desire, and thou shalt rule over him.'' The story of the fall of man and the story of Cain and Abel were, it may be supposed, written in parallel columns.

The author of the ancient protest against the curse on Eve (who may have been a woman or a man under the influence of a woman, a species of genus *Homo* which is common) wrote this ''suffragettic'' gloss on the space between the two columns. Afterwards it crept into the text of the column containing the story of Cain and Abel. The introductory verse connecting Cain and Abel and Adam and Eve is a subsequent addition. The name Cain is explained there (Genesis 4:1) as being connected with the verb ''canah,'' to produce. When Eve bare Cain she said, ''I have produced a man as well as the Lord. Just as the Lord formed me from the rib He took from Adam, so I have produced now a new human being.''

Some people think that when the Lord created Eve he took not only a rib from Adam, but his backbone. Most of us have all our ribs. If man eats his bread in the sweat of his face till he returneth unto the ground, and if woman bring forth children born to suffer, it is due to the forbidden fruit. Schiller says the fabric of the world is held together by hunger and love.

Theories of Totemism: E. WASHBURN HOPKINS, Yale University.

He considered first the definition of totemism and the necessity of understanding the different religious systems which go by the name of totemism. He showed that totemism must be disentangled from various accretions which have grown up with it before it is possible to discuss the essence of true totemism. When this is done, much that has affected and even produced some of the theories falls away and at the end a comparatively simple belief is revealed which has been built up into various sorts of totemism, so that it is unnecessary to assume a graded and uniform growth in every kind of totemism. Apparently later stages may come comparatively early. The latest theory of Frazer was examined and compared with that of Lang and that of Wundt. Besides this analysis and critique of older theories a new contribution to the theory of utility was made by the presentation for the first time of matter drawn from Sanskrit texts in which practically the same view is represented as that held by the ancient troglodytes. Apart from some variations the most common direct cause of totemism is economic rather than religious and then blends with other religious factors, but is not so fundamentally, though there are forms of totemism which are based on religious conceptions and helping to its spiritualistic development.

The New History: J. H. ROBINSON, of Columbia University. (Introduced by Professor Cheyney.)

Eggettes: a Conservation of Fuel: R. P. FIELD, of Philadelphia.

This paper dealt briefly with the general subject of the utilization of slack coal by manufacturing it into small briquettes, which are called eggettes, and showed that a binder which does not contain pitch or any kindred material is preferable for household use, and that by actual test the eggettes under consideration are cheaper than either anthracite or bituminous coal in the regular sizes, crushed coke, wood, oil or gas. There was then given a brief description with lantern slides of the machinery used to manufacture these eggettes, and a few statistical tables.

On Saturday afternoon besides the symposium and the papers in connection with it already mentioned a portrait of Thomas Hopkinson, first president of the American Philosophical Society, was presented by Leslie W. Miller, principal of the School of Industrial Art, Philadelphia; also an obituary notice of Professor Jakob H. van't Hoff, by Harry C. Jones, of Johns Hopkins University.

At the annual banquet on Saturday evening about one hundred members and guests were present, the president, Dr. Keen, presiding. Toasts were responded to as follows: ''The Memory of Franklin,'' by President Schurman, of Cornell; ''Our Universities,'' by Count von Bernstorff and President Hadley, of Yale; ''Our Sister Societies,'' by Professor W. M. Davis and Sir John Murray; ''The American Philosophical Society,'' by Professor E. C. Pickering.

Thus ended one of the most successful meetings in the history of the society.

ARTHUR W. GOODSPEED,
Secretary

SOCIETIES AND ACADEMIES

THE WASHINGTON ACADEMY OF SCIENCES

THE seventy-second meeting of the Washington Academy of Sciences, a joint meeting with the Washington Society of Engineers, was held in the salon of the steamer *Southland* the evening of April 28, 1911, while en route from Washington to Norfolk, Va., President F. W. Clarke, of the academy, presided.

