt over. The burnt trees had provided a habitat for all manner of grubs and beetles which are good food for black-backed three-toed woodpeckers. Now the musculature of the three-toed black-backed woodpecker is an interesting one and is the subject of Ph.D. study by a friend of Nero's at Ann Arbor. Very occasionally bird men shoot, and when they do so is for a purpose. One morning when Dr. Mawdsley and I were walking along a large drumlin we heard seven shots in the distance, and on our return to camp found that eight black-backed three-toed woodpeckers were being injected with copious amounts of formaldehyde to preserve them for shipment to Ann Arbor. Carson had been the marksman and I do not think he ever misses his bird, although, on one occasion when we were moving camp he took three shots to sever the cord of our radio aerial which was high up in the trees.

The third biologist, Mr. Harvey Beck of the Biology Department was making a study of small mammals. This involved setting out traps to cover as many different environments, within a few miles from camp, as possible. The traps, up to about one hundred and twenty, were visited in the early morning and the spoils brought back to camp to be skinned. The pelts and skulls being preserved for reference. A haul of from twenty to thirty specimens would keep Harvey busy most of the day but since he was the one who stayed in camp, except for his morning and evening visit to the trap lines, became the cook. A very good cook too. The rest of us were never conscious of the pot having been reinforced by mice, shrews, voles and other vermin, but if supplies had run short we would not have starved.

Although Dr. Mawdsley and I have had a long association with one another, this was the first time we have done field work together. I found it a most interesting experience. We made relatively long traverses across the open dunes and gravel plains but Dr. Mawdsley only really enjoyed himself when we came to the very densely forested areas of the high terraces of the William and McFarlane Rivers. These were frustrating areas to me, I could not see anything but trees and they attacked me from all sides. Ploughing through this kind of country was just joy to Dr. Mawdsley and he explained to me that momentum was the way to get through - just like a moose. It surprises me that none of his former field assistants have given him an alternative title. If

they have it has not come to my attention.

Outcrops are rare south of Lake Athabasca and the few we examined did not yield fossils! The age of the Athabasca sandstone is still a mystery.

Dr. D. H. Hall

Last summer, my work consisted of construction of equipment for rock magnetism measurements, gathering of samples for rock magnetism studies, and deep seismic sounding of the earth's crust near Flin Flon, Manitoba. I will be continuing the latter project next summer.

Dr. W. O. Kupsch

"Summer" is hardly the right modifier to use in connection with my fieldwork during the months of June, July and August, 1961. Mostly we had either "Spring" or "Fall" or were entering "Winter". In Saskatoon and Calgary, where I stayed before moving north of the Arctic Circle, everyone talked about the hot, dry summer. Weather in the Arctic does more than just provide a topic of conversation. It influences all actions and plans, whether it be flying, walking, or staying in a tent. Many were the days that we were forced to pursue activities other than actual fieldwork because heavy fog drifted in or a sleet storm iced up the aircraft, leaving us no choice but to remain in camp.

Resolute Bay on Cornwallis Island is the "jumping off" point for many geological exploration parties and we spent sometime there to ready ourselves for work on other islands. Interest in the possible oil and gas resources of the Arctic is now so great that J. C. Sproule and Associates alone had four field parties, each with 10-14 men. The organization of this small army of men and equipment is a major task and takes several months of planning. Inevitably, some plans cannot be executed and improvisations have to be made. Perhaps the most important attribute a field geologist should have for work in the Arctic or under other difficult circumstances is the maturity needed to realize that few events will happen according to plan and that it is up to him to improvise.

From Resolute Bay we went to the western Arctic Islands visiting Bathurst, Melville, Cameron, Amund Ringnes, and Ellef Ringnes Islands. Scenically, some of these islands are nothing to rave about, and we were particularly frustrated by a two weeks stint on Slime Peninsula, Amund Ringnes Island. The truly magnificent and gigantic anticlines and synclines of Bathurst and Melville Islands, so well known from air photo mosaics, are not impressive on the ground, because they are just too big to be viewed in their entirety by an earthbound geologists. Structural and stratigraphic details, on the other hand, can be seen in many places in the field, and they add spice to the geologist's fare. The most rewarding moments are generally provided by small discoveries such as the

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collecting of well-preserved fossils, the tracing of a fault, or the walking-out of an intrusive contact. It is from these pursuits that the field geologist derives his greatest satisfaction and it is because of these "little things", which together compose the big picture, that every geologist some time in his career should participate in field work to realize what geology is all about.

