

A detailed microscopic photograph of ice crystals, showing a complex network of needle-like and plate-like structures. A prominent circular feature, possibly a bubble or a specific crystal growth pattern, is visible in the lower right quadrant. The overall color is a pale, translucent blue.

NUMBER 8

JULY 1961

ICE

***News
Bulletin
of the
British
Glaciological
Society***



BRITISH GLACIOLOGICAL SOCIETY

The 25th Anniversary

OF THE FOUNDING OF THE SOCIETY
will be celebrated during the week-end of 5 - 7
January 1962, in Cambridge. Accommodation
will be available at one of the Colleges.

We hope to hold in the Scott Polar Research
Institute a film show, a general business meet-
ing and a Symposium on "The problems of mass
balance studies". A Dinner will be arranged in
one of the Colleges for the evening of 6 January.

Full details and booking forms will be sent
to members later this summer. We hope that
many members will be able to join us for the
week-end.

ICE

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Number 8

July 1961

The Society has suffered a great loss in the death of Mr W. Vaughan Lewis in a road accident on 8 June 1961 in Ohio, U.S.A. Mr Lewis, a Lecturer in Geography in Cambridge University, was on a six-month visit to North America, lecturing in geomorphology at the University of Chicago and travelling widely to many other universities and institutions interested in his recent work on glaciers. He had visited several places during April and May, lecturing on the mechanism of glacial erosion and the formation of ogives, and had written appreciatively of the kindness and consideration shown to him everywhere. He was looking forward with eagerness to field work in Alaska this summer.

His experience and enthusiasm will be sadly missed. His influence has spread far - there are about 40 members of the Society, in North America and the United Kingdom, who, as his students at Cambridge since 1945, formed the active groups which he organized to make a special study of glaciers, particularly in Norway. His persistence and enthusiasm also helped to interest Cambridge physicists in glaciological problems.

He served on the Society's Committee, as a Vice-President and as Chairman. His wisdom, unfailing good humour and optimism were invaluable to all who worked with him.

(We shall publish a full appreciation of Mr Lewis in the Journal of Glaciology.)

DUPLICATE PAPERS. There are still several duplicate glaciological papers available to members on request. A list can be obtained from the Editor, Journal of Glaciology, Little Dane, Biddenden, Ashford, Kent.

MEMBERS' LIST. If members find that their names and addresses are incorrectly published in the March 1961 issue, will they please inform the Secretary as soon as possible.

NUMBERING OF "ICE". In response to queries, we announce that the simple numbering of issues will continue and that there will be no division into volumes. No indexes will be published. We hope that this statement will help librarians who wish to bind "Ice".

Field Work

UNIVERSITY OF MICHIGAN GLACIOLOGICAL WORK ON THE ROSS ICE SHELF

A four-man expedition organised by the Geology Department, University of Michigan, flew from New Zealand to "NAF McMurdo" on 23 October 1960 in a U.S. Navy R7V "Constellation." Members were C.W.M. Swithinbank, glaciologist; T.E. Taylor, surveyor; J. Tuck, geographer and D.G. Darby, palaeontologist. The object of the expedition was to measure the rate of movement of the principal valley glaciers flowing into the west side of the Ross Ice Shelf. The party was taken to Mulock and Byrd glaciers in two helicopters. Aluminium stakes were drilled into the surface at 1-mile intervals across the mouth of each glacier. In places where crevassing made it dangerous to land, a man was lowered to the ice by means of the helicopter's rescue winch. Nine days were spent surveying the stakes from peaks overlooking the area. Swithinbank, Taylor and Darby were flown to "NAAF Beardmore" on 10 December in an R4D. Together with O. Liestøl, the Norwegian Observer on Operation "Deepfreeze 61", they departed on 13 December for Mount Hope. Two Eliason motor toboggans were used, each hauling two 4m. Nansen sledges and two men on skis. Owing to the crevassed nature of the terrain, each vehicle was steered from behind by means of 10m. long ropes. After finding a new route through the crevasses at the mouth of the Beardmore Glacier, a line of stakes was set up between Mt. Hope and Airdrop Peak.

Mt. Hope was climbed for the first time since Shackleton's ascent in 1908 and two survey stations were established. After delays due to bad weather the party returned to "NAAF Beardmore" on 26 December. On 29 December Swithinbank, Taylor and Darby left for Shackleton Inlet with a single motor toboggan hauling 1050 kg. (2300 lb.). Ten stakes were planted between Cape Wilson and Cape Lyttelton, and two survey stations were established on a nunatak off Cape Lyttelton. On the return journey over the ice shelf a further ten stakes were set up and surveyed by resection from mountain peaks. The party returned to "NAAF Beardmore" on 20 January after a journey of 560 km. (350 miles). Fuel consumption averaged 0.271./km. (9.5 m.p.g.). At each of the four major valley glaciers visited during the season, all the surrounding mountain peaks were intersected from the ends of a baseline fixed by sun altitude and azimuth observations. Two stakes were set up to measure the longitudinal strain rate in the middle of each glacier and a first approximation of the rate of movement was obtained. It is proposed to repeat all the ice movement measurements during the 1961-62 season. The party returned to "NAF McMurdo" in a C-130 aircraft on 17 February. Additional ice movement studies were continued during the season at Cape Crozier, Mount Discovery, Brown Island, Black Island and the Dailey Islands. The remains of upwards of 50 partially decomposed fish, together with numerous pelecypods, gastropods, brachiopods, siliceous sponges and anthozoan corals were found on the ablation surface of the ice shelf near the easternmost of the Dailey Island group. Seven 5-gallon water samples were obtained from snow on a line between White Island and Mount Erebus; they are being returned to the University of Michigan, Ann Arbor, for chemical analysis in connection with a study of rock weathering. Tuck visited "Byrd" and the "Amundsen-Scott" South Pole station to study recent developments in housing. Air support throughout the season was provided by Air Development Squadron Six of the U.S. Navy. The party returned to New Zealand in a "Constellation" on 21 February.

