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## THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

### PRELIMINARY ANNOUNCEMENT OF THE MINNEAPOLIS MEETING

Edited by Dr. HENRY B. WARD

PERMANENT SECRETARY

THE summer meeting of the association will be held this year in Minneapolis, Minnesota, from Monday, June 24, to Saturday, June 29, inclusive. This will be the ninety-sixth meeting of the association and the third to be held in that city. The thirty-second meeting in August, 1883, and the sixty-second in December, 1910, were those previously held in Minneapolis. It will be interesting to recall briefly something of those early meetings.

On both occasions the University of Minnesota acted as host for the sessions and both are recorded as well attended and well provided with all those conditions needed to insure a successful scientific congress. This year the university again welcomes the association and this time to its new campus, widely

recognized as one of the most beautiful, capacious and well arranged among the campuses of the great state universities. The evening general sessions and most of the sectional and society meetings will be held in lecture rooms on the Minneapolis campus, but use will also be made of facilities on the University Farm campus in St. Paul.

The meeting in August, 1883, was an early venture into the Northwest, being the third held beyond the Mississippi River. Out of a total membership of 2,033 the registration, visitors included, reached 328. In all 168 papers were listed in the program and the proceedings of the meeting. These, printed in full by the association, made up an impressive volume of 508 pages, one of the largest in the entire series. At

the meeting in December, 1910, the registered total attendance was 663 and the membership roll included 8,012 names. About 530 papers were programmed for various sessions. The practice of issuing a volume that contained all the papers presented at the meeting had been abandoned some years before 1910. The eleven sections then existing met in conjunction with related affiliated societies and legislation was adopted approving and perfecting this general plan, which has since been followed whenever such affiliated societies are in session at the meeting.

Again this year, as has proved advantageous previously, emphasis is laid in programs of sections and societies on symposia and joint sessions. Even greater provision is made for field trips near Minneapolis and some are planned to areas of especial interest in more distant parts of the state. The occasion is certain to afford varied opportunities for scientific contacts and studies.

#### LOCAL COMMITTEE, OFFICERS OF SECTIONS AND COOPERATING ORGANIZATIONS

The general chairman of the local committee is Dwight Elmer Minnich, professor and chairman of the department of zoology at the University of Minnesota; the general secretary is Donald Gildersleeve Paterson, professor of psychology, University of Minnesota. About forty members of the association and cooperating organizations are engaged as members of committees and subcommittees arranging programs and entertainment for the meeting. The following sections with the officers indicated have arranged the particular programs and the facilities for the meetings of the sections and the associated societies meeting in Minneapolis at this time.

In Mathematics Professor Dunham Jackson is acting secretary and Professor William L. Hart local representative. In Physics the acting secretary is Professor John T. Tate, and Dr. Henry A. Erikson is local representative. The American Meteorological Society is meeting with the section. The American Physical Society is meeting in Minneapolis on June 21 and 22, just prior to the opening of the association meeting. In Chemistry Professor Samuel C. Lind is acting secretary and local representative. In Astronomy Professor Willem J. Luyten is acting secretary and local representative. The Society for Research on Meteorites will meet in conjunction with the section. In Geology and Geography the acting secretary and local representative is Professor Frank F. Grout.

In the Zoological Sciences Professor William A. Riley is acting secretary and local representative. The Parasitologists will meet with the Zoologists. In the Botanical Sciences the acting secretary is Dr. Loren C. Petry and the local representative Professor

C. O. Rosendahl. The Botanical Society of America, the American Society of Plant Physiologists and the American Phytopathological Society are meeting with the Botanists. The Ecological Society of America will meet with the Zoologists and Botanists. In Anthropology Professor W. M. Krogman is secretary and the local representative is Professor Albert E. Jenks. In Psychology Professor John E. Anderson is acting secretary and local representative. In Social and Economic Sciences the acting secretary is Professor F. Stuart Chapin, and Roland S. Vaile is local representative. The American Sociological Society joins with the section.

In the Medical Sciences the secretary is Dr. Vincent du Vigneaud and the local representative is Dr. W. A. O'Brien. The American Pharmaceutical Association will meet jointly with the section. A local branch of the Society of American Bacteriologists is considering meeting in conjunction with the Section on Medical Sciences.

In Agriculture Professor H. K. Hayes is acting secretary and Dr. Walter C. Coffey is local representative. The American Society of Agronomy (Corn Belt Section), the Dairy Science Association, the Great Plains Section of the American Society for Horticultural Science, the Genetics Society of America and the Association of Official Seed Analysts are meeting with the Agriculturists. In Education the secretary is Professor William S. Gray, and Professor Harold Benjamin is local representative.

#### JOINT MEETING WITH MINNESOTA STATE MEDICAL ASSOCIATION

An unusual feature of the Minneapolis meeting is found in the arrangement for joint sessions and an exchange of privileges with the Minnesota State Medical Association, which is to hold its eighty-second annual meeting in Minneapolis from Monday, June 24, to Wednesday, June 26. The American Association has arranged with the Minnesota society to hold a joint general session on Monday evening, at which the speaker will be Dr. W. P. Murphy of Boston, who comes on the invitation of the Minnesota State Medical Association. The privileges of the evening general sessions and other meetings of the American Association and its sections have been extended to all members and visitors registered for the Minnesota State Medical Association. In return the members of the American Association have been invited to attend any of the lectures or scientific demonstrations and exhibits as guests of the medical society. The A. A. A. S. badge will serve as sufficient identification for admission.

