

lytes would diffuse out of fertilized eggs, thus lowering the internal osmotic pressure to a greater extent than from unfertilized eggs. This would make the ratio of external to internal osmotic pressure greater in the former than in the latter case.

In testing this prediction by experiment, urea solutions were found to be so toxic as to interfere with the observations. Sugar solutions, however, gave the expected results. If fertilized and unfertilized eggs be placed in a molecular solution of cane or invert sugar (approximately isosmotic with sea water) and observed under the microscope, the fertilized eggs appear small and sometimes irregular in outline, whereas the unfertilized eggs appear normal. This difference is observed before the formation of the "hyaline plasma layer" in the fertilized eggs, so their shrinking is real, *i. e.*, not due to a receding of the granules toward the interior.

I made series of measurements of the diameters of eggs treated in this manner, of which the following are specimens:

One drop of a molecular solution of dextrose contained eggs of the following measurements: unfertilized, 85, 84, 81, 84, 82, 84, 85, 85, 80, 85, 83, 85, 83, 85, 84, 83, 82, 86, 83 (mean = 83); fertilized, 80, 85, 80, 80, 75, 74, 70, 66, 67, 66, 80, 67, 78, 80, 80, 69, 70, 68, 80, 77 (mean = 75). As a control, a drop of sea water containing fertilized and unfertilized eggs was investigated and recorded as follows: unfertilized, 88, 85, 82, 90, 90, 82, 75, 82, 75, 85 (mean = 83); fertilized, 83, 80, 83, 90, 90, 82, 93, 82, 95, 80, 92 (mean = 86).

It thus appears that whereas in sea water fertilized eggs are not smaller than unfertilized, in a molecular solution of sugar fertilized eggs are plasmolyzed faster than are unfertilized eggs, indicating greater permeability of the fertilized eggs to electrolytes, or of the unfertilized eggs to sugar. As the former alternative agrees with previous data above mentioned, we assume it to be the correct one.

We thus have three demonstrations of the increase in permeability of the egg to electrolytes at the beginning of development: (1) the decrease in electrical resistance, (2) the

less rapid disintegration of the anode region and (3) the increased plasmolysis.

The second demonstration, if found true in other cases, would account also for the difference in electrical potential between the interior and exterior of the living cell, and the negative variation in nerve and muscle. The anions (of any electrolyte in greater concentration in the interior than on the exterior) that are prevented from escaping would make the interior negative in relation to the exterior; and a surface area of increased permeability would be negative in relation to the remainder of the surface. A band of increased permeability causing increased surface tension around the equator of the dividing egg would account for the constriction of the first cleavage furrow.

J. F. McCLENDON

U. S. BUREAU OF FISHERIES,
WOODS HOLE, MASS.,
August 8, 1910

SAN FRANCISCO MEETING OF THE AMERICAN CHEMICAL SOCIETY

THE meeting of the American Chemical Society in San Francisco and the sightseeing and entertainments enjoyed there and en route will always be remembered by those who attended as one of the pleasantest memories of their lives.

The members taking the special train, some 110 in number, gathered at the La Salle Hotel in Chicago on July 4, where they were entertained at luncheon as the guests of the Chicago Section.

The special train, furnished by the Santa Fe Road, was composed of the Pullman Company's finest equipment, electric-lighted throughout, with observation, library and buffet cars.

The first stop was made at Colorado Springs, where most of the members took the trip to Pikes Peak and to the Garden of the Gods, while others contented themselves with the attractions around Manitou and the Cheyenne Canyon.

On the following morning the train stopped for a short period at Albuquerque and reached Adamana at one o'clock, where carriages and wagons were in waiting to take the party to the Petrified Forest, some twelve miles distant. Although the sun shone brightly, no inconvenience was experienced, owing to the altitude and the dryness of the atmosphere, and all were repaid by the wonders awaiting them.

Friday, July 8, was passed at the Grand Canyon, without question the greatest of all nature's marvels. Rides were enjoyed by many along the rim, while a number went on mule back or on foot to the bottom of the canyon, a mile below.

The following afternoon, July 9, was spent driving around Redlands and automobiling through the orchards and palm-grown avenues of Riverside. The party had already been met at the Grand Canyon by Mr. Ralph A. Gould, chairman of the local committee, welcoming them to the state of California on the part of the California Section, and just before reaching Riverside a committee of chemists from Los Angeles met the train and outlined the entertainment to be given by the Los Angeles chemists on the following day.

July 10 was spent in and around Los Angeles as guests of the local chemists, visiting Pasadena, the San Gabriel Mission and Long Beach, and dinner was served at a pleasant resort on the seashore. In the evening the visiting members were entertained with a reception and dinner at the Sierra Madre Club and retired at a late hour to the special train, awaking in the morning at Lang, California. Here the party became the guests of the Sterling Borax Company, visiting their mines on a special train provided for the purpose, and each member received an interesting souvenir of the trip.

That afternoon and evening were spent at Santa Barbara, where a carriage drive was taken and the Santa Barbara Mission visited.

Early the next morning as the party approached Salinas the greatest excitement of the whole trip was furnished by the wrecking of the special train, which ran off the track in rounding a curve, completely destroying the engine and three cars. Fortunately none of the party was seriously hurt, although those in the forward part of the train were severely shaken up. After about three hours' delay the party proceeded to San José, where they were met by many members of the California Section and were entertained at lunch at the Vendome Hotel. Leaving here for San Francisco, the train was found full of bouquets of sweet peas and baskets of fruit presented to the ladies of the party by the San José Chamber of Commerce.