GLACIOLOGICAL WORK IN NEW ZEALAND. A visit was made to the névé of the Tasman Glacier to measure the year's annual accumulation. With the 1960 - 1961 very poor snowfall, the Tasman Glacier is in very poor condition. A great deal of crevassing occurred during the summer and generally the glacier is in the worst condition for many years. Photographs were taken of much of the glacier, as well as of the changes at present taking place near the terminal. Large circular "sinkholes" are developing along a line upstream from the river outlet at the terminal and a photographic record is being made of the changes taking place.

Some work has been done on the glaciers of Mt. Ruapehu. Permanent photo points have been established covering all the glaciers and aerial photographs have been made showing the mountain in its "barest" condition. It would appear that the glaciers have retreated a little since autumn last year and are now the smallest for many years. Much of the ash from the 1945 eruption has now been washed off the ice, and ablation may not now proceed quite as fast as over the last two summers. The snowfall last winter was rather small and this has no doubt affected the general decay rate of the glaciers.

SUMMER FIELD COURSE IN GLACIOLOGY. In cooperation with the Foundation for Glacier Research and the Juneau Icefield Research Program in Alaska, the Geology Department of Michigan State University is initiating a Summer Institute of Glaciological Sciences. The pilot season for this Institute will take place between August 1 and 30, 1961.

The headquarters for the Institute will be in Juneau, Alaska, with the basic field activities taking place on and in the vicinity of the Juneau Icefield in the Taku District. Here an established network of intermediate and high-level field stations, with the equipment and permanent facilities necessary for such a programme, is being made available through the coordinating agencies. Supplemental week-long survey trips will be made to the Taku Valley and Tulsequah-Atlin areas north and east of the icefield, and to the neighbouring Glacier Bay region 100 miles west of Juneau. These trips will deal largely with glacial geology and mapping. One segment will be conducted at the beginning and another at the end of the icefield programme.

Emphasis will be on Arctic and alpine geomorphology and glaciology, with special reference to the nature and processes of existing glaciers, as a basis for interpreting chronological sequences in land forms of the Pleistocene. Related consideration will be given to problems in bedrock geology, mapping, photogrammetry, glacio-meteorology/climatology, geophysics, and geo-botany.

The course will be offered through the summer school programme of Michigan State University. Further details and application forms available at: Geology Department, Michigan State University, East Lansing, Michigan.

Future Meetings

TENTH PACIFIC SCIENCE CONGRESS. The proceedings of this Congress, to be held between 21 August and 6 September 1961 in Honolulu, Hawaii, will include an Antarctic Symposium, of which the Convenor is Dr Harry Wexler. The programme has been arranged as follows:

22 August 1961

Antarctic Geography, Solid Earth and Upper Atmosphere
Chairman: J. Tuzo Wilson, Canada

Geography	C. R. Bentley, U. S. A.
Geology	R. J. Adie, U. K.
Geology	I. R. Cordini, Argentina
Volcanic geology, McMurdo Sound	S. B. Treves, U. S. A.
Multiple glaciation in Wright Valley, McMurdo Sound	R. Nichols, U. S. A.
Gravity and crust dynamics	G. P. Woollard, U. S. A.
Submarine geology	M. Ewing, U. S. A.
Outlines of southern ocean geomorphology	A. V. Zhivago, U. S. S. R.
Bottom sediments in the Antarctic	A. P. Lisitzin, U. S. S. R.
Morphology and some interpretations of geomagnetic variations in Antarctica	T. Nagata, Japan
The ionosphere over Antarctica	A. H. Shapley, U. S. A. and W. R. Piggott, U. K.
Auroral research in Antarctic regions	N. J. Oliver, U. S. A.

23 August 1961

Antarctic Meteorology, Oceanography and Glaciology
Chairman: H. Wexler, U. S. A.

The analysis of some characteristic processes of atmospheric circulation over the Antarctic	B. L. Dzerdzeyevsky, U. S. S. R.
Meteorology	H. R. Phillpot, Australia
Atmospheric advection and the Antarctic heat budget	M. J. Rubin, U. S. A.
The heat exchange between the Antarctic waters and the adjacent oceanic waters	V. G. Kort, U. S. S. R.
Geostrophic currents in the Antarctic sector of the Pacific	B. A. Tareyev and A. F. Fomichev, U. S. S. R.
New Zealand contributions to physical oceanography of the Ross Sea sector of the Southern Ocean	D. M. Garner, N. Z.

