

Calendar of Today's Events

- American Association as a Whole**
4:30—William Thompson Sedgwick Memorial Lecture, by Dr. E. B. Wilson, Rogers Building.
2:00-5:00—Exhibit, Boston Public Library, Copley Square.
3:00-5:00—Informal Tea, room 10-340, M. I. T.
4:00-6:00—Informal Tea, American Academy of Arts and Sciences.
8:00—Invitation Lecture by C. W. Rice, room 5-330, M. I. T.
- American Mathematical Society**
9:30—Contributions, Harvard Hall, Harvard College.
1:00—Symposium, room 1, Harvard Hall, Harvard.
4:30—Meeting, Incoming Trustees, Harvard Union.
- American Physical Society**
10:00—Contributions, room 4-270, M. I. T.
2:00—Contributions, room 4-270, M. I. T.
7:00—Dinner, Harvard Union, Harvard.
- Section C, Chemistry**
10:00—Symposium, room 10-250, M. I. T.
2:00—Papers left from previous sessions, room 10-250, M. I. T.
8:00—Smoker, American House, Boston.
- Geology and Geography**
10:00—Symposium, "Glaciation," room 4-370, M. I. T.
2:00—Contributions, room 4-370.
8:00—Smoker.
- American Society of Zoologists**
9:00—Business, room 1-190.
- Entomological Society of America**
10:00—Contributions, room 10-275.
7:00—Entomologists' Dinner.
- American Association of Economic Entomologists**
9:30—Papers on Horticultural Inspection, room 3-270.
1:30—Symposium, "Standards of Training," room 3-270.
7:00—Entomologists' Dinner.
- Botanical Society of America**
9:00—Business, room 1-150.
10:00—Contributions, room 1-150.
10:00—Physiological Section Contributions, room 1-143.
2:00—Contributions.
7:45—Reception, Academy of Arts and Sciences.
- American Phytopathological Society**
9:00—Contributions, Sec. A, room 5-226; Sec. B, room 3-470.
11:30—Business, room 3-470.
2:00—Round Table Discussion, room 3-470.
6:00—Dinner, North Hall, Walker Memorial.
- American Society of Naturalists**
9:00—Business, room 3-370.
10:00—Mendal-Galton Centenary, room 3-370.
1:00—Business, room 3-370.
1:30—Symposium, "Geographical Distribution," room 3-370.
6:30—Dinner, followed by Presidential Address, Somerset.
- Ecological Society of America**
10:00—Symposium, room 1-190.
- American Nature-Study Society**
10:00—Contributions, room 2-180.
2:00—Contributions, room 2-180.
- American Anthropological Association**
10:00—Contributions, room 8-205.
2:00—Maya Society Contributions, Peabody Museum, Harvard.
- American Psychological Association**
9:30—Contributions, room J, Emerson Hall, Harvard.
10:30—Contributions, room D, Emerson Hall.
2:30—Contributions, Boston Psychopathic Hospital.
- Section K, Social and Economic Sciences**
10:00—Symposium, "Conservation," room 2-390.
2:00—Symposium, room 5-226.
- Section M, Social and Economic Sciences**
10:00—Symposium, "Conservation," room 2-390.
2:00—Retiring Vice-President's Address, and Papers, room 2-390.
- Section N, Medical Sciences**
1:30—Retiring Vice-President's Address, and Papers, room 1-190.
- American Society for Horticultural Science**
9:30—Contributions, room 2-190.
1:30—Address of the President, and Papers, room 1-190.
- American Society of Agronomy**
9:00—Symposium, room 2-290.
- Society of American Foresters**
9:30—Contributions, State House, Boston.
2:00—Contributions, State House, Boston.
7:00—Smoker, Boston Harvard Club.
- New England Forestry Congress**
9:30—Contributions, State House.
2:00—Contributions, State House.
- Potato Association of America**
9:30—Contributions, room 1-135.
1:30—Contributions, room 1-135.
- Science in General**
Gamma Alpha Graduate Scientific Fraternity
4:00—Council Meeting, Harvard Union.
6:30—Dinner, Harvard Union.
- Section Q, Education**
9:00—Contributions, Fogg Art Museum, Harvard.

DR. SLOSSON POINTS TO WORLD POWER SOURCES

Potential Energy of Earth Has
Been in Steady
Decrease

RESOURCES CLASSIFIED

Sooner or later the world will have to grow its own fuel as it goes, and a systematic survey of all substitutes for petroleum products should be undertaken without delay, said Dr. Edwin E. Slosson, editor of Science Service, speaking at a symposium on photosynthesis, before the American Association for the Advancement of Science.

"Our modern civilization," said Dr. Slosson, "has been developed by the lavish expenditure of the potential energy accumulated in the form of fossil fuel during geologic ages. Our wealth and industries, our comforts and luxuries, our science and art, our power and population, all are dependent upon the continuance of an adequate supply of energy from some source."