A symposium on the Dismal Swamp had been

requested, and the committee on meetings decided to include an excursion to the swamp itself and to have the technical papers presented during the first stage of the trip. This plan proved to be eminently practicable, and there is every reason why similar plans that bring people so pleasantly together should be more frequently adopted by scientific societies, for, after all, it is personal acquaintance and private discussion that count for most in such organizations.

The first paper of the evening was by Mr. E. W. Shaw, who described the "Geography and Geology of the Dismal Swamp." The various plateaus and old shorelines of eastern Virginia were pointed out and their formation explained. The swamp is of recent origin, geologically speaking, and in general is well understood, though the existence of a lake near its center is a distinct puzzle, for the solution of which several more or less plausible theories have been advanced.

The second speaker, Dr. C. A. Davis, discussed "Peat Deposits," a subject of which he is a, if not the, recognized master. It was explained that the Dismal Swamp is a great coal field in the making; that it is covered with a layer of peat as much as fifteen feet thick in places, and that portions of this might even now be valuable as fuel.

The next paper was by Mr. R. Zon, whose subject was "The Forest Types in the Dismal Swamp." After a few introductory and general remarks on the relation of forests to climate and soil, the speaker described in greater detail the principal trees of the swamp, especially the cypress and the black gum.

Mr. F. V. Coville gave an interesting account of the "Plant Life in the Dismal Swamp," and made his many listeners anxious for the morrow when they were to see for themselves the yellow jasmine in bloom, the dense cane brakes and the many other wonders of plant life in their native jungle.

Dr. F. W. True told of the "Ground Animals of the Swamp." As these are not numerous, consisting mainly of musk and other rats, swamp rabbits and the like, the speaker so widened his talk as to include fishes, of which there are many varieties; bears, of which there is an abundance; and snakes, of which there is said to be a superabundance.

The last speaker of the evening, Dr. C. Hart Merriam, had for his subject, "The Birds of the Swamp." But as snake stories seemed to take unusually well, and as birds are only feathered reptiles, Dr. Merriam began his talk with an account of certain varieties of snakes that abound in the Dismal Swamp—rattlesnakes, copperheads, water moccasins, king snakes, black snakes, water snakes and just plain snakes. Having disposed of the snakes, the speaker next described the large variety of birds that have been found in the swamp, and so painted their beauty that, for the time being, even the snakes were forgotten.

From Norfolk, Va., the entire party of about 135 was taken into the swamp and even to Lake Drummond, as the guests of and on boats especially provided by the Lake Drummond Canal and Water Company.

Many returned to Norfolk the same day, while others camped out near the banks of the lake and returned to Norfolk the following day.

In every particular the excursion was a delightful one, due to the unusualness and the beauty of the place visited; to the exceptional courtesies, including even a complimentary luncheon, of the Lake Drummond Canal and Water Company; and to the untiring supervision of the genial David T. Day, who not only planned the details of the trip but also secured their execution without a single hitch.

W. J. HUMPHREYS,
Secretary

THE PHILOSOPHICAL SOCIETY OF WASHINGTON

THE 695th meeting was held on May 6, 1911, Vice-president Fischer in the chair. Two papers were read:

Simple Ammonia Apparatus for Temperatures to Minus 70° Centigrade: PROFESSOR C. F. MARVIN, of the U. S. Weather Bureau.

The apparatus described and exhibited by the speaker was designed for general laboratory work wherever a liquid bath maintained at the desired low temperature could be made to answer the purpose.

The apparatus consisted of a large cylindrical copper tank about 11 inches in diameter and 13 inches high. This was jacketed all around, except on top, with thick wooden walls and an interlining of animal hair felt. Inside the copper tank was placed a ring-shaped iron ammonia flask made up of two short sections of standard iron pipe having annular heads at each end. The flask measures about 10 inches in diameter outside by 9 inches high, and 7 inches across the ring inside. The flask is supported centrally on three lugs inside the tank, and is provided with a suitable outlet pipe and valve at the top.