Physical oceanography of the Drake Passage	O.A. Casellas and R. Paccagnini, Argentina
Ice phenomena in the Bellingshausen Sea in the 1959-1960 season	A.J. Valdez and R. Nawratil, Argentina
(both papers to be presented by Admiral R. Panzarini, Argentina)	
The amount of ice on planet Earth	E. Thiel, U.S.A.
Glaciology of Antarctica	P.A. Shumskiy, U.S.S.R.
Glaciology	R. Cameron, U.S.A.
Stratigraphic distribution of particulate matter in the firm at Byrd Station, Antarctica	E. W. Marshall, U.S.A.
Dynamics of ice shelves	J. Zumberge, U.S.A. and C. Swithinbank, U.K.
New Zealand glaciology	R. P. Goldthwait, U.S.A. and I. C. McKellar, N.Z.
South American glaciology	B.S. Colqui, Argentina

President's Report

March 1961

This is a year of unusual significance for our Society. Not only shall we this autumn be celebrating the first quarter-century of our existence, but we shall also have to give our minds and our energy to some important matters that affect our future.

Let me deal first with the happenings of the last 12 months:-

Our records give the following figures of our present supporters as shown by the circulation of the Journal of Glaciology:

Members	499 as against 445 last year
Subscribers to the Journal	442 " " 433 " "
Free and exchange issues	73 " " 67 " "
	<u>1014</u> <u>945</u>

I should add that the free issues which we are obligated to provide are very few in number.

This net increase of 69, good though it is, is not enough. We must not relax our efforts to obtain more members. On the contrary. The increase in our membership this year is partly due to the efforts of Mrs Richardson, our Secretary, in Scandinavia last summer, and it shows that there are many potential candidates for membership if only we can "get among them".

May I respectfully suggest to our Oversea Correspondents that there are few more important tasks for them than to approach all those in their countries who could be interested in the Society's work, but who are not fully apprised of it.

A few of our Correspondents have indeed brought us new members, and to them we are most grateful.

Since I last addressed you, 12 lecture meetings of the Society have taken place in Cambridge, Oxford, London, Birmingham and Durham. Some of these gatherings were joint with other organisations, but at each one a paper was read by one of our own members. It is gratifying to note the interest shown in glaciology at Cambridge, at the Imperial College in London, in Birmingham, and in Durham.

In addition to these 12 meetings two more were held for the first time outside Britain - one in Helsinki and one in Stockholm. Their main purpose was to discuss the proposed evolution of the Society - a subject which is uppermost in our minds at present, and to which I will return later. Mrs Richardson, who was present at both these meetings, reported that the amount of goodwill shown towards the Society abroad was surprisingly great. This is naturally most gratifying to us.

Last October Mrs Richardson also went as an observer for the Society to a meeting of the International Glaciological Greenland Expedition (E.G.I.G.) at the invitation of its President, Dr Børge Fristrup. In this connexion one of the problems at present engaging the attention of our Committee is in what way the United Kingdom can help the work which is now being planned for the resumption of this valuable research, and which will take place in a few years' time.

Work continues in Cambridge at World Data Center C of the I.G.Y. under the day to day supervision of our Secretary. She is thus so fully occupied that she has had to engage an assistant to take some of the Society's work off her shoulders.

The Glaciological Research Sub-Committee has had another active year under the direction of Dr J. W. Glen. A full account will be published later.

It may appear somewhat trite for me to repeat year after year how grateful we are to all those, both in this country and abroad, who help us in so many ways. I will only say that without their ready help neither the Society nor its Journal could survive.

During the past year we were glad to welcome a considerable number of our overseas members to this country. All our visitors went to our headquarters in Cambridge but in addition some were able to devote time to visiting my home in Kent, where we were able to show them the Society's library and much other glaciological matter.

I come now to the important problems for the future development of the Society, which must receive much careful thought during the next few months.

In the July issue of *Ice* we published a note and a letter to our members pointing out the wish of our Committee to give our overseas members more voice in the management of the Society's affairs. The Society is tending to internationalize itself, if I may use that term, for our members from abroad now constitute three-quarters of the whole membership. It seems only right that overseas members should have adequate representation on our governing body.

It also seems probable that we shall need to enlarge the Journal and perhaps to produce it quarterly. The Journal started in 1947 with 42 pages. Today it is something like four times that length. If it is to be further enlarged, this will entail a considerable increase in the cost of editing, printing and circulation. So that, quite apart from the justice of having overseas representation on the Committee for the reason stated above, we hope that this will also help us to receive additional counsel and facilities in increasing our financial resources.

If any members have views on these two points - the development of the Society and of its Journal - we hope they will write to us. Research in these problems is still continuing, and when the situation becomes clear our Committee will formulate proposals which will be placed before a General Meeting for a vote. Before the vote is taken, however, the proposals will be circulated to all our members in time to receive their reactions.

It will be seen from these concluding sections of my report that this year is indeed one of momentous importance for all those of us (and I think it is a very large majority) who have the welfare of our Society and of glaciology at heart.



Robert Haefeli

The Alps are the mountains which most of us think of first for examples of valley glaciers, and the glaciers of the Alps have for long been studied by glaciologists. The Swiss, living so near to these great ice streams, have consequently provided more than their quota of glaciologists. Robert Haefeli, who is today so much in the forefront of Swiss, and indeed world, glaciology, is an example of one who has regarded the mountains as a source of both work and recreation since his earliest days.

He was born in 1898, the son of a hotel owner in Lucerne, and was brought up to regard ski-ing and mountaineering as the natural form of recreation. He trained as a civil engineer in Zürich, and practised as such in Germany, France and Spain as well as in Switzerland. Throughout this period he continued ski-ing and mountaineering, and early collaborated in preparing the "Walliser Skiführer".