Dr. J. B. Mawdsley

This last summer proved a busy one for me as it included matters to do with the Institute for Northern Studies and my duties as President of the Canadian Institute of Mining and Metallurgy which I took over in March.

From March 20 to 22 Professor Edmunds and I attended the Annual Meeting of C.I.M. in Quebec City. An interesting and pleasant place for any meeting even in brisk pre-Spring weather. The ice breakers were busy and the first of the season's deep sea ships were making their way to the Port of Montreal. On June 5 to 7 I attended the meetings of the Royal Society of Canada in Montreal where the Geological Section of the Society discussed a slate of interesting papers.

On July 2 a small group of faculty members, unacquainted but interested in the possibility of having research students work on problems to do with Northern Canada, left Saskatoon and stopped at La Ronge, Stony Rapids and Uranium City. Monday, July 10, the main group headed back to La Ronge by air.

From the 12th to the 28th Professor Edmunds and I investigated the nature and inferred the origin of two large desert areas present on the south shore of Lake Athabasca. They are anomolous as they are flanked by dense forests. It proved a most intriguing and interesting problem to which we believe we have the answer.

As added entertainment we had three others on the party. W. Harvey Beck, Curator of the Biology Museum, who set trap lines that yielded numerous small mammals whose hides and related data added much information about this sort of fauna in this little-studied-section of the Province. Likewise Dr. R. W. Nero, now on the staff of the Biology Department, University of Saskatchewan, Regina Campus, and Ralph Carson, artist and preparator at the Provincial Museum, Regina, were continually on the go studying the birds of the district about which information is as yet fragmentary. This close association of experts in different fields proved very stimulating and interesting.

On July 28 I took off, via Fort Smith, for Yellowknife where I landed next day. I had a pleasant sojourn there in the comfortable home of John Anderson Thomson, and met various notables of the district and the staffs of the two gold mines, Giant and Con. At the invitation

of Mr. Gordon Brown, Director of Exploration for Giant Yellowknife Gold Mines Limited, I flew with him to Hudson's Bay north of Esquimaux Point where an exploration program was being carried out by the company in this part of the Barrens. Getting there involved a four-hour flight over interesting and little known country. One occurrence near the Bay was a large mass of iron ore. I was conducted over it by Hugh Squair. On the fourth day, August 6, I left this bleak, rocky, muskeg-and-lake studded land for Churchill. Two days there exhausted its scenic possibilities which included a look at Fort Prince of Wales. I then flew to Saskatoon via Winnipeg.

Shortly after my return the unexpected duties of Dean of Engineering were assigned to me. This has meant that the Department of Geological Sciences is now under the able direction of Professor Edmunds who has been a very important member of its faculty since the Department was founded in 1927. I know that under his guidance and the support of its very competent staff it is bound to prosper. I am sincerely glad that I am not wholly out of it and still have duties in connection with it.

Prof. T. E. W. Nind

After spending some two months on special studies for the Petroleum Engineering Division of the Department of Mineral Resources in Regina, and taking a short holiday in Waterton and Glacier National Parks, my family and I drove to Princeton, New Jersey, via the north shore of Lake Superior and Niagara Falls.

In Princeton I assisted in giving a three week course in Petroleum Engineering to ten senior engineers of Shell Oil Company (the course was not associated with Princeton University).

My wife and I were so impressed with the scenery along the highway on the way down that we returned by the same route.

The last three weeks before the fall term were spent moving my office and lab to their new location in the Geology Department.

In between times, I continued working on a book on Production Engineering which I am writing to honor a contract with McGraw-Hill.

Prof. R. F. Palmer

Almost since his graduation from McGill in Mining Engineering in 1935, Professor Palmer has been associated with large tonnage mining operations (over 3000 tons daily production).

His career started at Hollinger and Noranda mines in his undergraduate years. In 1935 he went to the Rand, South Africa for a ten year stint and progressed from miner to underground manager.

In 1945 he returned to Canada and worked a short spell in British Columbia and at Algoma's Helen Mine before joining a firm of consulting engineers for work in England and Africa. In 1950 he returned to Algoma as production engineer and in 1953 became mine manager.

Professor Palmer spent the summer of 1961 getting settled in Saskatoon and visiting Saskatchewan mining areas with Dr. Mawdsley and Professor Edmunds. Some of the spots visited were La Ronge, Stoney Rapids, Uranium City, H.B.M. & S.'s Coronation Mine and Esterhazy.