Dr. Slosson showed a chart listing tentatively all conceivable sources of mechanical power, as follows:

- A. NON-SOLAR ENERGY:**
1. Internal heat of the earth. (It may be possible to use deep borings for steam production but there is little prospect of its proving profitable.)
 2. Oxidation of mineral and metals from below surface.
 3. Tides, lunar. (Formerly used in a small way in tide-mills. Recent British and Scandinavian projects show that considerable power may be obtained by storage in favored localities. Purely an engineering proposition.)
 4. Internal Energy of Atoms.
 5. Sorting our Molecules According to Their Momentum or Motion. (The second Law of Thermodynamics does not preclude the possibility of getting work out of the motion of free molecules, atoms or electrons by handling them singly instead of in mass.)

- B. SOLAR ENERGY:**
1. Direct Utilization:
 - a. Solar boilers for steam or other vapor engines.

(These have been developed up to an efficiency of four per cent and are well worth working over since if successful it means the utilization of the enormous amount of solar power now wasted in deserts.)

- b. Photo-electric cells. (Various substances will give measurable currents when acted upon by very faint or brief light rays so they must be highly efficient as energy transformers but no way has been found to get large and continuous currents by such means.)
- c. Power from differences of electric potential.

1. On the earth's surface. (Sometimes sufficient to run telegraph lines as substitute for batteries.)
2. In the earth's atmosphere.
- d. Power from differences of temperature.

1. On the earth's surface.
2. In the earth's atmosphere.

2. Indirect Utilization of Solar Energy

- a. By physical means:
 1. Winds (The first mechanical power used by man, originally as sails and some 6000 years later as wind-mills. Sailing vessels may again come into common use and wind motors can be made a valuable auxiliary source of power. But this is an engineering problem not requiring scientific research.)
 2. Tides, solar (See Tides, lunar).
 3. Waves (An old problem but not yet solved. Through the development of electrical methods of collecting, accumulating and distributing energy, the utilization of such local and variable sources of power as winds, waves and tide assumes a new and more practical aspect.)
 4. Water Power from storage of rainfall. (This has been practically perfected as an engineering project and is being developed in many places but needs to be considered from a mondial point of view.)
- b. By chemical means:
 1. Products of chlorophyll fixation of solar energy.

OFFICERS OF SULLIVANT MOSS SOCIETY ELECTED

At a business meeting held yesterday in room 10-419, the Sullivant Moss Society re-elected the following officers for 1923: president, Dr. A. L. Andrews of Cornell University; vice-president, C. C. Plitt of the University of Maryland; secretary-treasurer, E. B. Chamberlain of New York City.

DAVIS LECTURE ON THE GRAND CANYON PLEASURES BIG AUDIENCE

MORE ENTOMOLOGISTS URGED BY J. G. SANDERS

Emphasizes Popular Uses of This
Branch of Science

In his presidential address before the Association of Economic Entomologists here yesterday, Mr. J. G. Sanders, of the Pennsylvania Department of Agriculture, discussed the growing demands, encouraging outlook, and attainable station of Entomology among allied branches of science and in world activities. In reviewing the wonderful accomplishments of the past thirty-five years, under limitations which often hampered the most determined workers, he found much to reassure the economic entomologist who experiences misgivings as to the future of his branch of science and his participation in its developments.

Urges Extension of Work

Mr. Sanders pointed out the present general lack of knowledge of the subject, and urged the extension of such work as The Pennsylvania Department of Education is now doing to interest and educate children in entomology. He mentioned the possibility of popularizing the science and its future developments. Among these he emphasized preventive entomology, heat control and vacuum fumigation of insect infected goods, and "dusting" by airplane. In conclusion he said—"Whereas but a few workers labored in earlier years and accomplished so much in a brief span of activity, should we not be buoyantly optimistic with high expectations when many workers shall have merged the impetus of their endeavors in entomology and closely allied subjects."

GIVE THIRD CONCERT AT SCHENECTADY, N. Y.

Spend Thursday in Inspecting
General Electric and
Broadcasting

SING TODAY IN BUFFALO

The Combined Musical Clubs gave the third concert of their trip at the Mohawk Country Club of Schenectady last night. The performance was greeted by a large enthusiastic audience. E. D. Harrington '18, was in charge of the concert.

This concert was the third during its annual winter trip. Wednesday night the first concert was held at Atlantic City where it entertained an audience of 700. The next evening they played in Philadelphia, at the New Century Club House. Each concert was followed by dancing, the music for which was furnished by the Musical Clubs' Jazz Band.

During the day the men were entertained at luncheon and dinner. In each city the Alumni did much to make their short stop pleasant. The Clubs have a special car in which they travel from point to point. So far all their traveling has been done at night, following the concerts, so the days have been spent sightseeing in these cities.

Tonight's Concert at Buffalo

Wednesday afternoon the Jazz Band played several selections which were broadcasted from the station in Strawbridge and Clothiers' store in Philadelphia. WGY, the broadcasting station of the General Electric Company at Schenectady, broadcasted the music of the Jazz Band yesterday afternoon.

Tonight the Clubs play in Buffalo, at the Twentieth Century Clubhouse of that city. The program will be the same as that presented at all the previous concerts. There will be two selections by each of the Clubs, and two or three specialty acts. W. R. Barker '21, Business Manager of Technique 1921 and Chairman of the Intercollegiate Conference, and A. J. Browning '22, former General Manager of THE TECH will have charge of tonight's concert.

This morning the Clubs will tour the plant of the General Electric Company. After this trip they will luncheon with Mrs. A. B. Potter. At 4 o'clock several specialty acts will be broadcasted. The Alumni of Buffalo will pay hosts to the members of the Clubs at dinner tonight.

ILLUSTRATED TALK BY PROMINENT HARVARD GEOGRAPHER RECEIVED

Theories on Widening of the
Canyon Expanded

EROSION PROCESS SHOWN

The third general meeting of the A. A. A. S. was held last evening in main hall, Walker Memorial, and consisted of an illustrated address by the eminent geographer of Harvard University, Professor W. M. Davis, on "Lessons from the Grand Canyon." Professor Davis spoke to a large and interested audience, describing the cycles of erosion in the Grand Canyon as may be observed by the existing topography of the surrounding regions. He outlined in detail the various stages by which the territory in that part of the country was built up as exemplified by the condition of the present day strata.

The widening of the Colorado canyon by erosion will not stop until all the neighboring highlands are laid low, and the whole region tributary to the river is reduced to a nearly featureless plain, sloping very gently toward the river mouth, predicted W. M. Davis, Professor of Geology, emeritus, at Harvard University in an illustrated lecture on the lessons of the Colorado canyon given before the A. A. A. S. at Walker Memorial last evening.

Stating that there can be no question that the canyon has been produced by the gradual work of weather and water, the distinguished Harvard geologist explained that it must once have been shallower and narrower, and in the future it will come to be deeper and wider. "Its depth," said he, "cannot be greatly increased, because the Colorado cannot cut down its course to sea level. It must preserve some slope on which to run and carry its load of rock waste to the sea. But the widening of the canyon may be increased immensely. Indeed, the widening must go on as long as any plateau-like highlands remain on either side."

Canyon Eventually Eradicated

"Any visitor who felt hesitation in thinking that the earth can be old enough to have witnessed the slow erosion of the canyon, must hesitate still more to believe that the continued action of slow weathering and washing can possibly wear away the vast plateaus which now border the canyon on the north and south. And yet there can be no question that precisely such cycles of erosion have been essentially completed here and elsewhere in the past, and not only once but repeatedly, wherever highlands have been from time to time upheaved."

"If the past history of the earth," continued Professor Davis, "has been long enough for several successive cycles of erosion, the future history of the earth may be equally long. Hence there is no valid reason for hesitating to believe that the excellent beginning of erosional work seen in the canyon today may be continued until its completion is realized in the wearing away of the plateaus and their reduction to nearly featureless lowlands."

Present Canyon Sixth Chapter

"It is precisely with respect to this great lesson of erosion that the walls of the canyon are eloquent teachers. The rock structures that they exhibit are outspoken witnesses to the passage of five long cycles of erosion before the erosion of the canyon was begun. Two of the structures make deposition of their testimony in the vast volumes of strata that they involve; for evidently, the deposition of heavy strata here means the erosion of their materials from some other region; and an erosion vast enough to have supplied material for the formation of strata that cover thousands of square miles to a thickness of 5000 or 10,000 feet must have endured long enough to have worn down the highlands from which the material was brought; that is, a cycle of erosion must there have been essentially completed."

"But the canyon walls also exhibit the work of local erosion in the removal of ancient highlands, and so completely that they were reduced to

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EX-SERVICE MEN EARN LIVING BY BEEKEEPING

Beekeeping was suggested as a vocation for disabled ex-service men by Professor E. N. Cory, state entomologist at the University of Maryland, in a paper read to the American Association of Economic Entomologists, last night, describing rehabilitation classes in apiculture.

The seasonal and non-continuous work required in beekeeping make it particularly suitable for those whose disabilities prevent them from taking up more strenuous work with long working hours and daily attention, said Professor Cory. He showed how the University of Maryland is training ex-service men in practical beekeeping.

CAUSE OF BLUE COLOR IN WATER DISCOVERED

The long controversy as to the cause of the blue color of water has been settled, thanks to recent work done at the University of Toronto, said Professor F. B. Kenrick, speaking before the Chemistry Section of the American Association for the Advancement of Science, yesterday.

There are three separate causes, Professor Kenrick explained, any one of which alone may, under suitable conditions, cause this blue color: absorption, light scattering, and reflection of the blue sky. As examples of these causes, he went on to say that the blue in a swimming tank is due to the first cause, that of a lake or sea seen from the land is caused chiefly by the sky, and the deep blue seen on looking vertically into the sea in the tropics is due to light scattering.