In 1933 he became head of the first Swiss laboratory on soil mechanics in Zurich. In 1935 he was appointed head of the Eidg. Institut für Schnee- und Lawinenforschung (Federal Institute for Snow and Avalanche Research), which had been founded a few years previously at the Weissfluhjoch above Davos. Here his experience in soil mechanics was successfully applied to the allied problems of snow. At the Weissfluhjoch many scientists have worked who were to become prominent in glaciological studies, including Bader, Bucher, and de Quervain. Haefeli and his team welcomed to the Institute some British glaciologists who later became members of the British Glaciological Society, among them Gerald Seligman, and gave them ready advice and facilities in their researches.

From snow studies Haefeli moved on to glaciers, and in 1939, perhaps taking his cue from the British glaciological researches there, he started his famous series of investigations on the Aletsch Glacier. This work he has continued over a long period, use being made by him of the Jungfrau research station and the tunnels dug into the ice on the ice col. He has also made good use for glaciological research of tunnels dug into the Arolla and Z'Mutt Glaciers. From the study of these alpine glaciers he has now moved on to the large problems of the ice sheets of Greenland and Antarctica. From its inception he has been associated with the International Glaciological Expedition to Greenland (E. G. I. G.) and was its President in 1956 and 1957. The results of his work there are still being published.

Haefeli has been active, too, in the work of the International Commission for Snow and Ice, and was its President from 1954 to 1957, and, while ill health prevented him from presiding over its meetings in Toronto, he has attended later meetings of the Commission, showing many signs of his recovered health and activity.

Since 1942 Haefeli has been professor of soil mechanics, snow mechanics, and avalanche protection at the Eidg. Technische Hochschule in Zürich, and in 1950 he became president of the Gletscherkommission der Schweiz, a post he still holds. These important appointments show how successful Haefeli has been in applying his engineering training to the study of snow and ice. Few people, if any, can claim so distinguished a record in glaciology, and it is to be hoped that his contributions to it will continue for many years.

**International Union of Geodesy and Geophysics
International Association of Scientific Hydrology
Commission of Snow and Ice**

Symposium on the variations of the regime of existing glaciers
Obergürgl, September 1962

FIRST CIRCULAR

(This document supercedes the version published in error in the
Bulletin of the Association of Scientific Hydrology for March 1961)

At the General Assembly of the I. U. G. G. at Helsinki in 1960 it was agreed that the Commission of Snow & Ice should hold a symposium entitled "The variations of the regime of existing glaciers" at Obergürgl in the Austrian Tyrol in 1962. At the same time the Commission appointed a sub-committee to prepare a document detailing the methods of recording glacier variations with the object of encouraging all countries to cooperate in a continuous and systematic world-wide assessment of the state and trend of glaciation. This sub-committee is now at work, and it is hoped that its recommendations will be circulated to all nations and that the measurements will be commenced before the Symposium takes place. The object of the Symposium is firstly to bring together all those people who are, and will be, engaged in regularly recording glacier variations to discuss their problems and to report progress, and secondly to discuss recent research into the causes of glacier variations and the processes by which glaciers respond to climatic changes.

Place and date

The Symposium will be held from Monday 10th to Tuesday 18th September 1962 at Obergürgl, Austria, by kind invitation of Prof. H. Hoinkes of the Institute of Meteorology and Geophysics of the University of Innsbruck. Obergürgl is a high alpine village (altitude 6,300 ft.) lying at the head of the Oetztal, a valley which runs up to the Italian frontier to the south-west of Innsbruck. All trains stop at the Oetztal railway station and there is a bus running between Oetztal and Obergürgl.

The meetings will be held in the Hotel Edelweiss and Gürgl with a seating capacity of more than 200 and with facilities for the projection of slides and 16 mm. film.

Accommodation

Details of accommodation, prices and booking instructions will be given in the next circular. There is room for over 500 people in hotels, and in addition there is plenty of cheaper accommodation in pensions and in the State sports centre. Dormitory accommodation plus food costs as little as 53 Austrian shillings per day at the sports centre.

Excursions

A) **Before the Symposium**: It is proposed that an excursion to several important Swiss glaciers and research centres should be organised to commence about one week before the Symposium starts. This is intended mainly for the benefit of visitors from outside Europe. Details will be sent later to those people who express a wish to join the excursion on the attached form.

B) **During the Symposium**: Several half and whole day excursions by bus, chair lift, and on foot will be arranged in fine weather during the period of the Symposium. These include visits to glaciers and other interesting places in the Oetztal, to the northernmost glacier in the Alps on the Zugspitz in Germany, to Meran in the South Tyrol (Italy), and to the Engadine in Switzerland. (Passports and visas will be required where necessary).

C) **After the Symposium**: Two excursions will be arranged to last 2 or 3 days after the Symposium is over:-

1) by bus to the Pasterze glacier and the Gross Glockner, the largest glacier and the highest mountain in Austria.

2) on foot. A mountaineering trip to the Hintereis, Kesselwand and Vernagt glaciers where the Austrian I. G. Y. programme on glacier meteorology was carried out. This trip will be led by Prof. H. Hoinkes and the party will stay 2 nights in a mountain hut.

Banquet

A banquet, with entertainment by Tyrolese singers and dancers, will be given at the

invitation of the Tiroler Landes-Regierung representing the Austrian Government in the Tyrol.