Dr. J. R. Smith - S. R. C.

The early part of my summer was spent in determining the trace content of Cu, Zn, Ni, Co and Ti in 800 samples of bedrock from the Coronation Mine area. This work was followed up in greater detail by taking an additional 1000 samples in the immediate vicinities of the Birch Lake and Coronation Mines. Final results of the work will be published within the coming year.

John Anderson Thomson D. L. S.

In the three years since I was at the University of Saskatchewan I have not been engaged in geological work. Since much geological work has suffered cutbacks since 1957 there has been little or no work for consulting geologists.

In 1959 I was appointed to the Royal Commission on the Great Slave Lake Railroad and this kept me busy till June of 1960 - most of which time was spent in Edmonton.

In 1960 and 1961 I was kept busy catching up on survey work which had accumulated from the previous year. The bulk of this was routine legal surveys of mining claims and town subdivisions around Yellowknife.

Dr. N. C. Wardlaw

From June to September of last year, I was in the Arctic working for Round Valley Oil Company of Calgary. Our work focused on an examination of Triassic and Permian sediments in Western Ellesmere and Eastern Axel Heiberg Islands. A base camp was established near the weather station

at Eureka, Ellesmere Island, and the examination and measurement of sections was accomplished by two man "fly camp" teams working away from base camp for periods of up to three weeks. Surveys were conducted by helicopter.

In the coming summer I intend to devote much of my time to a study of evaporite rocks in the Province.



TECHNICAL PAPERS

The Editors are pleased to introduce technical papers by students into the Concentrates for the first time. These papers have been submitted to all the noted Engineering and Geological Journals. Although none have been published as yet, they are expected to create a good deal of controversy with generally accepted ideas, when eventually they do appear in print.

THE TRANS SASKATCHEWAN RIFT

..... D. Boechler

A geological anomaly by the first geologists to work in Saskatchewan has at last been confirmed. The anomaly is a wide rift valley extending in a wide loop from  $3\frac{1}{2}$  miles south east of Estevan to a point 120 miles west of Saskatoon. This rift ranges from 1 to 3.7 miles in width. The rift was found by an extensive seismic grid run across Southern Saskatchewan.

From its position in the stratigraphic sequence the rift is thought to have occurred in late Devonian times. Its origin at present is attributed to stresses set up in the mantle due to the cooling of the earth.

No immediate effects of the rift were noticed until the Smiley oil field was shut in for three weeks in the fall of 1960. A gradual static pressure drop in the field amounting to 5 psig was noted. Investigations proved post Devonian faults extended down and intersected the rift valley which ran ten miles west of the field. It was concluded the oil was leaking into the rift. To find where this oil went some radioactive tracers were introduced into the Smiley reservoir. For ten months the results were negligible. Then a report came from the Agra Jari field in Iran. Oil there had been suddenly contaminated to a slight degree with radioactive material. Subsequent studies proved it was the same as the tracers introduced at Smiley.

It is now surmised that the oil from the Smiley field seeps down faults to the rift where it continues down to the mantle. The fractures, due to shrinkage continue through the mantle. The oil follows the fractures to the core. Then it moves along the core mantle interface until a similar set of fractures are encountered in the middle east area. The oil moves up the fractures there and is subsequently produced.

The effect of this leak on the earth has also been studied. Prior to Devonian times the earth's day, due to a much faster rotation of the earth was about 16.7 hours. This calculation was based upon the growing time for the common sunflower to be 1,496 hours. The sunflower as known follows the sun on its course every day. This results in a twist in

the stem. The number of twists in mature sunflowers of Devonian age gave a day length equal to the 16.7 hours. Studies along similar lines proved that Pre-Devonian slowing of rotation of the earth amounted to 0.0157 seconds per year. Since Devonian times this has reduced to 0.000015 seconds/year. This decrease has been attributed to the friction reducing property of the oil between the rotating mantle and stationary core.

How does this leak effect the average person. It means the middle east is producing our oil. It is wondered why the oil does not flow the opposite way. The pressure differential is the answer. As known we are further north than the middle east, and north, to a close approximation, is up in a relative sense. This relative elevation difference creates a differential head equal to 115,690 feet of water. A commission has approached the Arabs about splitting royalties on our oil. It failed, we think. This being a scientific investigation and the investigators being chicken, no other commission went to replace the first. Therefore it has been decided to water flood our fields, get the oil out, then pipe hot gas from Regina to the Middle East.

