

erosion may have been the result of about a year of gastrie action. It would also seem that such a hook would not have been broken from the leader by a trout only one year old, or one about seven inches in length, unless the fisherman had fastened it very care-

lessly. A two-year-old trout might possibly do this during the course of a lusty battle with the angler.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

NEW ORLEANS MEETING, DECEMBER 28,
1931-JANUARY 2, 1932

EXCURSIONS AND TRANSPORTATION

THE outdoor weather of the mild New Orleans winter will enable delegates and visitors to take full advantage of the interesting trips sponsored by various sections and the general committee at the American Association for the Advancement of Science meeting, December 28 through January 2, according to Dr. Daniel S. Elliott, chairman of the local committee on preparations.

The historic French Quarter or Vieux Carré of New Orleans will receive special attention. Most sections, as well as the general committee, are planning to provide delegates with guides for convenient and informal sightseeing tours through this area. The Vieux Carré, the site of original white settlement in Louisiana, includes the dimensions of the first town built by the French under Bienville. Its museum collection, antique stores and picturesque atmosphere, and architecture cause it to be a Mecca for visitors from all over the world. Many buildings date back to the time of French and Spanish occupation. Its people, French and Italian, belong to Europe rather than America.

Avery Island in New Iberia Parish, the center of Louisiana's extensive salt-mining industry, is the goal set for a special outing sponsored by the geological section. Those participating in this excursion will leave New Orleans on the Southern Pacific Railway at 10:40 p. m., January 1, traveling in special Pullman cars which will be set out at New Iberia until 7:30 a. m., January 2. Immediately after breakfast the party will leave in busses for the interesting localities in that vicinity, under the leadership of members of the local committee for Section E. The salt domes and a wild life sanctuary which occupies a portion of the island will be visited on the morning of January 2. Sightseeing will include trips into the mine shafts, which extend several hundred feet underground, giving a view of a wide variety of salt formations.

The Association of Commerce of the town of New Iberia is extending its courtesies to visitors. After the trip through the mining districts there will be a dinner at a hotel in New Iberia. Returning, the party will leave New Iberia at 3:13 p. m., and arrive in

New Orleans at 7:35 p. m., January 2. This will give an opportunity to see a salt dome and mine and jungle gardens, as well as many of the interesting features in the "Teche country," the land of Evangeline. The total cost for transportation, breakfast and luncheon will be approximately \$10.80 for lower berth accommodations and \$10.10 for upper berth accommodations. Reservation of space in this party should be made directly to Professor R. A. Steinmayer, Tulane University, New Orleans, La. As the party will be limited in number, it is strongly advised that all those who wish to join this party notify Professor Steinmayer at the earliest possible moment.

The engineering section will sponsor two excursions dealing with the general subject of flood control and its special application at New Orleans.

One afternoon will be given to a short visit to the Mississippi River spillway at Bonnet Carré, twenty-five miles northwest of the city. This project, constructed as a result of the flood season of 1927, is designed to divert excess high water from the Mississippi to Lake Pontchartrain, to protect New Orleans.

A tour of the city on another afternoon will take up in detail numerous features of interest to engineers. Among these will be the extensive pumping system which is necessary for city drainage, and the reclamation work now in progress along the shore of Lake Pontchartrain.

Specific dates and arrangements for these two trips are to be announced a little later through Professor W. B. Gregory, local representative for the engineering section.

Two field excursions are scheduled under the sponsorship of the local committee of the Ecological Society of America. One of these is to take place on Thursday, December 31, and the other on Friday, January 1.

For each trip the party will leave the St. Charles Hotel in special busses at 9 a. m., to return about 5 p. m. The outgoing trip will be via bridges over Pass Chef Menteur and Pass Rigolets. The return will be by way of one of the longest bridges in the world, which crosses Lake Pontchartrain for five miles.

Representative examples of marsh, bayou and cypress swamp in Orleans and St. Tammany Parishes will be visited.

The trip on Thursday will be attended largely by

members of the Ecological Society. Friday will be left open for the numbers of interested biologists and others who will probably be occupied with other sessions on the previous day. According to Dr. E. S. Hathaway, of the local committee, it is possible that a half-day excursion may be arranged for the benefit of those who can not take a whole day from other matters.

