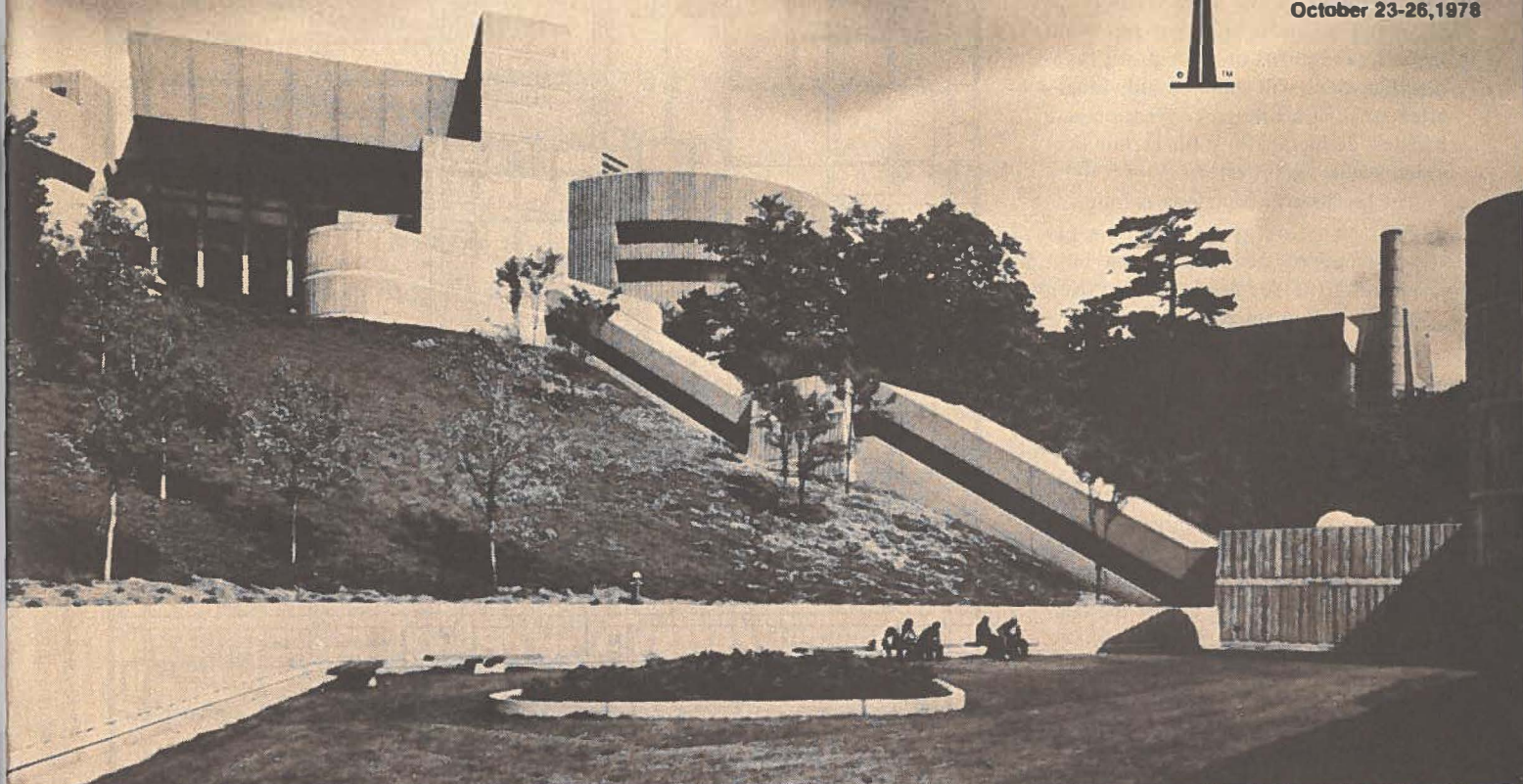




**Toronto '78**  
A Joint Annual Meeting  
October 23-26, 1978



*THE ONTARIO SCIENCE CENTRE: Situated in the geographic heart of Metropolitan Toronto, just seven miles from downtown, the Science Centre is a place where you can discover more about the world and yourself, by seeing, hearing and touching — you learn by doing. It is the site of a special Canada Night during the Toronto '78 joint annual meeting; the exhibits will all be open and dinner will be served.*

## TORONTO '78 — a joint annual meeting in Canada

It is 25 years since the Geological Society of America last held its annual meeting in Canada. This year it will do so again. From October 23-26, 1978, Toronto, on the north shore of Lake Ontario, will host a unique joint gathering, the 91st annual meeting of the Geological Society of America, the 31st annual meeting of the Geological Association of Canada and the 23rd annual meeting of the Mineralogical Association of Canada.

Toronto is a thriving, cosmopolitan city, yet it has not grown so large that its residents have forgotten the meaning of neighborliness. It is full of things to do and places to see. Its live theatres, art galleries and its symphony orchestra, which recently completed a successful tour in the People's Republic of China, would be worth taking in as well as the events of the meeting.

The city is ideally located as a center for the wide range of field trips planned

to take place before, during and after the meeting. These should suit the needs and interests of everyone from explorationist and engineer to earth science teacher. The rolling countryside of Southern Ontario, dominated by the Niagara Escarpment, will appeal to those interested in the Paleozoic and Pleistocene. Further north lie the Precambrian belts of the Canadian Shield, their mineral resources of much importance to the Canadian economy.

During the meeting technical sessions, poster sessions, exhibits and employment interviews will be held in the Royal York (headquarters) and Sheraton Centre Hotels. These two downtown hotels are a 10-minute walk apart.

Eight societies associated with GSA will hold concurrent annual meetings during Toronto '78: Cushman Foundation, Geochemical Society, Geoscience Information Society, Mineralogical Society of America, National Association of

Geology Teachers, Paleontological Society, Society of Economic Geologists, and Society of Vertebrate Paleontologists. A partially overlapping meeting will be held by the American Underground Space Society.

Additional copies of this announcement are available from: Meetings Department, Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301; or Toronto '78, P.O. Box 4170, Postal Station A, Toronto, Ontario, Canada, M5W 1T2. General chairman for the meeting is Paul M. Kavanagh, telephone (416) 367-4211.

### TAX DEDUCTIONS

United States participants attending Toronto '78 should be aware that the U.S. tax reform act of 1976 places limitations on deductions for conventions attended outside of the United States. Additional tax reform which may change

this is believed to be pending but at the time of writing the following applies. Registrants reimbursed for expenses by a non-profit organization or institution are not affected by the law. Individuals claiming a deduction on personal income tax returns or a for-profit organization which will claim an individual's attendance at a foreign convention as a business deduction must file certain documents with the tax return.

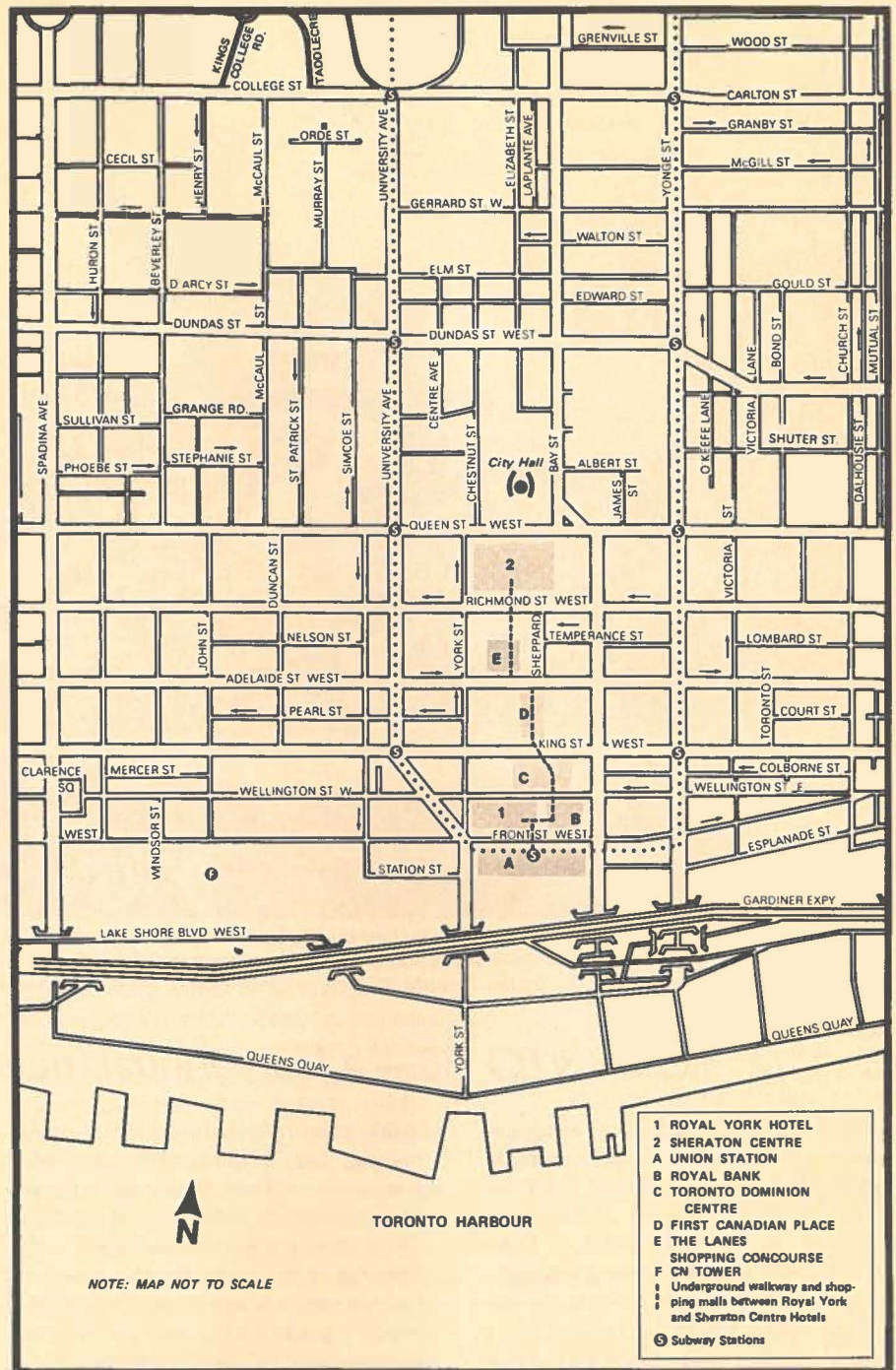
The law limits deductions as follows:

1. Only two foreign conventions per year may be deducted by an individual. If a for-profit corporation reimburses an employee for attending a foreign convention, the corporation will be allowed a deduction for expenses provided that no more than two foreign conventions are deducted for that individual.
2. To claim the full transportation deduction, individuals must devote at least one half of the total days of the trip, excluding the days of transportation to and from the site of the convention, to business-related activities. If less than one half of the total days of the trip, excluding the days of transportation to and from the site of the convention, are devoted to business-related activities, only a proportionate amount of the transportation expenses can be deducted. The amount allowable as a deduction for transportation to and from the convention may not exceed the lowest coach or economy rate charged by a commercial airline. Travel by car can be computed at the rate of 17¢ per mile but may not exceed the cost of a coach-class air fare. A deduction for travel by bus or train is the actual expense of the ticket, but may not exceed the cost of coach air fare.
3. Deductions for subsistence expenses, for instance, lodging, meals, tips, local transportation, etc., while at the convention or travelling to and from the convention are limited to the fixed amount of per diem allowed to government employees.

For those individuals requiring further information, please contact: Meetings Department, Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301; or your local IRS office.

## PREREGISTRATION

Preregistration is highly recommended, since preregistration fees are



substantially lower than on-site registration fees.

Preregistration fees will be accepted in either Canadian or U.S. funds and are as follows:

Professional	\$C48.00 OR \$US43.00
Student	\$C20.00 OR \$US18.00
Guest	\$C15.00 OR \$US13.50

To preregister and to make other reservations use the forms that appear in this announcement. All must register to participate in events associated with the meeting, except that non-registered per-

sons may accompany registered delegates to luncheons, dinners and evening events.

Preregistration for field trips requires special handling. See field trip section in this announcement.

Preregistration forms for the meeting may be mailed to either the Toronto or Boulder addresses shown on the form. The forms must be postmarked by **August 31, 1978**, and received **no later than September 8, 1978**. Cancellations must be received in writing at the

**HOUSING RESERVATION**

**TORONTO '78**

**1978 GSA-GAC-MAC Joint annual meeting  
Toronto, Ontario, Canada  
October 23-26, 1978**

To reserve your hotel accommodation in Toronto in October, please complete and mail this entire form to:

**Geology Housing Bureau, Toronto '78,  
Toronto Eaton Centre,  
Box 510,  
Toronto, Ontario, Canada,  
M5B 2H1.**

Please **PRINT** or **TYPE** the information requested.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State/Province \_\_\_\_\_  
Zip/Postal Code \_\_\_\_\_  
Student I.D. No./University (if applicable) \_\_\_\_\_

**PREFERRED HOTEL** (Tick first choice)

Royal York Hotel (Headquarters) .....   
Sheraton Centre Hotel .....   
Student accommodation (See \* Below) .....   
Special requirements \_\_\_\_\_  
\_\_\_\_\_

Arrival date \_\_\_\_\_ / \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.  
Departure date \_\_\_\_\_ / \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.

Please list names of all sharing room (only one person need make reservation per room). If students, state I.D. No. and university (see \* below).

Name \_\_\_\_\_ I.D./University \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**HOTEL**

Royal York Hotel (Headquarters) .....  
Sheraton Centre Hotel .....

	SUITES			
	SINGLES	DOUBLES/TWINS	STUDIO	1-BEDROOM
Royal York Hotel (Headquarters) .....	\$36-44	\$46-54	\$65-73	\$80-100
Sheraton Centre Hotel .....	\$35-37	\$45-47	n.a.	\$95 and up

(All rates quoted in Canadian funds. No additional sales tax.)

**\* STUDENT ACCOMMODATION**

Special student rates at \$15 each per night for three students sharing a room are available at the Sheraton Centre Hotel. Additional student space is also being held at another downtown hotel.

To qualify for special rate, student reserving room must include on housing reservation form:

- his/her student I.D. no.;
- names of the two other students with whom room will be shared and their I.D. nos.;
- and show I.D. cards when checking into hotel.

FOR HOUSING BUREAU ONLY	
Reservation follow-through	Date _____
Received at Housing Bureau	_____
Confirmed to guest	_____

**INSTRUCTIONS AND INFORMATION FOR HOTEL RESERVATIONS**

1. Requests for reservations must be received **no later than September 22, 1978**. Please use this official hotel reservation form. **DO NOT CALL FOR RESERVATIONS.**
2. Confirmation will be sent directly to you from hotel. Allow a minimum of three weeks for processing.
3. Room assignments will be made on a first-come, first-served basis.
4. If you have to change reservation, other than hour of arrival, write directly to Housing Bureau. If only arrival time is changed, inform hotel directly.
5. All cancellations should be made with Housing Bureau.
6. Be sure to fill in arrival date.

**TYPE OF ROOM** **PRICE RANGE**

Single (1 person)  \$ \_\_\_\_\_  
Double (1 bed, 2 persons)  \$ \_\_\_\_\_  
Twin (2 beds, 2 persons)  \$ \_\_\_\_\_  
Studio suite  \$ \_\_\_\_\_  
1-bedroom suite  \$ \_\_\_\_\_

**Reservations will be held only until 6 p.m. unless a guaranteed arrival is indicated.**

Guaranteed: Yes \_\_\_\_\_ No \_\_\_\_\_

**HOUSING BUREAU CLOSING ON SEPTEMBER 22, 1978. SPECIAL RATES APPLY ONLY TO THAT DATE.**

**IMPORTANT — PLEASE READ**

- Use a separate form for each registrant.
- Please use ballpoint pen or typewriter.
- Full payment **MUST** accompany registration. Preregistration payment will be accepted in either Canadian or U.S. currency.
- Preregistration forms must be postmarked by August 31 and received in Boulder or Toronto no later than September 8.
- Cancellations **must be** in writing and received at the address to which the preregistration form was sent no later than September 22 to be eligible for a refund. Cancellations will be subject to a \$10 processing fee in the currency submitted.
- Registration material may be picked up beginning at 12:00 noon on Sunday, October 22, at the Sheraton Centre Hotel.

**TORONTO '78**  
A joint annual meeting

**THE GEOLOGICAL SOCIETY OF AMERICA  
THE GEOLOGICAL ASSOCIATION OF CANADA  
THE MINERALOGICAL ASSOCIATION OF CANADA**

**Toronto, Ontario, Canada, October 23-26, 1978**

**PREREGISTRATION FORM**

**TYPE OR PRINT CLEARLY**  
**REGISTERED AS**  Professional  Student

Name \_\_\_\_\_  
(Last) (First) (Middle)

Mail Address \_\_\_\_\_  
(Street)

\_\_\_\_\_  
(City) (State/Province) (Zip/Postal Code)

Phone (\_\_\_\_\_) (\_\_\_\_\_) (\_\_\_\_\_) \_\_\_\_\_  
(Business) (Home)

Institution/Employer \_\_\_\_\_  
(Abbreviate for badge)

Affiliation: GAC GIS GS GSA MAC MSA NAGT PS SEG SVP  
(Circle)

**GUEST**

(Guests are not entitled to attend technical sessions.)