Above these considerations what are the implications of two deep incisions into the bowels of the earth? Immediately the idea of anterior and posterior comes to mind. This proves what we have been saying for years.

#### GEOLOGICAL IMPLICATIONS OF HOLES IN THE ETHER

..... R. Bross:

Anyone observing the great deformation of the crust of the earth cannot but admire the renowned geologist Hiram Galosh who revealed to the world, because of his generous nature, that this was all a result of the motion of the earth through the ether. More exactly this is caused by the collision of the earth with holes in the ether. Simple Laboratory experiments indicate that such a collision sets up oscillations which result in folding, rupturing and thrusting of the skin. Unfortunately the speed of the earth through the ether can only be measured by special techniques so that most people do not even realize that it exists.

By studying the older rocks the number of collisions with these holes can be determined. From the times between these cataclysms as measured by ether time the density of these holes in the ether can be determined. Knowing the density of the holes in the ether, the time for the next cataclysm can be determined.

This study has been the main interest of an eminent group of geologists of the Crocus district in Saskatchewan led by none other than Hiram Galosh B.E., Ph.D., M.A., F.R. R.C.M.P., P.A. Pen. By observing

the change in the long term component of the earth's magnetic field they have determined the velocity of the earth through the ether to be 284692.301 micro inches per mean ether second. Using the numerous movements on the Crocus main street fault, as measured at midnight on a Saturday night with the moon 2° east of the church steeple, they have determined the density of the holes in the ether as one per 10,799,856,442.96 square inches.

Knowing the last collision occurred at high noon on the second last day of the Neogene epoch they have determined that the next collision shall occur on the 29th of February 1963 at precisely three seconds before the close of the day.

At present no further comments are available as the eminent group has evacuated to Mount Hereford from whence they shall launch a balloon which they hope to fill from the hole in the ether and shall thusly be able to escape the tremendous cataclysm. For people who wish to do the same they can obtain similar balloons at the Crocus Hardware.

FLUVIAL DISTRIBUTION: THEORETICAL AND ECONOMIC CONSIDERATION

..... J. Cherry

Author's Note: The author humbly submits this treatise which was presented and subsequently rejected as a Bachelor's thesis.

He realizes that like all truly original and great scientific papers, it will be several decades and perhaps forever before this treatise gains recognition. If this is the case then it is the world's loss.

Last summer, the author was on a Soft Rock Exploration Party working in the Richardson Mountains of the N.W.T. and the Yukon. It was not long before he realized the problems of sampling in mountainous terrain. Immediately the scientific approach was applied to eliminate such things as excess physical exertion. The steps followed were:

1. Problem: too much climbing
2. Object: to fill sample bags with appropriate samples
3. Find a solution: now here is where the writer "struck oil".

The solution was revealed by a grizzly bear catching fish at the mouth of a stream. Here, the fish were plentiful and the water shallow and clear due to delta building (observations were limited as the author was moving rapidly out of the vicinity at the time). The following question presents itself - why does the bear do his fishing downstream? The obvious answer is - all the fish are moving toward the ocean, and accordingly there will be more fish the farther downstream one goes.

Plainly, this is analogous to sedimentary processes involving fluvial deposition. That is, pebbles from the length of the stream will be carried to the mouth where they are deposited in quiet waters. Also, greater abrasion will make the pebbles from farthest upstream, the smallest.

Applying this in practice, to sample exposures of a mountain area, the author goes to the delta at the mouth of the main drainage system. A standard is then set up - the smallest sized particles are considered as originating within 20 feet of the mountain tops (the use of silt sized particles would be desirable but they are hard to pick up). A large boulder represents origin very near the mouth (say  $\pm$  20 feet).

The distance mouth-mountain top is estimated using aerial photographs and an interval of sampling is decided upon. Using a geometric progression the size of pebble related to each interval is calculated.

Astounding but simple!!

This method is even more thorough than hand sampling because the streams cut all the outcrops. At first the author found the method no less strenuous than climbing mountains. Carrying the boulders from the downstream area was found, by the author, to be quite tiring. In addition, special large size sample bags had to be used. These wrinkles were eliminated by: first, moving camp close to the downstream area, and second, by chipping off a corner of the boulder and assuming it to be representative of the whole.

In conclusion, it would be well to point out that there are still some problems in this method of sampling. However, these should be eliminated shortly, after which time this will be the most economical and accurate and least strenuous method of sampling mountainous areas.