The local group of the Society of American Foresters will sponsor a somewhat detailed inspection of the forest industry at Bogalusa, La., on Thursday, December 31. The party will leave at 8 A. M. by automobile. At Bogalusa they will go through the experimental plant of the U. S. Forest Service and examine large planted areas maintained by the Great Southern Lumber Company.

On these latter lands will be shown examples of natural reproduction of longleaf pine, the effects of different methods of fire protection, the results of yearly burnings and numerous other aspects of practical forestry. Of especial interest will be the brown-spot spraying plots, demonstrating preventative measures taken against the brown-spot disease. The mid-day meal will be taken at the Louisiana State University's Forestry School Camp.

A tour of points of interest in the New Orleans harbor on the excursion steamer *Capitol* is being promoted by the mathematicians. Definite details in regard to this trip will be announced later, according to Dr. H. E. Buchanan, local representative of this section.

But the trips formally arranged by various sections represent only a few of the opportunities to be afforded visitors through arrangements for travel singly or in groups which are being worked out by the general committee.

By airplane or boat delegates will be able to visit Grand Isle, former rendezvous for the French pirates of the Gulf. The trip down the 110 miles of river which lie between New Orleans and the sea will be of interest because of the splendid woodland scenery and glimpses of the primitive life of the inhabitants. Waters in this area provide some of the best year-round fishing in the world, while the forests are teeming with wild life—ducks, geese, snipe, doves, rabbits, squirrels, bear, deer—most of which will be in season at the time of the meeting.

Sugar plantations during the interesting season of cane grinding will also be opened to visitors. Arrangements have been made with the Godechaux Plantation at Reserve, La., and Southdown Plantation at Houma.

The Evangeline country of the Teche will also attract the visitors. Short trips by bus and automobile to the towns of these French-speaking descendants of Longfellow's Acadians will be possible.

One of the numerous historical sites on the outskirts of New Orleans is the Chalmette battlefield, scene of the battle of New Orleans, in the War of 1812. It is still possible to walk over the very ground on which General Andrew Jackson's motley array of frontiersmen, French pirates, Negroes and Choctaw Indians turned back the tide of British invasion.

These journeys are planned to be informative—and to be more—to give delegates a better appreciation of atmosphere and conditions, facts and problems, in a land where French and American civilizations have impacted and fused.

The United Fruit Company will offer special post convention trips to Havana, Cuba. One itinerary will call for a round trip, New Orleans to Havana and return, while another itinerary will be from New Orleans to Havana and thence to New York. Information concerning these trips is as follows:

TRIP No. 1

New Orleans to Havana and return to New Orleans—
post-convention trip—all-expense-included plan

Leave New Orleans	ss. <i>Iriona</i>	Jan. 2 NOON
Arrive Havana	“ “	“ 4 A. M.

(Stop over Hotel Ritz or Bristol—room with private bath and meals included)

Leave Havana	ss. <i>Cartago</i>	Jan. 10— 9 A. M.
Arrive New Orleans	“ “	“ 11 P. M.

(Interesting auto trips, etc., can be arranged in Havana at very moderate cost and will be arranged for those members who desire that such trips be arranged for them)

The fares for the above trip, which also include the hotel stop in Havana with meals, will be:

Beds in cabins without private bath on steamer—	\$100.00 to \$106.00 each person
Beds in cabins with private bath on steamer—	\$116.00 each person
Beds in suites with private bath on steamer—	\$150.00 each person

TRIP No. 2

New Orleans to Havana, thence Havana to New York

Leave New Orleans	ss. <i>Iriona</i>	Jan. 2 NOON
Arrive Havana	“ “	“ 4 A. M.

(Stop over Hotel Ritz or Bristol—room with private bath and meals included)

Leave Havana	ss. <i>Tolosa</i>	Jan. 7 1 A. M.
Arrive New York	“ “	“ 10 A. M.