Name \_\_\_\_\_  
(Last) (First) (Middle)

Mail Address \_\_\_\_\_  
(Street)

\_\_\_\_\_  
(City) (State/Province) (Zip/Postal Code)

Make all checks or money orders (other than for field trips\*) payable to:

**TORONTO '78**  
(DO NOT SEND CASH)

Send this preregistration form with your payment in either Canadian or U.S. funds to:

**1978 ANNUAL MEETING REGISTRATION,  
3300 PENROSE PLACE,  
BOULDER, COLORADO 80301**

or  
**TORONTO '78,  
PO BOX 4170,  
POSTAL STATION A,  
TORONTO, ONTARIO, CANADA,  
M5W 1T2.**

\* NOTE: All field trip participants **MUST** register for the meeting. Registration for all field trips must be done on the official field trip form. A separate check or money order is required for field trip registration. Field trip form and field trip payment must be sent to **TORONTO**. See field trip registration form.

Fold

(Detach here)

Fold

	Price each	No.	Amount
<b>PREREGISTRATION</b>			
1. Professional .....	\$C48.00 OR \$US43.00	1	\$ _____
2. Student (I.D. No. _____) .....	20.00	1	_____
3. Guest(s) .....	15.00	_____	_____
<b>GUEST ACTIVITIES</b>			
4. Toronto highlights (Mon., Oct. 23) .....	\$C 7.00 OR \$US 6.50	_____	_____
5. A taste of China (Mon., Oct. 23) .....	14.00	_____	_____
6. Niagara Falls (Tues., Oct. 24) .....	24.50	_____	_____
7. Discerning eye on Toronto (Tues., Oct. 24) .....	14.00	_____	_____
8. Geological tour (Wed., Oct. 25) .....	8.00	_____	_____
9. McMichael Gallery (Wed., Oct. 25) .....	18.00	_____	_____
<b>SPECIAL EVENTS</b>			
10. Niagara Falls (Sun., Oct. 22) (Preregistrants only) .....	\$C24.50 OR \$US22.00	_____	_____
11. Toronto highlights (Sun., Oct. 22) (Preregistrants only) ...	7.00	_____	_____
12. Canada Night (Wed., Oct. 25) .....	15.00	_____	_____
13. GAC annual luncheon (Mon., Oct. 23) .....	8.50	_____	_____
14. GAC Environmental Earth Sciences Div. luncheon (Tues., Oct. 24) .....	8.50	_____	_____
15. MAC annual luncheon (Thurs., Oct. 26) .....	8.50	_____	_____
16. GSA annual dinner (Tues., Oct. 24) .....	14.50	_____	_____
17. GSA Coal Geology Div. luncheon (Tues., Oct. 24) .....	8.50	_____	_____
18. GSA Engineering Geology Div. dinner (Mon. Oct. 23) .....	10.50	_____	_____
19. GSA Geophysics Div. luncheon (Wed., Oct. 25) .....	8.50	_____	_____
20. GSA History of Geology Div. luncheon (Wed., Oct. 25) ....	8.50	_____	_____
21. GSA Hydrogeology Div. luncheon (Mon., Oct. 23) .....	8.50	_____	_____
22. GSA Quaternary Geology and Geomorph. Div. luncheon (Tues., Oct. 24) .....	8.50	_____	_____
23. MSA luncheon (Tues., Oct. 24) .....	8.50	_____	_____
24. NAGT luncheon (Mon., Oct. 23) .....	8.50	_____	_____
25. PS luncheon (Tues., Oct. 24) .....	8.50	_____	_____
26. SEG luncheon (Wed., Oct. 25) .....	8.50	_____	_____
<b>MAC SYMPOSIUM ON NICKEL SULPHIDES (Pre-meeting) .....</b>	<b>\$C20.00 OR \$US18.00</b>	_____	_____

Total \$C/US \_\_\_\_\_  
(Delete currency which does not apply.)

**FOR OFFICE USE ONLY**

Balance due \$ \_\_\_\_\_ Refund \$ \_\_\_\_\_

Received \_\_\_\_\_ Check No. \_\_\_\_\_

Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**FOR OFFICE USE ONLY**

**IMPORTANT — PLEASE READ**

- All field trip participants must register for the meeting.
- Registration for all field trips must be done on this form.
- Use a separate form for each registrant.
- Use ballpoint pen or typewriter.
- Full payment **MUST** accompany registration. Payment will be accepted in either Canadian or U.S. funds.
- Field trip preregistration forms must be postmarked by August 31 and received in TORONTO no later than September 8.
- Cancellations must be in writing and received in Toronto no later than September 22 to be eligible for refund. Refunds will be subject to a \$10 processing fee in the currency submitted.

**TYPE OR PRINT CLEARLY**

REGISTERED AS  Professional  Student

Name \_\_\_\_\_  
(Last) (First) (Middle)

Mail Address \_\_\_\_\_  
(Street)

\_\_\_\_\_  
(City) (State/Province) (Zip/Postal Code)

Phone (\_\_\_\_\_) (\_\_\_\_\_) (\_\_\_\_\_) \_\_\_\_\_  
(Business) (Home)

Institution/Employer \_\_\_\_\_  
(Abbreviate for badge)

Affiliation: GAC GIS GS GSA MAC MSA NAGT PS SEG SVP  
(Circle)

**FIELD TRIP REGISTRATION FORM**

**TORONTO '78**

**1978 GSA-GAC-MAC joint annual meeting  
Toronto, Ontario, Canada  
October 23-26, 1978**

Make check or money order payable in either Canadian or U.S. funds to:

**TORONTO '78 FIELD TRIPS  
(DO NOT SEND CASH)**

Send this field trip form with your payment to:

**FIELD TRIPS,  
TORONTO '78  
P.O. BOX 4170,  
POSTAL STATION A,  
TORONTO, ONTARIO, CANADA,  
M5W 1T2.**

Fold

(Detach here)

Fold

**FIELD TRIPS**

**Pre-meeting**

			Amount	Status Code
1. Canadian Shield metallogeny, Oct. 14-22 .....	\$C360	\$US324	_____	_____
2. Timmins mining area, Oct. 18-21 .....	215	193	_____	_____
3. Elliot Lake uranium, Oct. 19-22 .....	140	126	_____	_____
4. English River gneiss belt, Oct. 19-22 .....	289	260	_____	_____
5. Uchi-Confederation volcanology, Oct. 19-22 .....	306	275	_____	_____
6. Grenville Front Tectonic Zone, Oct. 19-22 .....	130	117	_____	_____
7. Nova Scotia coal deposits, Oct. 19-22* .....	120	108	_____	_____
8. Haliburton-Bancroft nepheline, Oct. 19-22 .....	120	108	_____	_____
9. Middle Wisconsinan Stratigraphy, Oct. 20-22 .....	70	63	_____	_____
10. Landslide studies, Oct. 20-22* .....	85	76	_____	_____
11. Archaeological sites, Oct. 21-22 .....	100	90	_____	_____
12. Niagara engineering geology, Oct. 21 .....	20	18	_____	_____
13. Toronto region geology, Oct. 22 .....	22	20	_____	_____
14. Nuclear plants, underground space, Oct. 22 .....	20	18	_____	_____

**During meeting**

15. Airborne geomorphology tour. On-site registration. Indicate interest <input type="checkbox"/>			_____	_____
16. Metro Toronto geology, Oct. 25 .....	7	6	_____	_____

**Post-meeting**

17. Petrochemistry of Archean volcanics, Oct. 26-29 .....	245	220	_____	_____
18. Silurian of Niagara Escarpment, Oct. 26-28 .....	90	81	_____	_____
19. Sudbury Basin mining area, Oct. 26-29 .....	140	126	_____	_____
20. Hastings metamorphic "Low", Oct. 26-29 .....	90	81	_____	_____
21. Kidd Creek mine, Timmins, Oct. 26-27 .....	135	121	_____	_____
22. Repeat of No. 14, Oct. 27 .....	20	18	_____	_____
23. Geological overview, Oct. 27-28 .....	70	63	_____	_____
24. Hydrogeology and waste disposal, Oct. 27 .....	30	27	_____	_____
25. Muskoka structural geology, Oct. 27-28 .....	60	54	_____	_____
26. Glacial geology, Oct. 27-28 .....	60	54	_____	_____

**TOTAL \$C/US** \_\_\_\_\_  
(Delete currency which does not apply)

\* If interested in a group flight being arranged to Toronto at end of field trip, please indicate: .....