Joint sessions of the Section on Medical Sciences and the medical society have been arranged on Monday and Tuesday mornings. On Monday morning Dr.

Hansen, of Faribault, Minnesota, will give a paper on the "Biological Effect of Thymus and Pineal Extracts," and Dr. Cutler, of Chicago, will discuss "The Recent Advances in the Treatment of Cancer." In the afternoon three very interesting papers will be given on clinical allergy, hyperthyroidism and the pathogenesis of gall bladder disease. On Tuesday morning a joint session will be held with the Section on Medical Sciences for a symposium on diseases of the blood. In the afternoon of the same day Dr. Brown, of Boston, will discuss the "Inception and Development of Fluoroscopy," Dr. Sevringhaus, of Madison, will present a paper on "Endocrine Therapy," and Dr. Plass, of Iowa City, will discuss "Simplification of Obstetrical Care." At ten o'clock and at two on both Monday and Tuesday, scientific demonstrations and exhibits will be shown by the Minnesota State Medical Association. Many of these will be of much interest to the members of the American Association. Various exhibits concerning cancer, prevention of deafness, mental health, physical therapy, tuberculosis and the like will be shown. An interesting series of exhibits will also be presented concerning the endocrines, including a very extensive one concerning diabetes mellitus.

#### HEADQUARTERS AND REGISTRATION

General headquarters for the meeting and the main registration office will be in the lobby of the Northrop Auditorium on the University of Minnesota campus, in Minneapolis. The building is centrally located with reference to all other buildings on the campus and will be a convenient social gathering place for

members attending the meeting. The office of the permanent secretary will also be located in this building. Officers of the association will be quartered in the Hotel Nicollet, which will be hotel headquarters. Mail, telegrams, etc., may, if desired, be addressed to Headquarters, A. A. A. S., Northrop Auditorium, University of Minnesota, Minneapolis, Minn.

Registration will be open, upon payment of a fee of \$1.00, to all persons who are interested in the advance of science or education. Each registrant receives a copy of the program, an identification card and a badge. Registration will be necessary for attendance upon the general reception, participation in excursions and other events.

#### TRANSPORTATION

Reduced railway rates on the receipt certificate plan have been granted by almost all railroads in the United States and Canada. The only exceptions are a few short lines in the Southwestern Passenger Association.

Persons attending the meeting should purchase a first-class, one-way ticket to Minneapolis, securing a receipt certificate reading "For the American Association for the Advancement of Science and Associated Societies, and the Minnesota State Medical Association." The certificate must be left at the registration desk for endorsement and validation, to be called for later in the same place. Each person presenting an endorsed and validated certificate may purchase a return ticket for one third of the regular fare, on the same route as used in going to Minneapolis. Tickets to Minneapolis from many points may be purchased between June 19 and 25, although from far western

#### HOTEL ACCOMMODATIONS IN MINNEAPOLIS

Name of Hotel	Address	Minimum rates			
		Without bath Single	Double	With bath Single	Double
Nicollet' ..... (General Headquarters)	Washington and Nicollet	\$2.00	\$3.50	\$2.50	\$4.00
Curtiss .....	10th and 3rd to 4th Avenues			2.00	3.00
The Leamington .....	10th and 3rd Avenue, South			2.00	3.00
Radisson .....	45 S. 7th Street	2.00	3.50	3.00	4.50
Sheridan .....	1112 Marquette Avenue	1.25	1.75	2.00	2.50
West .....	Hennepin at 5th Street	1.25	2.00	1.75	2.50
Andrews .....	Hennepin at 4th Street	1.50	2.50	2.25	3.25
Dyckman .....	27 South 6th Street			2.00	3.00
Vendome .....	17 S. Fourth Street	1.00	1.50	1.50	2.50
Maryland .....	1346 LaSalle Avenue			1.50	2.50
Francis Drake .....	10th and 5th Avenue, South			2.00	2.50
Hastings .....	12th and Hawthorne Avenue			1.50	2.25
Buckingham .....	1500 LaSalle Avenue			2.00	2.75
Field .....	510 S. 8th Street	1.25	2.00	2.00	2.50
Oak Grove .....	230 Oak Grove			2.00	3.00

points they may be purchased as early as June 17. Return tickets must be purchased by July 3 and in most instances these tickets will be good for thirty days, including date of sale of going ticket, as shown by selling agent's stamp on certificate.

The privilege of reduced rates is limited to bona-fide members of the association and its associated societies and the Minnesota State Medical Association and immediate members of their families.

Persons residing outside the regions of reduced rates should each purchase a round-trip ticket to the nearest station issuing through tickets to Minneapolis and situated within the region of reduced rates. On arrival at that station a one-way ticket to Minneapolis and a certificate, as directed in the preceding paragraph, should be secured.

In view of the fact that the railroads are likely to announce special summer excursions, it is advisable to consult the local ticket agent. It is advisable also to consult the agent regarding the various periods when going tickets may be purchased on the certificate plan.