Papers for the Symposium

a) Contents: The papers submitted to the Symposium must be original and must not have been published previously. The papers can cover any of the following topics: reviews and analyses of records of the glacier variations and associated phenomena in any area, statements of new national programmes for recording glacier variations, new data on detailed measurements of changes in the state of particular glaciers and correlation with climatic changes, studies of the processes and mechanisms by which glaciers vary in extent, theoretical studies of the response of glaciers to seasonal and climatic changes.

The papers must relate to studies on existing glaciers; extinct glaciers and glaciations are excluded.

b) Text, diagrams and photographs: The complete paper, including short abstracts in both English and French, diagrams, tables and photographs must not exceed 15 pages of typescript, each page containing not more than 300 words. The paper must be written in either English or French. The number of photographs must be kept to a minimum; the diagrams must be drawn with black lines on white paper, or tracing linen, and be suitable for direct reproduction. Papers must be typed with double spaces between lines.

c) Submission of papers: Authors should submit their papers to the National Committees of Hydrology or National Correspondents of the Commission who will be responsible for selecting the papers and for fixing the dates when they require the abstracts and complete papers to be submitted to them. The National Correspondents should forward the selected documents to the Secretary of the Commission not later than the dates given below. Late documents will not be accepted.

Three copies of the titles and abstracts in both English and French must be sent to the Secretary of the Commission not later than 1 February, 1962.

Three copies of the complete paper, including English and French abstracts, together with diagrams and photographs for reproduction must be sent to the Secretary of the Commission (address: 147, Rickmansworth Road, Watford, Herts., England) to arrive not later than 1 April, 1962.

The papers will be screened, edited and published before the date of the Symposium.

d) Limitation and screening of papers: Following the resolutions made at Helsinki, the number of papers to be submitted from each country to the Symposium is to be limited, and the suitability and quality of the papers are to be screened by a sub-committee appointed by the Commission. The Commission has decided that the total number of papers which can be printed is about 40.

e) Authors' addresses and reprints: Authors should give their addresses on their papers and place orders for the number of reprints they require on submitting their papers. A charge will be made for all copies of the Proceedings of the Symposium and for all reprints.

Preliminary information from participants

Anyone who is likely to attend the Symposium, or intends to submit a paper, should complete the attached form and send it to the Secretary of the Commission as soon as possible and not later than 30 September, 1961.

Second Circular

A further circular, which will give complete details and costs of accommodation, excursions and instructions for registration etc., will be issued in Spring 1962.

W. FREIDRICH
President, I.A.S.H.

P. A. SHUMSKY
President, Commission of Snow & Ice
W. H. WARD
Secretary, Commission of Snow & Ice

COMMISSION OF SNOW & ICE

Symposium on the variations of the regime of existing glaciers
Obergürgl, 10 - 18 September 1962

Preliminary Information Form

1. SURNAME INITIALS TITLE

2. ADDRESS
.....

(write in block capitals)

3. Do you expect to attend the Symposium? Yes. Possibly. No.
(cross out the words which do not apply)

4. I shall be accompanied by ladies children
(delete or give number)

5. Do you intend to submit a paper? Yes. Possibly. No.

6. Do you require a copy of the Proceedings when available? Yes. No.

7. Do you wish to join the excursion to Switzerland before the Symposium? Yes. No.

8. Do you wish to receive the second circular giving final details,
accommodation, etc.? Yes. No.

Send this form to the Secretary of the Commission before 30 September 1961

Mr. W. H. Ward,
Secretary: Commission of Snow & Ice,
147, Rickmansworth Road,
Watford,
Hertfordshire,
England.

—♦—

General Assembly, Berkeley, California, 1963.

At a meeting of the officers of the Commission in Zürich in April last it was decided that:-

- 1) Papers may be presented for discussion at the Assembly on the following subjects:-
 - a) the transfer of heat and mass in snow cover, ice cover, glaciers and frozen ground,
 - b) new developments in methods and techniques,
 - c) Antarctic glaciology.
- 2) A total of about 35 papers will be accepted covering items a) and b) together, and about 15 papers for item c).
- 3) The general organisation of the Commission's meetings at Berkeley will be undertaken by Mr William O. Field.

Appointment of National correspondents & sub-committees.

National committees of the Union are urged to appoint National correspondents and sub-committees to the Commission, and to inform the Secretary (Mr W. H. Ward) accordingly. Active glaciologists in every member country are asked to see that such appointments are made.

W. H. WARD
Secretary

News

Arnold Court, formerly Research Meteorologist with the U.S. Forest Service at Berkeley, Calif., and lecturer at the University of California, has been appointed Chief, Applied Climatology Branch, at the Air Force Cambridge Research Laboratories, Bedford, Mass. Dr A. Farrington has retired as Assistant Secretary of the Royal Irish Academy. He has been awarded a Sc.D. honoris causa by Dublin University.

Dr Cuchlaine A.M. King, University of Nottingham, has been awarded the Gill Memorial of the Royal Geographical Society for glaciological and coastal research.

An award under the Royal Society and Nuffield Foundation Commonwealth bursaries scheme has been made to Mr I. C. McKellar of the New Zealand Geological Survey, to assist him in studying glacial geology, Pleistocene stratigraphy and techniques in glaciology in British Columbia, Canada, during April and May.

The Royal Society British National Committee for Geodesy and Geophysics (Hydrology Subcommittee) has appointed Professor G. Manley to act as National Correspondent of the Subcommittee to the Snow and Ice Commission of the International Association of Scientific Hydrology.