(Different auto trips, etc., can be arranged while in Havana at very low cost)

The fares for the above trip, including hotel stay in Havana with meals, will be:

Beds in cabins without private bath on steamer—	\$135.00 to \$143.00 each person
Beds in cabins with private bath on steamer—	\$157.00 each person
Beds in suites with private bath on steamer—	\$203.00 each person

TRANSPORTATION TO AND FROM NEW ORLEANS

A special section of the Piedmont Limited will leave Boston on Saturday, December 26, at 12:00 noon. This train will be called the American Association for the Advancement of Science Special, and passengers will be limited to scientists and their friends and relatives. Eastern members of the executive committee are expected to use this train and to meet for informal discussion of association business. Extra cars are expected to be added at New York, Philadelphia, Washington, Greensboro and Atlanta. An itinerary showing roads, times of departure, etc., follows:

December 26	Lv. Boston	NYNH&H	12: 00 NOON
" "	Lv. New Haven	"	3: 35 P. M.
" "	Ar. Washington	PRR	10: 05 P. M.
December 26	Lv. New York	PRR	6: 45 P. M.
" "	Lv. Trenton	"	8: 03 P. M.
" "	Lv. W. Phila.	"	8: 44 P. M.
" "	Lv. Baltimore	"	10: 43 P. M.
" "	Ar. Washington	"	11: 38 P. M.
December 26	Lv. Washington	Sou. Rwy.	11: 55 P. M.
" 27	Lv. Charlottesville	"	2: 55 A. M.
" "	Lv. Greensboro	"	7: 30 A. M.
" "	Ar. Atlanta	"	4: 00 P. M.
" 28	Ar. New Orleans	L&N	7: 20 A. M.

It is hoped that western and central railroads will also arrange for special trains.

For many of those planning to attend the New Orleans meeting of the association, from December 28, 1931, to January 2, 1932, there will be a choice of two kinds of reduced railway fares: (1) on the standard certificate form and (2) short limit round trip winter excursion fares.

(1) Reduced railway rates, by the standard certificate plan, have been granted by all the railway passenger associations in the United States and by the eastern lines of the Canadian Passenger Association, but a few companies, listed below, have not granted reduced rates. The round-trip fare by this plan is one and one-half times the regular one-way fare.

Tickets to New Orleans by the standard certificate plan are to be purchased within time limits as follows: December 21 to 27, inclusive, for Canadian Eastern lines, Central lines and Trunk lines. For New England lines, December 20 to 26, inclusive. For Southeastern lines, December 22 to 28, inclusive. For Western and Transcontinental lines the inclusive dates are December 18 to 24 from California; December 19 to 25, from Arizona, British Columbia, Idaho, Montana, Nevada, Utah, Washington and Oregon (except *via* California); December 17 to 24 from Oregon (*via* California); December 20 to 26 from New Mexico, Wyoming and Colorado (except Jules-

burg); December 21 to 27 from Julesburg, Colorado, and from Illinois, Iowa, Kansas, Manitoba, Minnesota, Missouri, Nebraska, northern Michigan, North Dakota, South Dakota and Wisconsin. For the Southwestern lines the inclusive dates are December 20 to 26 from Oklahoma and Texas and December 21 to 27 from Arkansas, Kansas, Louisiana and Missouri; also Memphis, Tenn., and Natchez, Miss.

The following Southwestern lines do not offer reduced fares on the certificate plan: Arkansas and Louisiana Missouri Railway, Fort Smith and Western Railroad, Graysonia, Nashville and Ashdown Railroad, Missouri and North Arkansas Railway, Oklahoma City-Ada-Atoka Railway, Wichita Falls and Southern Railway, Kansas, Oklahoma and Gulf Railway, National Railways of Mexico and the Midland Valley Railway.

Persons residing in the regions of reduced rates (almost all the United States and Canada) should each purchase a first-class, full-fare, one way, through ticket to New Orleans, being sure to secure a certificate on "Standard Certificate Form," reading for the "New Orleans meeting of the American Association for the Advancement of Science and Associated Societies." A receipt is not required and will not be useful.

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

Every one should register immediately upon arrival at New Orleans, at the registration offices for the meeting, in the Roosevelt Hotel. Be sure to fill in all blanks on the registration card and leave the card at the registration desk, where you will receive a numbered identification card, which will be receipted for the registration fee paid. (See Registration, below.) Then leave your railway certificate at the validation desk, being sure that the identification card (which you keep) is there marked to show that you have deposited a certificate. Your certificate will subsequently be endorsed by the association and then validated by the agent of the transportation companies. Call for it later at the validation desk, where you left it, presenting your identification card.

Unvalidated certificates will not be honored for the purchase of return tickets and unendorsed certificates can not be validated. Registration is therefore necessary in order to have a railway certificate validated. Each person registering is entitled to the validation of his own certificate.