**NOTE: Participants will be selected on a first-come, first served basis; some consideration will be given to distance of residence from Toronto. On-site registration will be possible for those trips not fully subscribed.**

**FOR OFFICE USE ONLY**

Balance due \$ \_\_\_\_\_ Refund \$ \_\_\_\_\_

Received \_\_\_\_\_ Check No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STATUS COLUMN CODES:**

✓ = Registration accepted C = Field trip cancelled  
F = Field trip filled S = Registrant on standby

**FOR OFFICE USE ONLY**

**REMEMBER: SEND THIS FORM TO TORONTO ONLY**

address to which the preregistration form was sent no later than September 22, 1978; fees will not be refunded after that date.

**NOTE:** All cancellations will be subject to a \$10 processing fee in the currency submitted.

### ON-SITE REGISTRATION

Only Canadian currency will be accepted during the meeting. On-site registration fees will be as follows:

Professional	\$C58.00
Student	\$C25.00
Guest	\$C20.00
One-day professional	\$C35.00

Registration material and tickets may be picked up beginning at 12 noon on Sunday, October 22, at the Sheraton Centre Hotel. The registration area will be open at the following hours:

Sunday	12:00 noon to 7:00 p.m.
Monday	7:00 a.m. to 5:00 p.m.
Tuesday	8:00 a.m. to 5:00 p.m.
Wednesday	8:00 a.m. to 5:00 p.m.
Thursday	8:00 a.m. to 12:00 noon

**NOTE:** The on-site registration desks will be able to accept **Canadian currency only**. Both Terminal No. 1 and Terminal No. 2 at Toronto International Airport have currency exchange booths which are open seven days a week, from 6:30 a.m. until 11:00 p.m. A U.S. currency exchange desk will also be operated as a convenience to delegates in the registration area of the Sheraton Centre Hotel during registration hours on Sunday, October 22, and during the earlier part of registration hours on Monday, October 23. Currency may also be exchanged at local banks during business hours.

### HOUSING INFORMATION

Accommodation for all registrants will be available in downtown Toronto at the Royal York (headquarters) and Sheraton Centre Hotels, in which the meeting is being held. (Additional student space is also being held at another downtown hotel.) These hotels are a 10-minute walk apart — along York St., between Richmond and Front Sts., or via a series of underground shopping malls (see map). No taxes are applied to hotel room rates in Ontario.

All registrants are urged to make housing arrangements as soon as possible, through the meeting's official housing bureau which will handle all reservations and cancellations directly.

Application forms are included in this announcement; they should be sent to

Geology Housing Bureau, Toronto '78, Toronto Eaton Centre, Box 510, Toronto, Ontario, Canada, M5B 2H1, **before September 22, 1978**, which is the housing deadline. If after making reservations you find it necessary to change them, write directly to the housing bureau at the above address. After September 22, registrants will have to make their own housing arrangements directly with the hotels.

**NOTE:** The mailing address of the housing bureau is NOT the same as the mailing address for preregistration and field trip forms.

On Sunday, October 22, only, the housing bureau will have a representative in the registration area of the Sheraton Centre Hotel to handle all questions.

### LOCATOR BOARD

A locator board and desk will be provided in the registration area on the Concourse Level in the Sheraton Centre Hotel to help those attending the meeting locate colleagues. Alphabetical listings of registrants' names and annual meeting addresses will be included on the board. If you are staying at one of the hotels listed on the housing form and have made your reservations before the September 22, 1978, housing deadline, your name will automatically be placed on this list. If, however, you make housing reservations after the deadline or are planning to stay with friends in the Toronto area, you will need to notify the Meetings Department in Boulder or the Toronto '78 organizing committee in Toronto to have your name listed. During the annual meeting, if your name is not listed on the board, please notify the person staffing the locator board desk.

### SPECIAL EVENTS

#### Sunday, October 22

**Niagara Falls.** Arrive early and visit the famed Niagara Falls. This day-long trip will take you on a scenic drive through Ontario's fruit-growing belt to the honeymoon center of North America, 90 miles from Toronto. Have lunch in the restaurant atop the Skylon Tower, 775 ft. above the Niagara Gorge. There will be time to see the Falls and the surrounding park area before boarding the buses which will drive along the Niagara Parkway, by Brock's Monument and the Adam Beck Generating Station, to historic Niagara-on-the-Lake. Other points of interest will include the Welland

Canal and the Niagara Escarpment. The buses will be accompanied by excellent guides, who are very familiar with the history and geography of this part of Ontario.

**Cost: \$C24.50 or \$US22.00.** Includes bus, lunch and gratuities. Preregistration is required but tickets will not be needed to board the buses, which will leave from the Front St. door of the Royal York Hotel at 8:45 a.m. and return at 5:15 p.m.

This tour will be repeated on Tuesday, October 24.

**Toronto highlights city tour.** Well-informed guides will share their knowledge of Toronto's past and present, its lively downtown area, residential neighborhoods, castles and towers, and varied and outstanding architecture.

**Cost: \$C7.00 or \$US6.50.** Preregistration is required but tickets will not be needed to board the buses, which will leave from the Front St. door of the Royal York Hotel at 2 p.m. and return about 4 p.m.

This tour will be repeated on Monday, October 23.

**Welcoming party.** The Royal Ontario Museum is the site of this year's welcoming party, which will be held from 6:30 p.m. to 9:30 p.m. on Sunday, October 22. Enter through the majestic rotunda to roam through Canada's largest museum, one of the world's best. Visit its renowned collection of Chinese artifacts, its unique mineral collection, its geology and paleontology galleries and its special exhibits on Canadian native peoples.

The museum is conveniently located on University Avenue, just south of Bloor St., within minutes of the Royal York and Sheraton Centre Hotels by University Ave. northbound subway or by taxi. Complimentary subway tokens may be obtained at the information desks in the Royal York and Sheraton Centre Hotels during registration hours on Sunday, October 22.

Drinks will be available at cash bars in the museum. Entrance to the museum will be free. Delegates need not have registered before attending — name badges will not be required.

#### Monday, October 23

**GAC annual luncheon.** This will be held on Monday, October 23, in the Royal York Hotel. The Geological Association of Canada's Logan and Past-Presidents' medals will be presented.

Tuesday, October 24

**GSA cocktail party, annual dinner and presidential address.** These events will be held on Tuesday, October 24, in the Royal York Hotel. The cocktail party is scheduled from 6:00 to 7:00 p.m., the annual dinner from 7:15 to 8:45 p.m. and the presidential address from approximately 9:15 to 10:00 p.m. The Penrose and Day medals will be presented at the dinner.

**NOTE:** Attendance at the annual dinner is not required for admittance to the presidential address.

Wednesday, October 25

**GAC presidential address.** This will be given on Wednesday, October 25 in the Royal York Hotel, at 4:30 p.m.

**Canada Night, Ontario Science Centre.** Plan to join in the fun at a special Canada Night, which will include dinner and dancing, at the 'please touch the exhibits' Ontario Science Centre. Buses will leave from the Front St. door of the Royal York Hotel at 6 p.m. (Parking will be available for those who prefer to drive themselves.) On arrival at the Science Centre sample some Canadian cheeses, smoked salmon, fruit and wine before wandering around the unique displays designed to interest the expert as well as the novice. At 8:30 p.m. sit down to an Eastern Canadian or Western Canadian dinner. An orchestra will provide music with some distinctively Canadian themes for your dining and dancing pleasure. Buses will return to the Royal York Hotel from the Science Centre at intervals between 10:30 p.m. and midnight.  
**Cost: \$C15.00 or \$US13.50.** Includes h'ors d'oeuvres, dinner, and return bus fare for 20-minute journey. Reservations may be limited — book early to avoid disappointment.

Thursday, October 26

**MAC annual luncheon.** The Mineralogical Association of Canada will hold its annual luncheon on Thursday, October 26, in the Royal York Hotel. The presidential address will be given, and the association's Hawley award presented.

#### SCIENCE THEATER

The Science Theater will provide registrants with an opportunity to view, during technical session hours, an absorbing program of Canadian films of geological interest, in the Sheraton Centre Hotel.

#### EXHIBITS

Exhibits will be on display in the Sheraton Hall of the Sheraton Centre Hotel. Although the official deadline for making application for exhibit space is July 1, 1978, space may still be available. Companies, organizations and universities interested in exhibiting should write or call Fred Handy, Meetings Manager, Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301 (phone: 303-447-2020); or Steven Scott, Toronto '78, P.O. Box 4170, Postal Station A, Toronto, Ontario, M5W 1T2 (phone: 416-978-5424).

#### GROUP ACTIVITIES

Space assignments for meetings, breakfasts, luncheons, dinners and cocktail parties have been made and no further space is available for group events.

#### GUEST PROGRAM

Toronto has been described as "the world's newest city". Activities have been planned to help you appreciate its vibrancy, the wooded, fertile countryside around it and the historic, agricultural and scenic aspects of the Niagara district. Registration as a guest or delegate at the annual meeting is a prerequisite for participation. **BADGES MUST BE WORN.** Please note that registration for some events may be limited.