The Andrews, Dyckman, Hastings, Nicollet, Radisson, West and Vendome hotels are within one block or less of street cars, which run direct to the university; the Buckingham, Curtis, Field, Francis Drake, Leamington, Maryland, Oak Grove and Sheridan are three blocks or further from the direct car lines but are close to other car lines which have transfer connections with these lines. The buses to the university either pass the door or within two blocks of the Andrews, Dyckman, Nicollet, Radisson, Vendome and West hotels. The street car running time directly to the university is 12 minutes and the bus 12 minutes.

#### GENERAL SESSIONS

The evening general sessions will all be held in the Northrop Auditorium on the Minneapolis campus of the university. The opening session on Monday evening will be a joint session with the Minnesota State Medical Association. Dr. Karl T. Compton, president of the American Association, and Dr. W. A. Coventry, president of the Minnesota State Medical Association, will preside. The address will be given by Dr. W. P. Murphy of Boston, on the subject "Diseases of the Blood." At the general session on Tuesday evening, which will be the Maiben lecture, Dr. Richard P. Strong, of the Harvard University Medical School, will speak on the topic "The Importance of Ecology in Tropical Disease." This will be followed by an informal reception given by President L. D. Coffman, of the University of Minnesota, and Mrs. Coffman for the visiting scientists. Dr. Isaiah Bowman, director of the American Geographical Society, will address the general session on Wednesday evening, on the subject "The Land of Your Possession." At the Thursday

evening general session Dr. Wm. F. G. Swann, director of the Bartol Research Foundation, will speak on "The Nature of Cosmic Rays." The Friday evening address will be given by Dr. Philip Fox, director of the Adler Planetarium and Astronomical Museum, on the subject "The Scale of the Universe."

A symposium on "Conservation," organized by the local committee for the Minneapolis meeting, deserves especial mention. This will be held on Thursday morning in the Northrop Auditorium. The program will cover some of the broad aspects of the problem, and the speakers will include men of national reputation in this field. President L. D. Coffman, of the University of Minnesota, will preside and make the introductory address. He will also introduce the speakers. This major event of the meeting has been provided through generous cooperation from the university and is aimed to introduce to students of the University Summer School then in session the views of distinguished scientists on this important problem.

#### SOCIAL EVENTS

On Tuesday evening following the Maiben lecture President L. D. Coffman, of the University of Minnesota, and Mrs. Coffman will give an informal reception to visiting scientists.

The Minnesota State Medical Association will hold its annual dinner on Tuesday evening.

A joint luncheon is planned for Tuesday by the Sections on Mathematics, Physics and Astronomy.

Phi Lambda Upsilon will hold its luncheon on Wednesday at the Minnesota Union.

A dinner under the auspices of Phi Delta Kappa and Pi Lambda Theta, in which the Section on Psychology and the Section on Education will join, is scheduled for Thursday evening.

A number of other informal social gatherings for smaller groups and individual societies are being planned.

#### EXHIBITS AND DEMONSTRATIONS

A number of special exhibits are being planned by various departments of the university. The Department of Anthropology will have a number of such exhibits, including the Browns Valley Man and the Minnesota Man. An exhibit of early books and manuscripts dealing with natural science will be on display in the lobby of the University Library. The Museum of Natural History with its magnificent habitat groups, the Geological Museum, the Herbarium and the entomological collection at the University Farm will hold open house throughout the week. Various other departments are planning additional exhibits. The exhibits of the Minnesota State Medical Association are described in connection with the program of the Section on Medical Sciences.

## THE TWIN CITIES REGION

(By Thomas E. Steward, *University News Service*)

The region of the Twin Cities, including Minneapolis and St. Paul, offers many attractions to the visitor who would combine sightseeing with the scientific activities of an association meeting. Both cities lie above the Mississippi River, though on opposite banks, St. Paul being downstream from Minneapolis. On each bank of the river are winding drives that offer the motorist attractive views.

In point of actual beauty few cities have more to offer than has Minneapolis. In preglacial times the Mississippi flowed through what is now the city, and when the ancient river was diverted by debris the old channel became a chain of lakes, around which the better residence sections have sprung up. Parked drives wind past these lakes and follow Minnehaha Creek to the ledge where that famous stream drops to the level of the Mississippi in Minnehaha Fall, so well known from Longfellow's poem. During the drier parts of the year the stream and falls are, unfortunately, quite dry. Especially beautiful are Lake Harriet and Lake of the Isles, but the others, Calhoun, Cedar and Nokomis, will well repay a visit.

Fort Snelling stands at the point where the Minnesota River flows into the Mississippi. Dating back to about 1820, it offers many attractive glimpses of the distant past at a Northwest outpost, together with the evidences of more recent developments.

Eighteen miles west of Minneapolis lies Lake Minnetonka, once famous as a summer outing place for people from the South and now the site of many fine homes. A thirty-mile drive around this lake will carry one past many scenes of worthwhile beauty.

In Summit Avenue St. Paul has one of the outstanding residence streets of the country, and those who go from one city to the other would do well to follow this tree-lined route, which is both direct and most attractive.