In use the tank is filled with alcohol or non-freezing liquid (about 3¼ gallons), and the flask charged (two thirds or more) with liquid ammonia (5 to 6 pounds). To lower the temperature, gaseous ammonia is allowed simply to escape slowly from the flask. The fumes may be led into a vessel of water with the formation of aqueous ammonia, or allowed to escape entirely. A strong circulation of the liquid of the bath is maintained by means of an efficient form of motor-driven stirrer.

The temperature can be lowered to —25° to —30° C., by the spontaneous evaporation and escape of the ammonia. For still lower temperatures it is necessary to use a suction pump to increase the evaporation by reduction of pressure. A simple hand pump was described for this purpose with the novel feature that the outlet valve opened directly into a water jacket space supplied with running water. Moreover, the valve itself had a small hole directly through it, so that water constantly leaked into the pump chamber and there absorbed large volumes of gaseous ammonia. When in operation, the object of working the piston of the pump up and down is quite as much to expel the water leaking into the pump chamber as to take off the gas, large quantities of which are absorbed by the fresh water entering the pump after each stroke.

An apparatus of this character has been used for many years at the Weather Bureau in the comparison of thermometers and other low temperature work, and was first described in Annual Report of the Chief Signal Officer, 1891–92, p. 355. The bath can readily be lowered to —40° C., and thermometer comparisons carried on over a period of four or five hours with an expenditure of not over five or six pounds of ammonia, which costs about $1.50. Experience demonstrates that in a small apparatus of the kind described, it is much more convenient and economical to let the ammonia escape after evaporation than to try to recondense it back to the liquid state. It proves to be quite practicable to carry the temperature down to —70° C., at which a number of thermometer comparisons have already been made.

Recent Gravity Work by the Coast and Geodetic Survey: WM. BOWIE, of the Coast and Geodetic Survey.

This paper gave an account of the gravity work done by the Coast and Geodetic Survey during the past few years. In 1891 the survey began the use of two sets of half-second pendulums which proved efficient and accurate in this relative determination of gravitation, using the gravity pier at the Coast and Geodetic Survey Office as the base station. As first constructed the knife edges were fastened to the head of the pendulum with the supporting planes on the pendulum case. Several years later this method was reversed, the planes being placed in the pendulum head and the knife edges on the case. This gave a more invariable length of the pendulum, as the effect of any wear on the planes would be negligible.

The different apparatus used in making the observations were illustrated by lantern slides. Previous to 1909 the relative value of the intensity of gravity had been determined at forty-seven stations in the United States. In that year a campaign of gravity work was begun and is still in progress. It will probably close at the end of the present year. During the past two and one half years fifty-six stations have been established. By the end of this year the intensity of gravity will have been determined at about twenty additional stations. This will make a total in the United States of about one hundred and twenty stations.

The apparatus and methods are sensibly the same as those used in previous work except that an interferometer was used for determining the flexure of the pendulum case due to the horizontal force applied by the swinging pendulum. This took the place of the static method. The interferometer had never been used previously in any country for determining flexure on the field.

In 1909 J. F. Hayford, the inspector of geodetic work in the Coast and Geodetic Survey, made an investigation of the effect of topography and isostatic compensation on the intensity of gravity, using fifty-six stations in the United States. He read a paper showing his results at the meeting of the International Geodetic Association at Cambridge and London in that year. By the application of the theory of isostasy the large anomalies between the theoretical and actual value of gravitation by the Bouguer and free air reductions were greatly reduced. The mean anomalies without regard to sign for the fifty-six stations were .064, .027 and .015 dyne for the Bouguer, free air and Hayford methods, respectively.

An analysis of the anomalies by the new method showed that there is only a slight, if any, connection between the size and sign of the anomaly and the character of the topography surrounding the station.