Costs listed include admission fees, transportation, meals, taxes and gratuities. All buses will depart from the Front St. door of the Royal York Hotel.

Monday, October 23

**Toronto highlights city tour.** 10 a.m. A repeat of an earlier tour. See under Special Events for details. Tickets will be required to board bus on this tour on Monday, October 23.

**Cost: \$C7.00 or \$US6.50.**

**A taste of China.** After a show of slides and a talk on contemporary China by a noted authority, visit the Royal Ontario Museum's collection of ancient Chinese artifacts. Lunch will feature representative dishes from different Chinese culinary traditions — Cantonese, Shanghai and Szechuan — and a brief talk on the characteristics of each region. A trip to Chinatown will follow.

**Cost: \$C14.00 or \$US12.50.** Meet in the British Columbia Room, Royal York Hotel, at 9:30 a.m. Return about 2:45 p.m.

**Guest speaker: J. Tuzo Wilson.** Dr. Wilson, director-general of the Ontario Science Centre, will speak on 'Society's

challenges to the sciences', from 4 p.m. to 5 p.m. in the Royal York Hotel. An eminent geoscientist, Dr. Wilson was recently presented with the 1978 Vetlesen award by Columbia University; this is the premier award in earth sciences. Delegates as well as guests will be welcome.

Tuesday, October 24

**Niagara Falls.** Buses will depart at 8:45 a.m. and return at 5:15 p.m. A repeat of an earlier tour. See under Special Events for details. Tickets will be required to board bus on this tour on Tuesday, October 24.

**Cost: \$C24.50 or \$US22.00.**

**Discerning eye on Toronto.** Three of Toronto's outstanding attractions will be visited. Take a walk through art history at the Art Gallery of Ontario. Specialists will comment and introduce you to the Henry Moore sculpture center and other new galleries. Lunch at Ed's Warehouse, which contains the world's largest collection of Tiffany lamps. After lunch, select a talk on antiques, Eskimo sculpture, electric art or architectural history amidst Yorkville's art galleries, antique dealers, craft shops and high fashion boutiques. If you wish, you may browse.  
**Cost: \$C14.00 or \$US12.50.** Buses will depart at 9:30 a.m. and return at 2:45 p.m. Men are required to wear jackets and ties at Ed's Warehouse.

Wednesday, October 25

**Geological tour of Toronto.** A 3-hour morning tour led by a well-informed local geologist. See how geological processes have affected the growth of the city. Present and past shoreline features will be examined and a visit made to the Scarborough Bluffs.

**Cost: \$C8.00 or \$US7.00.** Buses will depart at 9:30 a.m., return at 12:30 p.m.

**McMichael Gallery.** Take a scenic drive to a delightful art gallery in rural Kleinburg. See the McMichael collection of native Indian and Eskimo craftsmanship, and the Group of Seven paintings — the signature art of early 20th century Canada. Treat yourself to a superb meal in an early Canadian setting. The route followed will enable you to see parts of Toronto not viewed on other tours — the Forest Hill residential area, Canadian National Exhibition grounds and the Toronto lakeshore among them.

**Cost: \$C18.00 or \$US16.00.** Buses will depart at 9:30 a.m., return at 2:45 p.m.

**HOSPITALITY ROOM.** Relaxation and refreshments will be provided every day in a Hospitality Room in the Royal York Hotel. Displays and demonstrations of Canadian crafts will be featured. Hostesses will be on hand to help plan individual activities and supply other information.

#### DAY CARE CENTER

A licensed Day Care service for children will be available in the Royal York Hotel for a daily fee **if there is sufficient demand from preregistrants**. It would operate from 7:00 a.m. to 5:30 p.m., Monday, October 23, through Thursday, October 26, at a cost significantly lower than usual hotel babysitting rates. Lunch and snacks would be included. Full day registration only would be accepted.

Preregistration is necessary. See Day Care registration form in this announcement. This must be sent to **Toronto** (Toronto '78, P.O. Box 4170, Postal Station A, Toronto, Ontario, Canada, M5W 1T2); and postmarked **by August 31** and received **no later than September 8**.

If numbers are sufficient for this service, after August 31 you will receive a form requesting information pertinent and helpful to your child's stay in the Day Care Center. It must be returned to Toronto and received no later than October 10.

**Cost: \$C15.50 or \$US14.00 per child per day.**

**NOTE:** Program will only operate if enough preregistrants apply; payment in either Canadian or U.S. currency must be enclosed with registration form. If there is insufficient interest for the service, full refunds will be made.

#### EMPLOYMENT INTERVIEWS

The Geological Society of America holds an employment interview service during its annual meeting each fall. Recruiters may rent interview booth space during the meeting at a nominal charge. Staff is available to help with scheduling of the interviews. The fee for applicants seeking jobs is \$C16.50 or \$US15.00. For employers requesting listings of applicants, the minimum fee is \$C44.00 or \$US40.00 for two specialty listings and \$C11.00 or \$US10.00 for each additional specialty listing. Canadian employers and job applicants are welcome to use this GSA service. Applications for both employers and applicants appeared in the June issue of the GSA's 'News and Information'. Applica-

tion forms and additional information may be obtained by writing for:

##### Applicant information

Jill Couchman  
Membership Department  
Geological Society of America  
3300 Penrose Place  
Boulder, CO 80301  
(phone: 303-447-2020)

##### Employer information

Charlene Bicknell  
Membership Coordinator  
Geological Society of America  
3300 Penrose Place  
Boulder, CO 80301  
(phone: 303-447-2020)

**NOTE TO APPLICANT: The deadline for application acceptance is September 15, 1978. Any application postmarked after that date will be accepted and put on file, but will not appear on the computer printout that is sent to employers prior to the annual meeting.**

#### TECHNICAL PROGRAM

The technical sessions will consist of symposia and of volunteered papers presented both orally and in poster sessions. Up to 10 concurrent sessions will be held in the Royal York (headquarters) Hotel and the Sheraton Centre Hotel. Chairman of the Joint Technical Program Committee is J. Jeffrey Fawcett (University of Toronto, phone 416-978-4852). Speakers in the regular technical sessions will be allotted a total of 15 minutes and will be expected to leave time for questions and discussion at the end of their presentation. Projection facilities will consist of a **single 35 mm projector** in each room. Dual projectors will not be available. Poster booths will have tackboards but no tables or projection facilities. A 'no smoking' policy has been adopted for all technical sessions.

Titles of symposia, with names of sponsors and organizers, follow:

1. *The Superior Geotraverse Project; Integrated Studies of Archean Crust in Western Superior Province of the Canadian Shield*: Geological Association of Canada; A. M. Goodwin.
2. *Atmospheric Chemistry*: Geochemical Society, Mineralogical Association of Canada; J. Kramer.
3. *Environmental Geochemistry of Radionuclides*: Environmental Earth Sciences Division of Geological Association of Canada, Mineralogical Association of Canada, Geochemical Society; R. E. Jackson.

4. *Fossils and Shales*: Paleontological Society, Society of Economic Paleontologists and Mineralogists; F. W. Beales and John Cisne.
5. *Analytical Studies in Structural Geology*: Structural Geology Division of Geological Association of Canada; W. M. Schwerdtner and J. Dixon.
6. *Global Recognition of Messinian (Late Miocene) Events*: U.S. Working Group, IGCP Project 96; R. C. Wright.
7. *Limits of Wisconsin Glaciation in E. and N. Canada*: Geological Association of Canada, Quaternary Geology and Geomorphology Division of Geological Society of America; I. Brooke.
8. *Geochemical Models in Groundwater Evolution*: Hydrogeology Division of Geological Society of America, Geochemical Society; John Cherry.
9. *Zonal Boundary and Speciation*: Paleontology Division of Geological Association of Canada; R. Ludvigsen and Barnard Mamet.
10. *Cenozoic History in and around the Northern Atlantic and Arctic Oceans*: Society of Vertebrate Paleontologists, Paleontological Society; Mary Dawson.
11. *Geological Information — Problems in Transfer from Scientists to Policy Makers*: Committee on Environment and Public Policy of Geological Society of America; N. Rutter.
12. *Dispersion in Groundwater Flow Systems*: Environmental Earth Sciences Division of Geological Association of Canada, Hydrogeology Division of Geological Society of America; Eugene S. Simpson.
13. *Metamorphic Field Petrology*: Mineralogical Society of America, Mineralogical Association of Canada; H. J. Greenwood and J. B. Thompson.
14. *Explosive Volcanism in Island Arcs*: S. Sparks.
15. *Serpentine Mineralogy and Petrology*: Mineralogical Association of Canada; Fred Wicks.
16. *Comparative Planetary Evolution: Implications for the Protoarchean*: R. A. F. Grieve.
17. *Remote Sensing*: Murray Felsher.
18. *Future Directions of Research in Mineral Deposits*: U.S. National Committee for Geochemistry, Geophysics Committee of the U.S.