At six o'clock, July 12, the party arrived in San Francisco, and from that time on the hospitality of the California Section was boundless. Every detail had been attended to by the local committee. Each member was immediately taken

to a taxicab, carried to his hotel, and special vans were waiting for the baggage, which, without any attention on the part of the visiting members, was soon found awaiting them in their rooms. On arrival at the hotel, the ladies of the party found bouquets of roses awaiting them.

On Wednesday morning, July 14, the forty-second general meeting was called to order by President Bancroft in the St. Francis Hotel. After an address of welcome by Arthur Lachman for the California Section, responded to by President Bancroft, the following addresses were delivered in general session:

W. D. Bancroft, "Positive Photography" (illustrated with lantern slides).

Edw. C. Franklin, "Liquid Ammonia as a Solvent and the Ammonia System of Acids, Bases and Salts."

W. F. Hillebrand, "Chemistry in the Bureau of Standards."

H. E. Barnard, "The Use of Sodium Benzoate as a Preservative of Food."

At the same time a ladies' reception was held in the parlors of the St. Francis Hotel.

After luncheon the members present and their guests enjoyed an excursion over the Ocean Shore Railroad to Half Moon Bay and Tunitas Glen, returning in time for the smoker held in the Fairmont Hotel and for the ladies' theater party. A hot supper had been promised at the smoker and all who partook of the tamales and heard the Chinese music were ready to acknowledge that the adjective was quite descriptive.

On Thursday morning the meetings of the divisions were held in the St. Francis Hotel and many interesting papers were presented. The symposium on smelter smoke before the industrial division excited especial interest.

After luncheon all attending the meeting enjoyed one of the pleasantest excursions of the trip, made by special train to the top of Mt. Tamalpais, stopping at the Muir Woods. The members were entertained at a banquet during the evening on the top of the mountain. Several of the members remained all night, coming down the mountain on the following morning in gravity cars. The Muir redwoods, named after John Muir, is probably one of the most beautiful bits of scenery in the immediate vicinity of San Francisco, and the ride to the top of the mountain, with the changing interest of foliage and panorama of hill, valley, bay and distant city of San Francisco, was appreciated by all.

Friday morning was spent at the University of

California in Berkeley, mainly in an examination of the various buildings, laboratories and campus of this beautifully-situated institution.

Friday noon the party boarded a special steamer as the guests of the Selby Smelting and Lead Company, and sailed some twenty miles up San Francisco Bay, being entertained at luncheon by the company and afterwards conducted through their plant, where the various processes of lead smelting and the recovery of gold and silver therefrom were explained. One of the chief attractions of this plant was the opportunity given to view the new Cottrell precipitating apparatus installed for the purpose of removing sulfur trioxide and any other solids or liquids present in smelter smoke.

After returning to San Francisco, the evening was spent in a visit to Chinatown, where at ten o'clock all were entertained at a Chinese collation of tea and sweets served in a Chinese restaurant to music which the local committee characterized as sweet.

Saturday morning was devoted to divisional meetings at which the remaining papers on the program were read.

In the afternoon at two o'clock the members were treated to an automobile ride over Buena Vista Heights, through the Golden Gate Park to the ocean beach and the Cliff House, returning through the Presidio and the residential section of San Francisco.

In the evening the members assembled for the main banquet of the week in the St. Francis Hotel, at which the ladies attending were guests. About two hundred and fifty sat down to the banquet, which will long be remembered by those present.

On July 17 the party, as the guests of the Italian-Swiss Colony, took a special train to Asti, where an unusually pleasant day was enjoyed in examining the vineyards and wineries of this well-known region. Lunch was served outdoors in unusually attractive pergolas. The party returned to San Francisco early in the evening and were given, almost for the first time, opportunity to sleep.

On the following morning, July 18, an excursion was taken by steamer up the Sacramento River to Sacramento through the wonderfully fertile fields of the Sacramento Valley, between levees so high that the party was obliged to view the country from the upper deck of the steamer. The general aspect was much like that of portions of Holland. Returning from Sacramento by train, the party reached San Francisco late in the eve-

ning, having been royally entertained. Many, however, took trains at Sacramento for the north.

On Tuesday, July 19, a special steamer was provided for those who remained to visit and examine the various points of interest around San Francisco Bay.

Following the meeting in San Francisco, the members returned to their homes by various routes, but some thirty traveled northward by invitation of the Puget Sound Section to visit Seattle and obtain a view of the northern Pacific coast scenery. Arriving in Seattle on the morning of the twenty-first, the party was met by President Falkenburg, of the Puget Sound Section, Horace G. Byers, councilor of the section, President Kane, of Washington University, and others, who welcomed them as the guests of the Puget Sound Section.

On arrival the ladies were supplied with bouquets of dahlias and shortly afterwards all started on an automobile trip which covered all parts of the city, both business and residential, and included the beautiful grounds of Washington University.

At the end of the drive the party were lunched at the Commercial Club, after which they immediately left on a chartered steamer for a trip around Puget Sound. The first stopping-point was the plant of the Pacific Creosoting Company, where the party left the boat and inspected the largest creosoting plant in the world. Returning, a stop was made at the navy yard, where battle-ships and armored cruisers were examined, and then the party proceeded to Tacoma, where a delightful lunch was served under the enormous trees of the Tacoma City Park. By the courtesy of the board of park commissioners, the party was well supplied with roses and given permission to pick all the sweet peas they could carry away.

From Seattle some came east via Vancouver and the Canadian Rockies, while others came over the Northern Pacific, visiting the Yellowstone National Park.

Unusual enthusiasm was shown throughout the whole meeting and many new western members were added to the society, which now has a membership of over five thousand.

Two hundred and ninety members and guests registered for the meeting.

One hundred and twenty papers were presented at the meeting, embodying new chemical research, many of them reporting very important results.

CHARLES L. PARSONS,

Secretary