Professor P. -L. Mercanton celebrated his 85th birthday on 11 May 1961 at Lausanne. We offer him our best wishes.

We are sorry to record the death in Jan Mayen on 25 June of Peter Smith, aged 23, deputy leader of a glaciological and geological survey expedition organized by Imperial College and Birkbeck College, London University. Mr Smith had been active in the past 3 years in building up an enthusiastic group of young glaciologists in Imperial College, and had given a lecture to the Society in December 1960 on the work of his group in Jan Mayen during 1959. Four companions are also missing, three of them glaciologists from Imperial College.

Professor Kaare Strøm, our Norwegian Correspondent, will read a paper in the British Association meetings in Norwich during August.

Professor Carl Troll has been elected President of the International Geographical Union.

John R. Williams is now working in Alaska studying the occurrence of ground water in permafrost regions for the Ground Water Branch of the U.S. Geological Survey. Initial phases of the work will include preparation of an annotated bibliography, and collection of all available well data in the permafrost region of Alaska. It is hoped that enough data will be available to formulate some principles of the relationships of ground water to permafrost.

The U.S. Antarctic Research Program of the National Science Foundation has an ice-working cargo vessel on lease from the Military Sea Transportation Service that is being converted into an Antarctic research vessel. It is planned that there will be laboratories and facilities for a wide variety of scientific efforts. The ship will not be geared toward oceanography but toward a varied programme as proposed by institutions and scientists interested in the ship. It will have a home port somewhere in the Southern Hemisphere and will stay in Antarctic waters throughout most of each year. Individual cruises will last 3 to 10 weeks each. Scientists will be flown to appropriate ports to catch the ship for their scheduled research cruise and then flown out again on completion of their work. Land research, such as geology, glaciology, and biology, will be considered for areas not easily accessible by other means. Scientists may propose support for research on the ship by addressing proposals to the National Science Foundation in the same way that other research grants are requested. Proposals from non-U.S. scientists are welcome.

A work has recently come to light in a store-room of the Faculté des Sciences at Grenoble entitled "Observations sur les variations des glaciers et l'enneigement dans les Alpes Dauphinoises organisées par la Société des Touristes du Dauphiné", compiled by W. Killian and G. Flusin and the guides of the Society, from 1890 to 1899.

Professor L. Lliboutry has presented a copy of this work to the library of this Society, and has a few more copies available. He will donate a copy to any library which is interested. Applications should be made to the Laboratoire de Géophysique et Glaciologie, Institut Fourier, Place Doyen-Gosse, Grenoble (Isère), France.

In January 1947 the "Geographical Review" noted in the "Geographical Record" the transference to the custody of the Geographical Society by the Research Committee on Glaciers (of the Section of Hydrology of the American Geophysical Union) of its collection of some

five thousand photographs of Alaskan glaciers. These pictures formed the nucleus of a collection that during the intervening years has been expanded to about twenty-five thousand ground and air photographs of glaciers and related features in Alaska, the American and Canadian Rockies, the Sierra Nevada, the Cascades, the Olympic Mountains, the Alps, the Caucasus, and the Andes. The collection, which is under the supervision of the I.G.Y. World Data Center A: Glaciology, is available for consultation. Some, though not all, of the photographs may be reproduced at a nominal fee.

On 16 April the Australian Prime Minister opened at Adelaide University the Mawson Institute of Antarctic Research, which it is hoped will develop along lines similar to those of the Scott Polar Research Institute. The Mawson Institute will foster polar studies and research, and maintain and develop a collection of Antarctic equipment and geological and biological specimens, especially those associated with Sir Douglas Mawson's three trips to Antarctica.

Reviews

GLACIERS. ROBERT P. SHARP. Eugene, Oregon, University of Oregon Press, 1960. V + 78 p., illus., 25 cm. \$1.25.

This admirable booklet records the lectures given by Professor Sharp under the Oregon State System of Higher Education. We cannot describe its contents in words more eloquently than those used by Mr L. Cressman in part of the Preface: "Dr Sharp in these lectures took his audiences over the surfaces of his 'streams of ice', down into crevasses and into depths explored by scientific instruments and methods. Occasionally he took us on short jaunts to Greenland and Antarctica. He succeeded superbly in creating an understanding of and conveying a feeling for these glaciers with which he is on such familiar terms, in their beauty, their tremendous power, their complex structure and behaviour whether in terms of masses of ice or component crystals, and showed how glaciers may be studied as ongoing illustrations of the geological processes at work in rocks throughout the long period of geologic time." We cordially agree.

GLETSCHERFORSCHUNGEN AUF ISLAND (VATNAJÖKULL). EMMY MERCEDES TODTMANN. (Abhandlungen aus dem Gebiet der Auslandskunde, Bd. 65. Reihe C (Naturwissenschaften), Bd. 19), Hamburg, Cram, de Gruyter, 1960. 95 p., illus., map. DM. 45.00.

This work is the result of the author's several journeys to Iceland and her observations on many of the glaciers running off from Vatnajökull. The items described are for the most part the formations at the tongues of these glaciers, the run-off and the periglacial formations. The first two journeys took place in 1931 and 1934 on the south side of the ice cap. The third was in 1950 by which time the recession of the glaciers had revealed many previously hidden features. Thereafter journeys were made in 1951, 1953, 1954, 1955 and 1956. The glaciers on which the principal observations were made were on the Eyjabakkajökull and the Brúarjökull on the north side of Vatnajökull and on the Skeidarárjökull, the Morsábjökull, the Svinafellsjökull, the Kvíarjökull, the Breidarnarjökull, and the Hoffellsjökull on the south side.