National Research Council, Society of Economic Geologists; Paul Barton.

19. *Robinson Symposium on Precambrian Sulphide Deposits*: Geological Association of Canada; P. M. Kavanagh.
20. *Geophysical Methods as Applied to Coal Exploration and Mining*: Coal Geology Division of Geological Society of America; Lyle Sendlein.
21. *Geological Applications to the Study of Archaeology*: Archaeological Geology Division of Geological Society of America; J. C. Kraft.
22. *Disposal of High-Level Radioactive Waste – the Canadian Geoscience Program*: Canadian Geoscience Council; C. R. Barnes.
23. *Geoscience Publication – Problems and Prospects*: Geoscience Information Society; J. Bichteler.
24. *Applications of Petrologic Information Systems to Geological Problems*: F. Mutschler and M. David.
25. *Geology and Space Beneath Cities*: Engineering Geology Division of Geological Society of America; R. F. Legget.
26. *Thermal and Pyrolytic Studies for Characterization of Geological Organic Substances*: Organic Geochemistry Division of Geochemical Society; W. L. Orr.
27. *Ecology of Living Foraminifera*: Cushman Foundation; M. A. Buzas and J. H. Lipps.
28. *Geological Field Station Programs – Industries and Academics Look into the Future*: National Association of Geology Teachers; R. W. Ridky.
29. *Seismicity in Eastern North America*: Geophysics Division of Geological Society of America; M. B. Dobrin.

#### MAC SYMPOSIUM

A symposium on nickel sulphide and platinum group element ores, sponsored by the Mineralogical Association of Canada, will be held on October 21-22 immediately prior to the GSA-GAC-MAC annual meeting. The two days will be devoted to four main topics: host rocks, Ni-Cu ores, Pt group ores, and theoretical aspects. Invited international speakers will participate. The symposium will be held in the Medical Sciences Auditorium of the University of Toronto.

Preregistrants may pay the symposium fee in either Canadian (\$C20) or U.S. (\$US18) currency. On-site registration will be available but payment will be accepted in Canadian currency (\$C20) only. For further information: A. J. Naldrett, Department of Geology, University of Toronto, Toronto, Ontario, Canada, M5S 1A1.

#### SPECIAL COURSES

**Mineralogical Association of Canada – Short Course: Uranium deposits – their mineralogy and origin.** At the University of Toronto. Organizers: M. M. Kimberley, R. Morton, V. Ruzicka. October 27-29. For further information: M. M. Kimberley, Department of Earth and Planetary Sciences, Erindale College, University of Toronto, Mississauga, Ontario, Canada, L5L 1C6.

**Paleontological Society – Short Course: Mollusks.** At the Royal Ontario Museum, Planetarium lecture room. October 22, 9 a.m.-5 p.m. No fee. For further information: Ellis Yochelson, U.S. Geological Survey, E-501, U.S. National Museum, Washington, D.C., 20244.

**American Geological Institute, National Association of Geology Teachers and West Virginia University – Workshop: Teaching problem-solving skills – applications of innovations to geoscience courses at all levels.** Convenor: Robert W. Behling, October 21-22. For further information: William H. Matthews III, Director of Education, American Geological Institute, P.O. Box 10031, Lamar University Station, Beaumont, TX 77710 (phone: 713-838-7724).

#### FIELD TRIPS

**NOTE: All field trip registrants MUST ALSO register for the meeting.**

Preregistration for field trips is strongly recommended. Use the official field trip form included in this announcement.

Send the completed form to:

Field Trips,  
Toronto '78,  
P.O. Box 4170,  
Postal Station A,  
Toronto, Ontario, Canada,  
M5W 1T2.

This form must be postmarked by **August 31, 1978**, and **RECEIVED** in Toronto no later than **September 8, 1978**. Preregistration payment for field trips

will be accepted in either Canadian or U.S. currency. Remember – send the completed form and payment to Toronto, NOT Boulder. **Boulder cannot handle field trip forms.**

Participants will be selected on a first-come, first-served basis; some consideration will be given to distance of residence from Toronto. On-site registration (Canadian currency only) will be possible for those trips not fully subscribed.

All trips depart from and finish at the Sheraton Centre Hotel unless otherwise stated. A field trip desk will be located in the Sheraton Centre Hotel.

Participants should be prepared to make their own arrangements for meals, lodging and transportation not specified in the field trip descriptions.

**Cancellations.** Cancellation of field trip reservations must be made in writing and must be received in Toronto no later than **September 22, 1978, to be eligible for refund.** Refunds will be subject to a \$10 processing fee in the currency submitted. If, for reasons beyond the control of the organizers, field trips are cancelled, full refunds will be made.

**Weather and clothing.** October weather in Ontario is unpredictable; it could be warm and sunny or cool and wet. Field trip participants should bring warm, rain-proof clothing, hats, gloves and field boots. For those taking part in field trips No. 5 and No. 20 (Uchi-Con-Confederation volcanology and Hastings metamorphic "low" respectively), which involve travel by small watercraft, rain-wear is essential.

The field trip chairman for the meeting is W. O. Mackasey, Toronto '78, P.O. Box 4170, Postal Station A, Toronto, Ontario, M5W 1T2 (phone: 416-965-7046).

A visit to the earth science galleries of the **Royal Ontario Museum** is recommended. If you miss seeing them at the Welcoming Party, or would like another look, the museum is open to the public from 10 a.m. to 6 p.m. each day except Sunday, when it opens at 1 p.m., and Tuesday, when it stays open until 9 p.m.

#### PRE-MEETING

1. **Metallogeny of Archean and Proterozoic rocks in Superior and Southern Provinces of the Canadian Shield.** Saturday, October 14-Sunday, October 22. Bus – max. 20. Leaders: R. W. Hodder, R. W. Hutchinson, L. S. Jensen.

A review by mine visit (underground and/or surface) and regional traverse of geology and metallogenic significance of

Archean nickel, gold, base metal and iron deposits at Timmins, Noranda, Kirkland Lake and Cobalt, and Proterozoic nickel, base metal and uranium deposits at Sudbury and Elliot Lake.

**Cost: \$C360 or \$US324.** Includes bus fare, 8 nights lodging, 9 breakfasts, 9 lunches and guidebook.

**2. Volcanic stratigraphy and geochemistry in Timmins mining area.** Wednesday, October 18-Saturday, October 21. Bus – max. 35. *Leader: D. R. Pyke.*

Depart by plane from Toronto, Wednesday afternoon. Two days studying the Archean volcanic stratigraphy of the Timmins area, examining komatiitic, tholeiitic and calc-alkalic sequences, associated intrusive rocks and their relationships to known Cu-Zn, Ni and Au deposits. On third day emphasis will be on examining outcrops elsewhere in the region in which a number of primary volcanic structures and textures are well preserved and exposed.

**Cost: \$C215 or \$US193.** Includes round trip plane fare from Toronto, bus fare, 3 nights lodging, 3 lunches, 1 dinner and guidebook.

**3. Stratigraphy and economic geology of Elliot Lake uranium mining area.** Thursday, October 19-Sunday, October 22. Bus – max. 40. *Leader: J. A. Robertson.*

The trip will provide a traverse across the Southern Province of the Canadian Shield in the vicinity of the Principal Reference Section for the Huronian Supergroup. Emphasis will be on: a) Huronian Supergroup stratigraphy, sedimentation, facies changes (from north to south, i.e. from the Archean craton of the Superior Province towards the Penokean fold belt); b) relationship of uranium deposits to stratigraphy. Underground tour of a uranium mine.

**Cost: \$C140 or \$US126.** Includes bus fare, 3 nights lodging, 3 breakfasts, 4 lunches, 3 dinners and guidebook.

**4. The English River Subprovince, an Archean gneissic belt – its characteristics and associated mineral deposits.** Thursday, October 19-Sunday, October 22. Bus – max. 35. *Leaders: F. W. Breaks, W. D. Bond.*

Depart by plane from Toronto, Thursday afternoon. Cross-sectional examination bearing upon the geological evolution of an important high grade gneissic belt, in the Superior Province of Northwestern Ontario. Emphasis on general geology, structure, regional metamorphism, petrochemistry, associated U, Li, Cs and Be deposits and nature of contact zones with adjoining volcanic-rich Uchi and Wabigoon subprovinces.

**Cost: \$C289 or \$US260.** Includes round trip plane fare from Toronto, bus fare, 3 nights lodging, 3 breakfasts, 3 lunches and guidebook.