For the return trip, railway agents at New Orleans will honor any properly endorsed and validated cer-

tificate if presented at least thirty minutes before the scheduled time of departure of the train for which it is to be used. Each person presenting an endorsed and validated certificate may purchase a continuous-passage, one-way, return ticket for one half of the regular fare, by the same route as that followed on the trip to New Orleans. Certificates may be validated from December 28, 1931, to January 1, 1932. The last date on which return tickets may be purchased is January 5.

(2) Short limit round-trip winter excursion rates are available from many points in the United States to destinations in Alabama, Florida, Louisiana and Mississippi, and also to Havana, Cuba. These rates have been granted for only certain days in November and December, 1931, and March and April, 1932. During December, 1931, round-trip excursion tickets to New Orleans may be purchased on the following

days: 4, 5, 6, 11, 12, 13, 18, 19, 20, 25, 26 and 27. Tickets are limited to 16 days, including date of purchase and actual time required to return to starting-point. The following is a comparison of the cost under the two plans of a round-trip ticket (not including Pullman berth) from Washington, D. C., to New Orleans:

Standard Certificate form (one and one-half fares)	\$60.30
Short limit round-trip winter tourist rate	54.30

It is advisable to get information from your local ticket agent about the excursion fares, since there are some points where they are not available. The Canadian eastern lines and the Transcontinental lines are among those that are not authorizing these fares.

CHARLES F. ROOS,
Permanent Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A METHOD OF SUPPLYING STUDENTS WITH NATURAL *ENDAMOEBIA HISTOLYTICA* FROM CULTURES¹

INSTRUCTORS in protozoology are not always fortunate enough to have an active case of amoebic dysentery available for use in the classroom. Cultures of *Endamoeba histolytica* are commonly used, but the amoebae in culture are much smaller² than those encountered in the amoebic stool. It would seem desirable to be able at any time to supply large amoebae and these should also contain red blood cells.

In the course of some experimental studies, irrelevant to the present subject, it was found that the addition of gum arabic to produce a 0.1 per cent. solution in the liquid portion of the ordinary Boeck and Drbohlav medium³ resulted in a marked increase in the size and number of the amoebae usually present. Further investigation disclosed that the increase in size was probably related to the bacteriostatic action of the gum arabic. As a matter of fact some of the bacteria commonly found in association with the amoebae in culture were not only inhibited but were killed by the use of gum arabic in stronger percentages. The increase in size of the amoebae led one competent observer to remark; "That is the nearest thing to *histolytica* in the stool I have ever noted in cultures."⁴ The amoebae, although increased in size,

are somewhat slowed in action by the increased viscosity of the fluid.

Usually the addition of red blood cells to cultures of *Endamoeba histolytica* results in the hemolysis of the cells very quickly, with the result that if the cells are ingested only shadows of the cells can be seen within the amoeba. Furthermore, the amoebae, in my experience, seldom ingest the red blood cells under these conditions. In the course of certain immunological studies involving the amoebae, it was found that successful efforts to cause them to ingest red blood cells resulted from the use of the following technique:

Mix the medium well by rotating the culture tubes between the palms of the hands. Combine the liquid portion of ten cultures so treated, place in 10 cc centrifuge tubes and centrifuge at 1,000 r.p.m. for ten minutes. Discard the supernatant liquid, combine the sediment, and add two to five cc of rabbit serum. Mix well with a pipette and add 0.1 cc of guinea-pig or rabbit red blood cells. The latter are obtained by defibrination and centrifugalization. Again centrifuge at 1,000 r.p.m. for ten minutes and place in the water bath for two hours. At the end of this period many of the amoebae will be found to have ingested the cells; some will contain a large number; twenty or more cells may be found within them. The preparations made from sediment were found to be satisfactory up to at least six hours; after this time the cells begin to hemolyse and the amoebae to disappear.

Enlarged amoebae containing red blood cells, resulting from the technique described, yield very pretty specimens for class work and give students a better

¹ From the laboratories of the Army Medical School, Washington, D. C.

² J. H. St. John, *American Journal of Tropical Medicine*, 6, 319. 1926.

³ W. C. Boeck and J. Drbohlav, *Proc. Natl. Acad. Sci.* no. 5, Washington, 1925; *Amer. Jour. Trop. Hyg.*, 5, 371.

⁴ Colonel Charles F. Craig, Medical Corps, U. S. Army.