PROBLEMS OF THE NORTH. (A translation from the Russian). Ottawa, Canada, National Research Council, No. 1, 1958. (Translated December 1960). 376 p., illus., maps, 27 cm. \$7.00.

This recently published work contains translations of 29 papers in Russian, all of considerable interest. It was originally produced by the Academy of Sciences, USSR, and contains papers in the fields of oceanography, geography, biology, economics, and geophysics. The latter contains about a dozen papers which are of pure glaciological interest.

We congratulate Miss Moira Dunbar and her Editorial Board on a first-rate and valuable piece of work.

DIE VERSCHWUNDENEN GLETSCHER DER OSTALPEN (SEIT DEM LETZTEN HOCHSTAND UM 1850). (The vanished glaciers of the Eastern Alps - since their maximum about 1850). VIKTOR PASCHINGER. Vienna, Abhandlungen der Österreichischen Geographischen Gesellschaft, Bd. 18, 1959. 67 p.

This work gives, in considerable detail, the present condition of the glaciers in the Eastern Alps, compared with that of a hundred years ago. The areas described number

twenty-one, of which the principal mountain groups are - the Silvretta, Otter, Oetzal, Stubai, Glockner and Venediger. The total number of glaciers in the various areas is 1500, of which 421, or 28.1%, are either no longer active or have entirely disappeared.

GEOMORPHOLOGISCHE STUDIEN. Machatschek-Festschrift. Comps. H. LOUIS and I. SCHAEFER. (Supplement No. 262 of Petermanns Geographische Mitteilungen) Gotha, Hermann Haack, 1957. viii, 336 p., maps, illus., 28 cm. DM 48.20.

This book was produced in honour of the 80th birthday of Professor Fritz Machatschek, the noted geographer, who has specialised in geomorphology. Twenty-eight authors have contributed articles. These are divided into the following sections:

The history of geomorphology; the general theory of surface formation; special studies of form-making processes. There follow five separate sections on geomorphological studies in the Alps, in the areas surrounding the Alps, in southern Europe, in Asia and in South America.

The action of glaciers is part of the study of geomorphology, but there are several papers of more direct glaciological interest: by W. Pillewizer on the movement of Karakoram glaciers, by H. Paschinger on late glacial action in the Eastern Alps, by K. Gripp and E. Ebers on the former Inn and Chiem Glaciers, by H. von Wissmann on Karst in Arabia, and by H. Wilhelmy on the Ice Age and its climate in the Andes.

One could wish that an excellent, valuable work of this kind could publish English and French abstracts of its articles - a labour that would add little to the immense task of bringing out an otherwise beautifully produced work of this kind.

VATNAJÖKULL. JON EYTHORSSON. Almenna bókafélagid, P.O. Box 9, Reykjavík, Iceland, 1960. 44 p., 72 illus., 24 cm. £3.0s.0d.

There are 17 pages in English after the Icelandic introduction, giving a popular description of the ice cap and its outflow glaciers. The main feature of the work is the collection of 72 plates, some coloured. They are divided into 3 groups; the first shows the principal features of Vatnajökull and its outflow glaciers, the second various phenomena such as volcanic action in Grimsvötn, and finally, some general scenes such as expeditions on the glacier. The photographs are superb and the whole get-up of the work is of as high a standard as one could wish.

The book may be obtained from: Bókaverzlun Sigfúsar Eymundssonar, P.O. Box 868, Reykjavík, Iceland.

LATE-PLEISTOCENE ENVIRONMENTS OF NORTH PACIFIC NORTH AMERICA. C.J. HEUSSER. American Geographical Society, New York, 1960. 308 p.

The sub-title of this book announces that it deals with the "Late-Glacial and Postglacial Climatic, Physiographic and Biotic Changes" of the coast of North Pacific North America. This promise is fulfilled abundantly, and the contents and list references in fact collect an amazing amount of information into a small space. The writing is never monotonous, and although dealing mainly with the results of pollen analyses this book also summarises a large body of work on the advances and retreats of glaciers during the last thousand years or so, past and present variations in the height of shore-lines and a detailed history of volcanic eruptions. For this catalogue, much use is made of radiocarbon dating. All the Holocene period is discussed to some extent; incidentally one wonders whether the horrible Hypsithermal is really necessary instead of "climatic optimum"?

Interesting as this book will be to students of pollen analysis (must we be burdened with another long word "palynology"?), and important as the information on various physiological changes may be, this book will make a special appeal to anyone working on the climatic changes during the last 1000 years or so. The collection of information on this subject is very important and up-to-date.

GEOLOGIC EVOLUTION OF EUROPE. R. BRINKMANN. Ferdinand Enke Verlag, Stuttgart; The Hafner Publishing Company, New York, 1960. 161 p., illus., 24 cm. DM 30.00. (Translation from the German by J.E. Sanders).

This book is a condensation of the second volume of the 8th edition of the well-known "Abriss der Geologie", which is a standard textbook for Continental geology students. In

the past decade the geological knowledge of Europe has advanced considerably and, therefore, the author's task in presenting the overall picture in handbook form has been a formidable one. In spite of realising this, it comes as a shock to the English reader to find the Jurassic and Cretaceous Systems of the British Isles dismissed in 18 and 14 lines respectively.

The brief text is copiously supplemented and illustrated by useful correlation charts, palaeogeographical and geological maps, line sketches and photographs of important index fossils. The correlation charts unfortunately still bear the original German lettering; the system of symbols, hatching and stippling of each is the same, and an explanation of this is given at the beginning of the book.

The first chapter introduces the reader to the history of European geology and the final one epitomizes the development of the European continent. In the intervening 145 pages each stratigraphic system is provided with its own water-tight compartment, and the book progresses all too quickly from the Pre-Cambrian to the Quaternary. Individual chapters give the boundaries, classification, distribution, details of the principal regions, and the general climatic and environmental features of each System, together with associated tectonic movements.

For the Quaternary geologist there is an adequate summary of European refrigeration, illustrated by very interesting palaeographic maps and detailed correlation charts (some of which include several unfortunate errors only exposed by recent research).

New glacial map of the U.S.S.R.

Until now the standard source on the former extent of ice cover in the U.S.S.R. has been I. P. Gerasimov and K. K. Markov's work, "The glacial period in the territory of the U.S.S.R." (Moscow, 1939). The large amount of research done since that time has led to the compilation of a new map, under Markov's supervision, by I. A. Suyetova of the Institute of Geography of the U.S.S.R. This map is called "Map of the present and ancient glaciation of the U.S.S.R." and is on a scale of 1 : 5 million, but it does not seem to be available yet at that scale. There is a published version, reduced to 1 : 25 million and with a short explanatory note by the compiler, in "Vestnik Moskovskogo Universiteta", Seriya V. Geografiya, 1961, No. 2, p. 53-55. Suyetova makes the point that her figures for the areal extent of ice, both the maximum and the last glaciation, differ considerably from R. F. Flint's in "Glacial and Pleistocene geology" (New York, 1957), and ascribes this to Flint's not having recent Soviet data. The new map contains much useful information, but users will find some difficulty in deciphering parts of it at this scale. One may hope that the U.S.S.R. will follow the Canadian example and produce something comparable to the fine "Glacial map of Canada" (Geological Association of Canada, 1958).

Other Books Received

Exploring glaciers - with a camera. A. E. Harrison. Sierra Club, San Francisco, 1960. 71 pages, illus., 24 cm. \$1.95.

Matter and Light - the new physics. Louis de Broglie. London, Constable & Co. Ltd., Dover Publications, (Reprint, 1960). 300 p., 20.5 cm. 13s.0d.

Characteristics of existing glaciers. W. H. Hobbs. New York, The Macmillan Company, 1911: xxiv, 301 p., illus., 22.5 cm.

Bibliography and index of geology, exclusive of North America. Vol. 23. 1958. Marie Siegrist and Mary C. Grier. Washington, The Geological Society of America, 1960. 822 p., 25 cm.

Die Heutige Vergletscherung und Schneegrenze in Hochasien. Hermann von Wissmann and Hermann Flohn. (Abhandlungen der Mathematisch-Naturwissenschaftlichen Klasse, Jahrg. 1959, Nr. 14), Wiesbaden, Franz Steiner Verlag 1960. P. 1103-1431, illus., and map inset, 25 cm. DM 34.40.

The Society's Library

Papers etc. received for the Society's library since November 1960.

We thank the following authors or donors of papers and pamphlets and regret that it is impossible to acknowledge them individually. The glaciological works, with their complete references, will be listed in the "Glaciological Literature" at the end of the Journal of Glaciology and bound in the Society's collection of glaciological papers.

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 Cambridge.
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 The Highlands, Madison 5, Wisc., U.S.A.
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 Colorado State University, Fort Collins, Colorado, U.S.A.
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 RFD West Acton, Mass., U.S.A.
 Hastings, Andrew D., Jr., P.O. Box 383, Natick, Mass., U.S.A.
 Henry, T.A., 6 Park Gate Avenue, Manchester 20.
 Hewitt, K., Pembroke College, Cambridge.
 Howarth, Philip J., Pembroke College, Cambridge.
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 Lorius, Claude J., Laboratoire de Géologie, Collège de France, Place Marcelin Berthelot,
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 Péguy, Charles-Pierre, Laboratory of Climatology, University of Rennes, Department of
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 Raitt, William L., 84 Evesham Road, Cheltenham, Glos.
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 Canada.
 Ritland, R.M., Geoscience Research Institute, Berrien Springs, Mich., U.S.A.
 Robinson, Edwin S., Geophysical & Polar Research Center, 6021 South Highland Road,
 The Highlands, Madison 5, Wisc., U.S.A.
 Ross, William P., 17 Vandine Street, Cambridge 41, Mass., U.S.A.
 Schroter, Robert C., 17 Church Road, Potters Bar, Middx.
 Sullivan, Walter, 66 Indian Head Road, Riverside, Conn., U.S.A.
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 Japan.
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 Untersteiner, Norbert, Hohe Warte 64, Vienna XIX, Austria.
 Vernon, Peter, Geological Survey of Canada, Rm. 608, Ottawa, Ontario, Canada.

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Further details may be found in the *Journal of Glaciology*,
published in March and October.

I C E

Editor: MRS. H. RICHARDSON

This news bulletin is issued free to all members and subscribers of the British Glaciological Society, and is published in January and July. Contributions should be sent to Mrs. H. Richardson, c/o Scott Polar Research Institute, Lensfield Road, Cambridge, to arrive not later than the 15 November and 15 May.