**5. Volcanology and mineral deposits of the Uchi-Confederation Lakes area, Northwestern Ontario.** Thursday, October 19-

Sunday, October 22. Bus and small watercraft – max. 22. *Leader: P. C. Thurston.*

Depart by plane from Toronto, Thursday afternoon. The trip will inspect portions of three basalt to rhyolite volcanic cycles of Archean age and include an underground tour of a massive Cu-Zn sulphide orebody (South Bay mine) associated with the uppermost cycle. Emphasis will be on volcanology, volcanic stratigraphy and the relationship of these parameters to rare earth element chemistry of the volcanic rocks.

**Cost: \$C306 or \$US275.** Includes round trip plane fare from Toronto, bus and boat fare, 3 nights lodging, 3 breakfasts, 3 lunches and guidebook.

**6. Geology of the Grenville Front Tectonic Zone in Ontario.** Thursday, October 19 – Sunday, October 22. Bus – max. 35. *Leader: S. B. Lumbers.*

The Grenville Front Tectonic Zone, one of the major structures of the Canadian Precambrian Shield, separates the Grenville Province from the Southern and Superior Provinces. Structural, stratigraphic and metamorphic aspects of the zone pertinent to its history will be examined at various localities between Temagami and Sudbury.

**Cost: \$C130 or \$US117.** Includes bus fare, 3 nights lodging, 3 lunches and guidebook.

**7. Geology of Carboniferous coal deposits in Nova Scotia (GSA Coal Geology Division).** Thursday, October 19 – Sunday, October 22. Bus – max. 40. *Leaders: P. A. Hacquebard, W. G. Potter, W. S. Shaw, A. R. Cameron.*

Assemble Thursday evening in Sydney, N.S. Paralic and limnic coal measures of Westphalian age will be seen in exposures and shore sections of Sydney, Mabou and Pictou coalfields. Underground visits in Sydney field to modern (submarine) Lingan Colliery and old French workings of 1720 are included with examination of megascopic seam profiles. Return to Halifax airport, Sunday afternoon.

**Cost: \$C120 or \$US108.** Includes bus fare, 3 nights lodging, 1 lunch and guidebook.

**8. Alkalic rocks of the Haliburton-Bancroft region.** Thursday, October 19 – Sunday, October 22. Bus – max. 40. *Leader: J. Gittins, R. Miller.*

Depart Thursday afternoon. The excursion will examine nepheline-bearing gneisses of both igneous and metamorphic origin, nepheline-rich pegmatites and a variety of demonstrably magmatic igneous nepheline-bearing rocks from fayalite-bearing nepheline syenites (sensu stricto) to nepheline gabbro and nepheline diorite.

**Cost: \$C120 or \$US108.** Includes bus fare, 3 nights lodging, 3 lunches and guidebook.

**9. Middle Wisconsinan stratigraphy of Southern Ontario.** Friday, October 30 – Sunday, October 22. Bus – max. 40.

*Leaders: P. F. Karrow, W. R. Cowan, A. Dreimanis, S. N. Singer.*

Depart Friday evening. Port Talbot and Innerkip interstadial peat, Cherrytree Stadial till and Late Wisconsinan tills will be seen on Saturday. Sunday will be spent examining: Thorncliffe Formation, Cherrytree Stadial tills, Early Wisconsinan Scarborough formation, Early to Late Wisconsinan tills and sands at Newcastle.

**Cost: \$C70 or \$US63.** Includes bus fare, 1 night's lodging (Friday) in London, Ont. (NOTE: Participants should make their own lodging arrangement through Toronto '78 Housing Bureau for Saturday night lodging in Toronto), 2 lunches and guidebook.

**10. Geology and engineering phenomena (landslide studies) of the Champlain Sea clays, Ottawa-Hull area.** Friday, October 20-Sunday, October 22. Bus – max. 40. *Leaders: N. R. Gadd, M. A. Klugman.*

Assemble in Ottawa, Friday evening. Day one will be used to summarize the late glacial history of the area, concentrating on the development of Champlain Sea sediments. Stops will inspect: deposits of various marine environments; channels eroded in these sediments by rivers; the geological setting of major landslides in these sediments. Day two will utilize this geological framework to examine the engineering properties, slope stability problems and remedial efforts which are being considered in dealing with these hazard lands. Return to Ottawa airport, Sunday afternoon.

**Cost: \$C85 or \$US76.** Includes bus fare in Ottawa-Hull area, 2 nights lodging, 2 lunches and guidebook.

**11. Archaeological sites – Pittsburgh to Toronto.** Saturday, October 21 – Sunday, October 22. Bus – max. 40. *Leaders: J. Donahue, P. L. Storck, J. M. Adovasio, J. D. Gunn, R. Struckenrath.*

Depart by bus from Pittsburgh. Main feature will be the geology and archaeology of the Meadowcroft Rockshelter, a Paleo-Indian site dating to 16,000 years B.P. An additional stop will include an Indian mound. Banting, Hussey and Fisher Paleo-Indian sites in Ontario and their relationship to the Lake Algonquin strandline will be examined.

**Cost: \$C100 or \$US90.** Includes bus fare, lodging, 2 lunches and guidebook.

**12. Engineering geology at Niagara hydroelectric plants.** Saturday, October 21. Bus – max. 40. *Leaders: T. Carmichael, G. Gorman, D. McKay.*

Visits will be made to the following hydroelectric stations: Ontario Power – valve chamber rock instrumentation, cliff face stability, Niagara geology; Toronto Power – residual stress effects, misalignment; Sir Adam Beck – rock face stability project, Niagara Gorge geology. Additional visits include the Schoellkopf Museum and Terrapin Point Collapse.

**Cost: \$C20 or \$US18.** Includes bus fare and guidebook.

- 13. Geology of the Greater Toronto region.** Sunday, October 22. Bus – max. 40. *Leader: E. B. Freeman.*

A general overview of the geology in and about Toronto: Ordovician bedrock, its environment and fauna; structural features illustrating high horizontal stress; Pleistocene events, Scarborough Bluffs; shoreline processes and shoreline management projects.

**Cost: \$C22 or \$US20.** Includes bus fare, lunch and guidebook.

- 14. Nuclear power plants, underground space and engineering geology.** Sunday, October 22. Bus – max. 80. *Leaders: T. Carmichael, G. Smith.* (This trip will be repeated on Friday, October 27. See Field Trip No. 22.)

Demonstrating the important role that geology plays in the planning of electric power facilities, the trip will tour Pickering Nuclear Generating Station, the world's largest, most efficient operating plant; the site excavation for the planned Darlington Nuclear Generating Station, including engineering geology, aspects of shoreline protection, dewatering, site geology; the construction site for the Wesleyville GS fossil fuel thermal station, including site geology, site excavation, underground bulk oil storage facility, cooling water intake and forebay.

**Cost: \$C20 or \$US18.** Includes bus fare and guidebook.

#### DURING MEETING

- 15. Airborne tour of the geomorphology and urban geology of the Western Lake Ontario drainage basin.** Monday, October 23 – Thursday, October 26. Twice daily if sufficient interest, weather permitting. *Leaders: G. J. Burwasser, J. Z. Fraser.*

A 1-hour circle tour to give an overview of such major Quaternary and Paleozoic features as Niagara Falls, Scarborough Bluffs, the Oak Ridges moraine, Niagara Escarpment and the glacial lake plains bordering Lake Ontario. Geological aspects affecting cultural development and land-use planning will be emphasized.

**Cost: \$C25.** Includes plane fare, transport to and from airport. On-site registration only.

- 16. Toronto geology (Geoscience Information Society).** Wednesday, October 25. Bus – max. 40. *Leader: E. B. Freeman.*

Afternoon tour to examine present and ancient shoreline features including Scarborough Bluffs and how geological features have affected the growth of the city.

**Cost: \$C7 or \$US6.** Includes bus fare.

#### POST-MEETING

- 17. Archean komatiitic, tholeiitic, calc-alkalic and alkalic volcanic sequences in the Kirkland Lake area.** Thursday, October 26 – Sunday, October 29. Bus – max. 40. *Leader: L. S. Jensen.*

Depart by plane from Toronto, Thursday evening. Stratigraphy consists of komatiitic, tholeiitic, calc-alkalic and alkalic volcanic rocks and coeval intrusives plus fluvial and turbiditic sedimentary rocks. Use of the Jensen Cation Plot to classify the subalkalic rocks and to recognize volcanic sequences, chemical trends and areas of Au, Cu, Zn, Ni and asbestos mineralization will be illustrated.

**Cost: \$C245 or \$US220.** Includes round trip plane fare from Toronto; bus fare, 3 nights lodging, 3 breakfasts, 3 lunches, 2 dinners and guidebook.