Persons interested in the industrial life of the region will find in Minneapolis many plants devoted to the production of cereal foods, including flour, feed, breakfast foods, macaroni, and the like, also extensive linseed crushing establishments and elevators for the storing of grains and linseed. There also are important plants devoted to the fabrication of ornamental products of iron, brass and bronze. Nearby, at South St. Paul, are extensive packing plants. Some of the largest dairy manufacturing plants in the country are to be found in St. Paul and Minneapolis, and St. Paul is a considerable center of metal fabrication and of the railroad shop and maintenance industry.

Among cultural activities there may be listed in Minneapolis the Minneapolis Institute of Arts, the Walker Gallery, the Minneapolis Symphony Orchestra,

the University of Minnesota and, a few miles from the main campus, University Farm, in St. Paul, site of the College of Agriculture, Forest and Home Economics and of the Agricultural Experiment Station.

Among the independent or church colleges in the cities are Augsburg Seminary, College of St. Thomas, College of St. Catherine, Macalester College and Hamline University. Two junior colleges, Bethel Institute and Concordia College, are located in St. Paul.

The background of the business and industrial life of the Twin Cities region is primarily agricultural and arises from the production, shipping and manufacture of dairy, cereal, linseed, corn and animal products. For those with a special interest in any or all of these, exceptional opportunities for observation will be at hand.

Less than twenty miles east of the Twin Cities one comes to the St. Croix River, which in early postglacial times drained Lake Superior into the Mississippi, while ten miles south of Minneapolis is the Minnesota River, known to geologists as the River Warren. As such it drained Lake Agassiz, when that great glacial body of water covered much of northwestern Minnesota and eastern North Dakota.

Adjacent to Minneapolis and St. Paul is an area of varied agriculture. About forty miles southwest lies Northfield, site of the two important independent colleges, St. Olaf and Carleton.

## SCENIC ATTRACTIONS AND VACATION OPPORTUNITIES

Minnesota has vacation opportunities superior to those of a majority of the states in which an association meeting is held. Called the state of "Ten Thousand Lakes," it is at least supplied with an unusual number of attractive inland bodies of water, left in particularly large numbers over the northern two thirds of the state by the receding glaciers.

Among the larger of the Minnesota lakes are Mille Lacs, 100 miles north of Minneapolis, Leach Lake, about 180 miles northwest of Minneapolis, Cass Lake, just north of Leach Lake, and Lake Winnibigoshish, on the northeast point of a triangle formed with Cass and Leach Lakes. Fifty miles northwest of Winnibigoshish lies Red Lake, most remote and largest of the Minnesota lakes, not especially picturesque, but interesting because of the large Indian settlements nearby. There also are reservations near the other three big lakes, excepting Winnibigoshish.

Scattered throughout the rest of the state, particularly north of Minneapolis and St. Paul, lie literally a myriad of other lakes of different sizes and attractions. Principal recognized centers from which these can be reached are Brainerd, Alexandria, Park Rapids, Detroit Lakes, Grand Rapids, Ely and Bemidji, and the tourist who finds himself in any of these towns will

have no difficulty in locating a number of splendid outing spots.

Those who wish a rugged outing of the "back yonder" variety had best visit what are called the "border lakes." These are remote lakes of extreme beauty lying along the Canadian boundary. Access to them is gained at the western end through International Falls and Crane Lake; half way across through Ely, via Basswood Lake; and at the eastern end, by way of the Gunflint trail, which runs back to the Canadian border lakes from the town of Grand Marais.

Combined with the eastern border lakes are the attractions of Minnesota's really fine north shore drive, along the northern shore of Lake Superior. From Duluth, Minnesota's big lake port at the apex of Lake Superior, this drive runs northeast to the Canadian border, and across it to Port Arthur, Ontario, and the famous Nipigon River.

The highest and most rugged country in Minnesota lies just inland from the north shore drive and the views of the great freshwater sea, Lake Superior, are superb over most of the 180 miles between Duluth and Pigeon River at the border. Near the latter point one may follow on foot the route of the old Grand Portage, by which French and later British traders found their way inland from Superior to the Pigeon River and the border lakes in their quest for furs.

Just over the Canadian border lies the Quetico area of Canada, one of the finest game areas and canoe-trail districts in the world, and similar in these respects to the Minnesota region that it borders. No shooting will be legal in June, but splendid fishing, camping and canoeing will be available.

The St. Croix River, already mentioned, will provide many scenic attractions to those who wish to visit it, while northern Wisconsin is in many respects similar to northern Minnesota, although it ends at the south shore of Lake Superior.

Minnesota in general is made up of a rugged, unglaciated area in the southeast, a rich farming country in the south, a prairie farming region in the southwest and central west, the famous Red River Valley in the northwest, and at the north and northeast cutover forest areas that merge imperceptibly into wilderness as one comes nearer to the Canadian boundary.

In such a state those seeking outdoor recreation may take their pick, although, as in any other place, careful advance selection of a route will mean greatly increased satisfaction over the outing.

#### EXCURSIONS

The following preliminary summary of excursions which are contemplated by various sections and societies is compiled from the reports sent in and is subject to modification. Complete details as to places,

routes, starting times, expenses and other important features will appear in the final program to be issued on registration in Minneapolis. Further information may be secured at the special desk in the registration room at the Northrop Auditorium.