The results from this investigation confirm the conclusions arrived at by Mr. Hayford in his two investigations of the figure of the earth and isostasy. He and the speaker have nearly completed an enlargement of this investigation, using eighty-nine stations. It is expeeted that the results of this investigation will be published by the survey during the coming year. This investigation will verify the conclusions arrived at from the preliminary one. The work done by the Coast and Geodetic Survey proves that a close approximation to the condition of complete isostasy exists.

(The abstracts of the above papers are by their authors.)

R. L. FARIS,
Secretary

THE AMERICAN CHEMICAL SOCIETY
NEW YORK SECTION

THE eighth regular meeting of the session of 1910–11 was held at Rumford Hall on May 5. Professor Chas. Baskerville in the chair.

Resolutions were offered on the death of Mr. Bernard G. Amend.

The day of the meeting marked the centenary of the birth of John W. Draper and a committee was appointed to consider some fitting memorial celebration.

The following papers were presented:

"A Tetracetyl Glucosamine Glucoside," M. L. Hamlin.

"Studies on Amylase. III. Experiments on the Preparation and Properties of Pancreatic Amylase," H. C. Sherman and M. D. Schlesinger.

"The Lactic Acid Ester of Santalol and other Santalol Compounds," Frederick S. Mason.

"Electric Tube Furnaces with Calorite Resistors for Laboratory Use," S. A. Tucker.

"A New Rapid Method for the Determination of Manganese in Iron and Steel," F. J. Metzger and L. E. Marrs.

"The Oxidation of Ferrous Salts," Chas. Baskerville and Reston Stevenson.

"Contributions to the Chemistry of Anesthetics. III. Nitrous Oxide," Chas. Baskerville and Reston Stevenson.

C. M. JOYCE,
Secretary

THE TORREY BOTANICAL CLUB

THE meeting of March 29, 1911, was held at the museum building of the New York Botanical Garden at 3:30 P.M. Vice-president Barnhart occupied the chair. Thirteen persons were present.

The following communication from Miss Caroline C. Haynes was then read:

SIXTEEN EAST THIRTY-SIXTH STREET,
NEW YORK CITY.

MR. BERNARD O. DODGE,
Secretary and Treasurer,
Torrey Botanical Club, Columbia University.

Dear Sir: It is desired by a number of the members of the club and by others interested, to establish a fund in memory of the late Professor Lucien Marcus Underwood, the income of which may be used to aid in the illustration of the Club's publications. It is hoped that this fund may reach at least $5,000.

I ask that you obtain from the club its consent to administer such a fund, and enclose my check for $100, as an initial subscription drawn to the order of the Torrey Botanical Club.

Sincerely yours,
(Signed) (MISS) CAROLINE C. HAYNES
February 15, 1911

Dr. M. A. Howe made a motion that the club establish a Lucien Marcus Underwood fund, the income of which shall be used in illustrating the publications of the club, and that the secretary be instructed to convey to Miss Haynes the hearty and appreciative thanks of the club for her generous initial subscription. The motion was unanimously adopted.

The resignations of Elizabeth Billings, Alice Knox, W. L. Sherwood and Rev. L. T. Chamberlain were read and accepted.

Dr. H. H. Rusby reported having received several acceptances to his invitations to become sustaining members of the club.

First on the announced scientific program was a paper on "Virginia Fungi" by Mr. B. O. Dodge. After reviewing the literature relating to Virginia fungi the speaker gave a report on the fungi collected on the estate of Mr. Graham F. Blandy at White Post, Clark County, Va., last September.

The second number on the program was on "A Little-known Mangrove from Panama," by Dr. M. A. Howe. The mangrove in question, *Pelliciera Rhizophoræ,* a member of the Tea or Camellia Family, was found in association with *Rhizophora, Aviunnia,* etc., near the Pacific terminus of the Panama Canal. Specimens and photographs were exhibited. A description and discussion of this mangrove will appear in the April number of the *Journal of the New York Botanical Garden.*

B. O. DODGE,
Secretary