- 18. Silurian stratigraphy of the Niagara Escarpment, Niagara Falls to the Bruce Peninsula.** Thursday, October 26 – Saturday, October 28. Bus – max. 40. *Leader: P. G. Telford.*

Depart Thursday evening. This trip will examine Silurian litho- and biostratigraphy along the Niagara Escarpment, Southern Ontario. Beginning at Niagara Falls, where Lower Silurian deltaic sediments and Middle Silurian carbonate-bank deposits are well exposed, the excursion will follow the complex facies changes that occur as the Escarpment leaves the Appalachian Basin, crosses the Algonquin Arch and extends into the Michigan Basin. Opportunities for microfossil collecting and microfossil sampling of key sections will be provided.

**Cost: \$C90 or \$US81.** Includes bus fare, 2 nights lodging, 2 lunches and guidebook.

- 19. Geology and mineral deposits of the Sudbury area.** Thursday, October 26 – Sunday, October 29. Bus – max. 40. *Leaders: K. D. Card, D. G. Innes, E. F. Pattison, G. Cluff, J. F. Davies.*

Depart Thursday afternoon. This trip will involve a 3-day examination of the Sudbury Structure in its regional setting. Included are the Nickel Irruptive and its sulphide ore deposits, associated shock metamorphic features such as breccia and shatter cones, the Proterozoic rocks of the Sudbury Basin's interior and the surrounding rocks, the Proterozoic Huronian Supergroup of the Southern Province, and the Archean rocks of the Superior Province. An underground tour of a nickel mine will also be included.

**Cost: \$C140 or \$US126.** Includes bus fare, 3 nights lodging, 3 breakfasts, 3 lunches and guidebook.

- 20. Isograds around the Hastings metamorphic "Low".** Thursday, October 26 – Sunday, October 29. Bus and small watercraft – max. 28. *Leaders: D. M. Carmichael, J. M. Moore, Jr., G. B. Skippen.*

Depart Thursday afternoon. Around the margins of a sub-circular anomaly of low grade metamorphism in the Grenville Province of Eastern Ontario, isograds have been mapped denoting a rise from conditions of garnet zone to sillimanite-K feldspar zone and granulite facies. Day one: isograds in the pelites of the Whetstone Lake area, on the west side of

the "Low", will be traversed. A 7-km walk on bush roads and a 5-km boat journey will be involved. Day two: metamorphic zoning in pelitic and impure calcareous rocks in the Flinton-Bishop Corner-Fernleigh districts, on the east margin of the "Low", will be examined, from roads and short bush treks. The morning of the third day will involve roadside stops on high grade granulites and marble of the Frontenac Axis region.

**Cost: \$C90 or \$US81.** Includes bus and boat fare, 3 nights lodging, 3 lunches and guidebook.

- 21. The Kidd Creek mine, Timmins.** Thursday, October 26 – Friday, October 27. Bus – max. 20. *Leaders: P. R. Coad and others.*

Depart by plane Thursday afternoon. Underground tour of the massive sulphide (Cu, Zn, Pb, Ag, Sn, Cd) deposit to examine a stratigraphic section through the orebody and enclosing rocks. Examination of surface geology, tour of computer graphics facilities.

**Cost: \$C135 or \$US121.** Includes round trip plane fare from Toronto, lodging, transportation to minesite, lunch and guidebook.

- 22. Nuclear power plants, underground space and engineering geology.** Friday, October 27. Bus – max. 80. *Leaders: T. Carmichael, G. Smith.*

A repeat of the same trip planned for Sunday, October 22. For description and cost, refer to trip No. 14.

- 23. Geological overview: Canadian Shield and Paleozoic Lowlands, South-Central Ontario.** Friday, October 27 – Saturday, October 28. Bus – max. 40. *Leaders: W. M. Tovell, E. B. Freeman.*

Stops are planned in the Tweed, Madoc, Peterborough areas to examine Paleozoic rocks, the Paleozoic-Precambrian contact, and Precambrian rocks of the Grenville Province including pillow lavas, amygdaloidal lavas, stretched conglomerates, and intrusives. Surface visits to two or three mine sites will be made. A variety of glacial features will be reviewed and discussed from the bus.

**Cost: \$C70 or \$US63.** Includes bus fare, lodging, 1 breakfast, 1 lunch, 1 dinner and guidebook.

- 24. Hydrogeology and subsurface waste disposal in the Toronto region.** Friday, October 27. Bus – max. 40. *Leaders: R. C. Hore, G. Hughes, U. Sibul, R. Ostry.*

This trip will examine certain hydrogeologic conditions in the area around Metropolitan Toronto with specific reference to major aquifers and important ground-water recharge and discharge areas, and will include visits to waste management sites and a demonstration of geophysical techniques as applied to ground-water problems.

**Cost: \$C30 or \$US27.** Includes bus fare, lunch and guidebook.

**25. Structural geology and lithology of the Muskoka-Georgian Bay region (GAC Structural Geology Division).** Friday, October 27 – Saturday, October 28. Bus – max. 80. *Leaders: W. M. Schwerdtner, D. H. Waddington, J. R. Trusler.*

This high grade metamorphic terrain is part of the Grenville "sea of granitic gneisses" which covers the northwestern two-thirds of the Grenville Province in Ontario and Quebec. The trip will demonstrate that the actual lithology of the Muskoka-Georgian Bay region is rather varied, ranging from metagreywacke to

calc-silicate marble and from metagabbro to metamorphosed quartz-monzonite. The regional structure is dominated by complex major folds, some of which have been mapped in detail. Associated minor structures and mineral fabrics offer important clues to the development of these folds.

**Cost: \$C60 or \$US54.** Includes bus fare, lodging, 2 lunches and guidebook.

**26. Glacial geology of the Toronto-Georgian Bay area.** Friday, October 27 – Saturday,

October 28. Bus – max. 40. *Leaders: W. R. Cowan, D. R. Sharpe, B. H. Feenstra, Q. H. J. Gwyn.*

This trip will emphasize recent findings on the stratigraphy and geomorphology of Late Wisconsinan deposits of the Georgian Bay lobe. Deposits in the area of interaction with the Huron lobe will also be examined. Discussion of glacial materials in the Toronto area will take place en route.

**Cost: \$C60 or \$US54.** Includes bus fare, lodging, 2 lunches and guidebook.

## ABSTRACTS WITH PROGRAMS

Abstracts with Programs for the Toronto '78 meeting will be mailed to GAC and MAC members and to GSA members (except those at option A minimum dues level) as a benefit of membership. Single copies may be ordered from Boulder for mail delivery before the meeting **up to August 15, 1978**. Price is (1) **\$US6.50 to GSA members and nonmember authors** and (2) **\$US8.00 to all other participants** when ordered from Boulder. Copies will also be sold at the meeting for \$C7.25. All registrants will receive in their meeting packets a copy of the program section of the volume.

### ABSTRACTS WITH PROGRAMS:

**Remittance must accompany order.** Order must be received by GSA no later than August 15, 1978, for delivery before the meeting.

**Mall to: Manager, Marketing  
The Geological Society of America,  
3300 Penrose Place,  
Boulder, Colorado 80301**

Non-member author  
 GSA member no. \_\_\_\_\_

Enclosed is my check/money order in the amount of \$US\_\_\_\_\_ for \_\_\_\_\_ copies of *Abstracts with Programs* for the Toronto '78 meeting.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

**Cost: \$US6.50 to GSA members and non-member authors, \$US8.00 to all others.**

Residents of Colorado please add 3% state sales tax. Residents of the Denver metro area please add 3½% state and local taxes. Residents of Boulder please add 5½% state and local taxes.

**DAY CARE CENTER**

A licensed Day Care Center will be operated during the meeting if there is sufficient demand from preregistrants. If interested, please complete form below as instructed. **Remittance must be enclosed**, and form postmarked by August 31 and received by September 8.

**DAY CARE CENTER**

Name of Registrant \_\_\_\_\_

Address: \_\_\_\_\_

City \_\_\_\_\_

State/Province \_\_\_\_\_ Code \_\_\_\_\_

**Mail to: Toronto '78,  
P.O. Box 4170,  
Postal Station A,  
Toronto, Ontario, Canada,  
M5W 1T2**

I require Day Care for \_\_\_\_\_ child/children

	<input type="checkbox"/>	@ \$C15.50	<input type="checkbox"/>	\$US14.00	<input type="checkbox"/>	per child for	<input type="checkbox"/>	child/children	Amount
on: Monday, October 23	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	_____
Tuesday, October 24	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	_____
Wednesday, October 25	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	_____
Thursday, October 26	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	<input type="checkbox"/>	"	_____
<b>Total \$</b>									_____

Name(s) and age(s) of child/children \_\_\_\_\_

Enclosed is my check/money order made out to TORONTO '78 in the amount of \$ \_\_\_\_\_

Annual Meeting  
Housing and  
Preregistration  
forms inside

**GSA news &  
information**