General trips will be arranged to visit (1) Minneapolis parks and parkways and (2) Minneapolis mills and milling districts.

The Section on Medical Sciences will meet on Thursday in Rochester at the Mayo Foundation. The morning program there will be devoted to reading papers. In the afternoon the general offices of the Mayo Foundation, the Hygienic Museum and the Experimental Institute will be visited. Members of the section and others interested, especially those in biological sciences, are invited to participate.

Special trips are being planned as follows:

*Tuesday afternoon.* A field trip to the Minnesota River Valley or the St. Croix River Valley has been arranged by the Section on Botanical Sciences, the Botanical Society of America and other botanical organizations, in which the Ecologists will join. The afternoon will also be used by the Great Plains Section of the American Society for Horticultural Science for an inspection of horticultural plots at the University Farm, and by the Section on Agriculture and cooperating societies for a field trip to Moscrip's Farm, Lake Elmo, to observe studies of pasture management.

*Wednesday (all day).* The Section on Botanical Sciences, the Botanical Society of America and other botanical organizations will go on a trip to the Bunker Prairie Region. The Ecologists will either join the Botanists or will go with the Zoologists for an afternoon trip to sand dunes in the vicinity of the Twin Cities. The same afternoon the Plant Physiologists will visit the University Fruit Breeding Farm. The Section on Agriculture and cooperating societies will devote the day to inspecting demonstrations of agricultural research by the University of Minnesota divisions of agronomy and plant genetics and plant pathology and botany at the University Farm. The Great Plains Section of the American Society for Horticultural Science has arranged a field trip for the morning through Como Park, mushroom caves and vegetable-growing regions near South St. Paul, and for the afternoon to Faribault to visit nurseries, seed houses, etc., as well as parks and greenhouses in the Twin Cities.

*Thursday (all day).* The American Society of Agronomy will go to Lake Mille Lacs to observe the High-lime Peat Experimental Field at Coon Creek and the Low-lime Peat Experimental Field at Page. The American Phytopathological Society has arranged a morning trip to local market garden regions and an afternoon trip to the fruit breeding farm. The Amer-

ican Society for Horticultural Science will visit on Thursday morning the Coon Creek Experimental Farm, vegetable growing areas near Anoka, early potato regions near Osseo and melon districts near Brooklyn Center, and in the afternoon the University of Minnesota Fruit Breeding Farm near Zumbra Heights.

*Thursday and Friday.* A two-day trip to Itasca State Park, the Cloquet Forest Experiment Station and the north shore of Lake Superior has been planned by the Section on Botanical Sciences, the Botanical Society of America and other botanical organizations. In this the Plant Physiologists and Ecologists will join.

*Friday (all day).* The American Society for Horticultural Science has arranged a trip to the Cloquet Forest Experiment Station, Northeast Experiment Station near Duluth, Iron Range, and North Central Experiment Station at Grand Rapids.

Additional field excursions for which the dates are not fixed include the following: One or two half-day trips by the Section on Geology and Geography to places of interest in the immediate vicinity of Minneapolis; a visit by the Plant Physiologists to the laboratories of the Shelter Belt project of the Lake States Forest Experiment Station; and a visit by the American Meteorological Society to Fort Snelling, where meteorological observations, since continued, were commenced in 1819. If the number warrants, the Section on Anthropology will make a three-day trip to outstanding archeological sites, notably those of Pleistocene Man in Minnesota, with an archeologist or a geologist in charge.

#### SECTION MEETINGS AND SOCIETY PROGRAMS

The Section on Mathematics (A) and the Section on Physics (B) will hold a joint symposium on Tuesday morning on the general subject of methods of solution of differential equations and illustrations of their application to problems in mathematical physics. Papers will be presented by Professor R. W. Brink (University of Minnesota) on "Boundary Value Problems"; Professor Rudolph E. Langer (University of Wisconsin) on "The Asymptotic Solution of Differential Equations"; and Professor David M. Denison (University of Michigan) on "Applications of Approximate Methods to Physical Problems with Particular Reference to Molecular Spectra." On Tuesday afternoon the Section on Physics (B) will meet jointly with the Section on Astronomy (D). A joint luncheon of Sections A, B and D is scheduled for Tuesday. The American Physical Society has arranged to hold its summer meeting in Minneapolis on June 21 and 22, just prior to the opening of the meetings of the association.

The American Meteorological Society will hold

sessions on Thursday, Friday and Saturday. The outstanding feature of the meeting will be descriptions of methods of controlling or mitigating the effects of weather. The interrelations of climate and forests and the proposed Shelter Belt, the prevention of soil erosion and the construction and management of the nine-foot channel of the Mississippi will be the subjects of invited papers by Raphael Zon and Carlos G. Bates, consultants for the Shelter Belt, by Walter J. Parsons and George O. Guesmer, of the U. S. District Engineer Office, St. Paul, and O. R. Zeasman, in charge of erosion control work in Wisconsin. A session devoted to the work of the cooperative climatological observers of the Weather Bureau will be held on Saturday, to which all these observers in the upper Mississippi Valley and Northwest have been invited. Arrangements are being made for a visit to Fort Snelling, where meteorological observations, commenced in October, 1819, have been carried on continuously since that date.

The Section on Chemistry (C) plans to have a symposium on physiological chemistry, probably on the processes of the digestive tract, in cooperation with the Section on Medical Sciences. Also the section will have one or two general sessions, depending on the number of contributions, devoted to general papers in the field of chemistry. The Minnesota Section of the American Chemical Society is cooperating with Section C and will invite the state sections from neighboring states to meet jointly with the section. At least one of the national chemical fraternities will hold its annual meeting in Minneapolis at the same time as the association meeting.

The Section on Astronomy (D) will meet with the Section on Physics (B) in a joint session on Tuesday afternoon, at which Dr. Otto Struve, director of the Yerkes Observatory, will give the principal address on the subject "Modern Interpretations of Spectra." This will be followed by a session for contributed papers. Additional sessions for the presentation of papers may also be scheduled. The offices of the Department of Astronomy of the University of Minnesota will be open to all visitors, who are cordially invited to come and inspect the work that is being done. A joint luncheon is planned for Tuesday noon with Sections A and B.

The Section on Geology and Geography (E) plans a meeting for presentation of papers Thursday morning, also joint sessions with the Section on Anthropology (H). Half-day field trips to places of interest in the immediate vicinity of Minneapolis are in mind. The department of geography of the University of Minnesota is considering a field excursion. The Society for Research on Meteorites has sessions on Wednesday and Thursday which will interest geologists. It may be that the Eastern Section of the

Seismological Society of America will also hold a meeting in Minneapolis at this time.

The Section on Zoological Sciences (F) will present a symposium on hormones on Wednesday morning. In the afternoon the section will meet jointly with the Ecological Society of America for a field trip to sand dunes in the vicinity of the Twin Cities. Thursday morning's session will give place to the association program on conservation. On Friday the American Society of Parasitologists will conduct jointly with the Section on Medical Sciences a program of invited papers in the field of animal parasitology. Among these papers are one on North American and other ticks in relation to the transmission of Rocky Mountain spotted fever, and others by prominent investigators on "Characteristics of *Diphyllbothrium latum* in Canada," "Problems in the Study of Onchocerciasis," "The Rickettsia-like Microorganism of *Culex pipiens*," "The Rôle of Fleas and Ticks in the Spread of Tularemia," "The Significance of Recent Studies on Lung Flukes in the United States," "The Life Cycle of *Prosthogonimus macrorchis*," "The Zoology of Cercarial Dermatitis," "Stages in the Life History of *Spirorhynchus contortus*," "The Use of Calcium Chloride in Parasitological Technique" and "The Fox Lungworm, *Cepillaria aerophila*." This will be followed by an afternoon program of demonstrations by the American Society of Parasitologists, for which an extensive series of unusual exhibits is pledged.

The Section on Botanical Sciences (G), in cooperation with the Botanical Society of America and other botanical organizations, will hold a session on Monday evening with one or two invited papers, followed by a reception or smoker. A program of invited papers is scheduled for Tuesday morning, and a field trip, either to the Minnesota River Valley or the St. Croix River Valley, for Tuesday afternoon, a trip to the Bunker Prairie region for Wednesday and a trip to the Cloquet-Duluth region for Thursday and Friday. Tuesday and Wednesday evenings are to be devoted to informal discussions, with possibly a dinner on Tuesday evening. The American Society of Plant Physiologists will participate in three joint sessions as follows: with the Botanical Society of America on Monday afternoon; on Tuesday morning with the Section on Agriculture in a symposium on "Improving the Germplasm of Domestic Plants and Animals," with addresses by Dean W. C. Coffey, Hon. H. A. Wallace, Dr. Jay L. Lush and F. D. Richey; and on Wednesday afternoon with the American Society for Horticultural Science, followed by a field trip to the University Fruit Breeding Farm. A session for the presentation of papers will be held on Wednesday morning, followed by a symposium on dormancy, after-ripening and germination of seeds. On Thursday and Friday the Physiologists will join

the Botanists in their field trip to Itasca State Park, the Cloquet Forest Experiment Station and the North Shore of Lake Superior. Their program also includes inspection of laboratories and demonstrations of research work in progress in the physiological laboratory of the University of Minnesota Department of Botany as well as the Section of Plant Physiology at the University Farm, and also laboratories of the Shelter Belt project of the Lake States Forest Experiment Station.

The Ecological Society of America, under the joint auspices of the Sections on Botany and Zoology, plans to hold a session on Tuesday morning with invited papers dealing with local flora and fauna. The Ecologists will join the Botanists in their field trip on Tuesday afternoon to the Minnesota River Valley, where are to be found a typical forest of the region, wet meadows and seepage bogs at the base of bluffs, with unusual vegetation. An all-day field trip is planned for Wednesday, either with the Botanical Society to the Anoka Sand Plain, or with the Zoologists and Animal Ecologists. On Thursday and Friday the Ecologists will join the Botanists in their trip to northern Minnesota.

The Section on Anthropology (H) will hold three morning sessions. On Thursday the session will be devoted to the discussion of archeological problems of the Upper Mississippi area. Dr. A. E. Jenks will discuss Pleistocene Man in Minnesota, L. A. Wilford will present data on Minnesota prehistory, and A. W. Bowers will talk on the archeology of the Dakotas. At the Friday session the principal speaker will be Mark L. Burns, an Indian agent in charge of the Great Lakes area, who will present an outline of government policy in this area. Dr. Florence Goodenough will discuss primitive mentality and Miss Frances Densmore will read a paper on Indian songs. Dr. W. M. Krogman will give an illustrated talk on proto-historic and early historic races of Asia Minor. The Saturday session will be given over to child-growth studies. Dr. R. E. Seammon will discuss growth trends, Dr. W. D. Wallis will read a paper on anatomic growth-rate, and Dr. C. H. McCloy will outline the statistical approach to the analysis of growth factors at varying ages. The afternoons have been left open to provide an opportunity to study the important archeological material housed in the department of anthropology of the University of Minnesota, under the care of Professor A. E. Jenks. In addition there will be time to visit archeological sites on the outskirts of Minneapolis. If the number warrants, a three-day trip to outstanding archeological sites, notably those of Pleistocene Man in Minnesota, will be arranged, with an archeologist and a geologist in charge.

The Section on Psychology (I) will meet jointly



with the Section on Education (Q) on Friday morning in a session for contributed papers. On Thursday evening these sections will participate in a dinner held under the auspices of Phi Delta Kappa and Pi Lambda Theta, at which Professor John E. Anderson (University of Minnesota) and Professor F. B. Knight (University of Iowa) will deliver addresses. On Saturday Section I will hold a session for the discussion of "The Measurement of Attitudes."

The Section on Social and Economic Sciences (K) will hold morning sessions on Tuesday, Wednesday and probably also Thursday for the presentation of papers among which are the following: (1) "The Effect of the Depression on Mortality and Morbidity," by Dr. Louis Dublin; (2) "Recent Population Movements," by Dr. Carter Goodrich, from the S. S. R. C. study of this problem; (3) "Income Redistribution," by some one from the Brookings Institution; (4) "Land Use and Its Effect on Population Trends," by Professors Kolb and Nowell, of the University of Wisconsin; (5) "The Fertility of Families on Relief," by Dr. Clark Tibbitts, of Chicago; (6) "Housing Problems," by Professor James Ford, or "Basic Studies Behind Housing," by Shelby Harrison. The American Sociological Society is cooperating.

The Section on Medical Sciences (N) has arranged a comprehensive program, including both general and special subjects, and will hold sessions on the mornings of Monday, Tuesday, Wednesday, Thursday and Friday, the Monday, Tuesday and Friday session to be joint meetings with the Section on Chemistry (C), the Minnesota State Medical Association and with the Zoologists and Parasitologists, respectively.

The joint session with the Section on Chemistry (C) on Monday will include papers dealing with the chemistry of certain hormones and other subjects. The joint session with the Minnesota State Medical Association on Tuesday morning will consist of a symposium on "Diseases of the Blood." The subject of "Agranulocytosis" will be discussed by Dr. Theodore L. Squier of Milwaukee. Dr. Walter A. Bloedorn, School of Medicine, the George Washington University, Washington, D. C., will discuss "Iron Therapy," and Dr. William P. Murphy, Harvard Medical School, Boston, Massachusetts, will discuss "Liver Treatment." After the scientific demonstrations and exhibits have been presented Dr. Louis W. Sauer, of Northwestern University Medical School, will speak on "The Prevention of Whooping Cough with *Bacillus Pertussis* Vaccine." On Wednesday morning Section N will have a group of interesting papers covering various subjects.

On Thursday morning, June 27, Section N will hold its meeting at the Mayo Foundation in Rochester, Minnesota. Dr. William J. Mayo will welcome the visitors to the Mayo Clinic and interesting papers will

be presented by members of the staff of the Mayo Clinic and visiting scientists, including Professor L. H. Newburgh, of the University of Michigan, and Professor E. L. Sevringhaus, of the Medical School of the University of Wisconsin. The afternoon will be devoted to visiting the Experimental Institute, the Hygienic Museum and the General Offices of the Mayo Foundation.

On Thursday morning, while Section N is meeting in Rochester, there will be a meeting of the subsection on Pharmacy in Minneapolis, at which several interesting papers will be presented.

On Friday morning the joint program with the American Society of Parasitologists will include papers by Dr. R. R. Parker, U. S. P. H. S., Dr. R. A. Wardle, the University of Manitoba, Dr. Richard P. Strong, Harvard Medical School, Dr. Marshall Hertig, Harvard Medical School, Dr. R. G. Green, University of Minnesota, and Dr. D. J. Ameel, Augustana College, South Dakota.

Of especial interest to members of the Section on Medical Sciences will be the exhibits and demonstrations of the Minnesota State Medical Association mentioned elsewhere. These are shown in the Minneapolis Municipal Auditorium from 10 to 12 and 2 to 3 Monday and Tuesday. The badge of the A. A. S. will serve for admittance. In addition to the commercial displays there will be a large number of scientific displays sponsored by the University of Minnesota, the American Medical Association, the Mayo Foundation, the Council on Physical Therapy, and smaller displays on the treatment of pediatrics, carbon monoxide poisoning, injection treatment of hernia, diabetes and a special heart exhibit. The Friday afternoon program of exhibits and demonstrations by the American Society of Parasitologists will also be of interest to members of the Section on Medical Sciences. Full details regarding both series of exhibits will be found in the final program.

The Section on Agriculture (O) will hold a joint symposium on Tuesday morning in cooperation with the Dairy Science Association, the Corn Belt Section of the American Society of Agronomy, the American Society for Horticultural Science (Great Plains Section), the American Phytopathological Society, the Genetics Society of America and the American Society of Plant Physiologists, on the subject, "Improving the Germ Plasm of Domestic Plants and Animals." Professor H. K. Hayes, vice-president of the section, will preside. The introductory address will be given by Dean W. C. Coffey, of the University of Minnesota department of agriculture. The Honorable Henry A. Wallace will speak on the subject "Future Possibilities," and Dr. Jay L. Lush, of Iowa State College, will discuss "Some Accomplishments with Animals." Dr. O. S. Aamodt, of the University of

Wisconsin, will talk about "Analysis and Synthesis in the Development of New Varieties of Plants." A field trip to Moscrip's Farm, Lake Elmo, to observe studies of pasture management, has been arranged for Tuesday afternoon. On Wednesday the section will cooperate with the Phytopathologists, Geneticists and Plant Physiologists in a field trip to observe the work of the divisions of agronomy and plant genetics and plant pathology and botany of the University of Minnesota at University Farm. Thursday morning will be devoted to a field trip to Lake Mille Laes, with visits en route at the High-lime Peat Experimental Field at Coon Creek and the Low-lime Peat Experi-

mental Field at Page, twelve miles south of Lake Mille Laes.

The Section on Education (Q) will hold four sessions, on Thursday and Friday morning and afternoon, for the presentation of reports on research studies on (1) school administration, (2) the improving of learning, (3) understanding the young child and (4) higher education. On Thursday evening the section will participate in a dinner held under the auspices of Phi Delta Kappa and Pi Lambda Theta, at which Professor F. B. Knight (University of Iowa) and Professor John E. Anderson (University of Minnesota) will speak.

## A DINNER DEMONSTRATION OF THRESHOLD DIFFERENCES IN TASTE AND SMELL

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MEAL-TIME is distinctly a time of taste and smell. However great may be the appeal to the eye or to the ear in the dinner accompaniments, the primary appeal of food is to the senses of gustation and olfaction. At meal-time one is most ready to try experiments that involve the senses associated with the consumption of our daily bread. The fact that at table the senses in question may be washed, as a slate, clean for a new test by so simple a procedure as a morsel of food and a drink of water is an added reason why a dinner offers a favorable opportunity for a demonstration of peculiarities in taste and smell.

The specific occasion about which the editor of *SCIENCE* has requested a brief account was the biologist's dinner at the Berkeley meeting of the  $A_S$  this past June. The demonstration was made possible by the cooperation of the management of the International House, where the dinner was held, as well as by that of Dr. A. E. Clarke, who had charge of assembling and distributing the test material and of recording the reactions as expressed by a showing of hands. Since nearly 250 persons were present at the dinner it was not possible in the time available to obtain an accurate record in any instance and, in consequence, some of the estimates given below have been reached with the aid of tests made at other times. The showing of hands adequately fulfilled its chief purpose, however, which was to demonstrate how different people may be in their reactions to the same stimuli.

The first test was called a "preservative cocktail," which was sipped by the diners before they were served with a conventional fruit cup. It consisted of a 0.1 per cent. solution of benzoate of soda served in paper cups in lieu of wine glasses. This is the concentration

used commercially in the preservation of food. The majority found it tasteless, but to over a quarter of those tested, however, it had a distinct taste which was described for the most part as sweet or bitter. A larger proportion are able to taste the dry powder, but this compound has been advertised as a tasteless substance, which it is to some, but not to others.

Following the fruit cup, each was given two glassine envelopes marked respectively 0.02 per cent. and 0.64 per cent. The first contained a slip of paper tape which had been dried after being passed through a 0.02 per cent. alcoholic solution of PTC (phenyl-thiocarbamide). The second paper had been treated with a 0.64 per cent. solution and was 32 times stronger. The first paper was without taste to the majority and tasted by only about a quarter of the people. The second stronger paper was tasted by the majority and was without taste to only about 15 per cent. This test was given to show that a substance must have a certain strength of concentration before it can be tasted and that this concentration is different for different people. In other words, people differ in their taste thresholds. They differ also in the kind of sensation which they appear to get from a substance which they taste. PTC, for example, is bitter to most tasters, but a considerable proportion of people report other tastes. In an exhibit at the American Museum of Natural History in connection with the Eugenics Congress in 1932, an opportunity was given for visitors to record on a voting machine what taste, if any, they got from paper impregnated with a medium concentration of PTC. Of the 6,377 who voted, 1,296, or 20.3 per cent., were non-tasters and 5,081, or 79.7 per cent., were tasters. The latter reported their tastes as follows: