

President of Audubon Society Gives Lecture

Opening Meeting for Salem Nature Study Club Held; Many Pictures Shown by W. A. Elliott During His Interesting Address

The Salem Nature club, one of the most significant of recent organizations, held a particularly successful open meeting on Friday evening, March 11, at YMCA. W. A. Elliott, president of the state Audubon society spoke on birds of the Pacific Coast. Mr. Elliott exhibited more than



Bluebirds, harbingers of spring, are already seen perching on low boughs and fence posts.

75 colored plates and spoke to a packed house for a period of more than two hours on the habits of western birds. Mr. Elliott is one of the outstanding authorities of the country on bird life. His book, entitled "Birds of the Pacific Coast," is known to many people in Salem and can be secured through the local book stores.

Salem Nature Study club was realized as an organization through the efforts of C. A. Kells, and George Shand. These men called a general meeting at the YMCA on February 19 at which time the club was formally organized. The constitution provides for a governing board of ten members. At the present time there are eight filling the office. Two will be named later.

The following are the officers and charter members of the club, which is open to those interested: Mr. George Shand, president; Prof. M. E. Peck, vice president; Mrs. C. A. Kells, secretary-treasurer; Robert Paulus, Miss Mirph Blair, Mrs. M. E. Peck, Miss Lillian Applegate, Miss Gussie A. Niles, Loyal A. Warner, Dwight T. Shaw, Robert Dana, Mrs. Robert Paulus, Prof. H. C. Kohler, Miss Clara E. Smith, Mr. and Mrs. Henry C. Gilbert, Miss Elaine Brown, Leonard Mosher, Mr. and Mrs. Walter H. Denton, Miss Elsie S. Devine, Miss Clara E. Stewart, Mrs. E. M. Hoffnell, Mr. H. C. Batchem, Mr. C. A. Kells, Mary Elizabeth, Margaret Ann, and Frances Alice Kells, Mr. and Mrs. Chas. A. Park, Miss Louise Brown, Miss Lola White, Mr. and Mrs. W. C. Dibbis, Mrs. Alice Fisher, Mr. Arthur Fisher, Miss Gertrude Breven, Miss Mary J. Stone, William Mosher, Mrs. O. J. Hull, Miss Eleanor Lizar, Mrs. P. M. Hester, Mrs. S. H. Van Trump, Mr. Ben Rickli. The first eight members comprise the board of directors.

The speaker on Friday, William Ayres Elliott, as president of the Oregon Audubon Society is, of course, deeply interested in the protection of the birds. The Audubon society is an organization of bird lovers who work to educate public opinion to a proper appreciation and protection of bird life and to cultivate in them a love of birds, to communicate knowledge of and enthusiasm for them to others. The term Audubon society was coined by George Bird Grinnell in 1865, and an organization for the

protection of birds at that time started by him attained a membership of 48,868. It was later discontinued, but the name and purpose remained in memory of John James Audubon, a distinguished American ornithologist, born in 1780 in Louisiana. John James Audubon, born of French parents, was educated in Paris. Upon leaving school in France he returned to America where he occupied himself with his ornithological studies. He spent much time in watching the habits of birds. Often he took long walks through the forest regions of uninhabited sections of our early country, sometimes being gone for months upon such journeys, in the course of which he perfected many sketches of birds.

With a mass of data on bird life accumulated in 15 years of such excursions, he proceeded to Philadelphia to publish a work on birds of North America. While he was absent from the city, all his papers were destroyed by rats, and he was obliged to go back again to his bird study and sketching. Four years later he took his designs to England, and in 1820 appeared the first volume of "The Birds of America." Mr. Elliott says that the society is promoted from two viewpoints, from the sentimental and esthetic viewpoint and from the economic viewpoint. There are a number who are interested in birds as birds, as creatures of beauty, whose existence calls for protection from a purely sympathetic standpoint. Others are interested in birds because of the work they do in protecting growing things. These form perhaps the larger class. It is the purpose of the state society to work from both these viewpoints. The program committee for the local club includes: Mrs. C. A. Kells, Professor M. E. Peck, and Miss Mirph Blair.

GIRLS SCHOOL IDEA GETS DEATH KNEEL

The work of the men in junior class play proved them to have far more than the usual dramatic ability. A committee is now working on the sale of the school annual "The Norm" with gratifying success. The men graduates are each year going out into the teaching field into principalships and remunerative junior high school positions, and several have been asked to return to the normal as faculty members because of their high grade work. Co-education at the Monmouth school is drawing more men each year into the teaching profession—a field in which the demand for men is constantly increasing.

RESUME WHALING OFF MEXICAN COAST (Continued from page 1.) ducts, up-to-date machinery for this purpose being installed along the rendering ship. Whale oil accumulates in vast tanks, and when thousands of barrels have been obtained it is pumped into the tankship and sent off to the world-markets. Of the many varieties of whales frequenting the waters here, the California greyback is said to be the most numerous. The giant sperm whale, the blue-nose and a dozen other types are also captured in numbers by the whaling company. Although the continual operation of the whale fleet below San Diego is expected to thin out the mammoths along the coast, authorities making studies of the waters have found that whales are numerous at the present time. At certain seasons of the year, as the temperature of the water changes, these giant fish-like mammals find their way into the channels off San Diego and even migrate as far north as San Francisco. Steamship captains operating along the coast recently complained the whales are so thick as to hinder

AMERICAN FARMER HAS PLACE IN SUN

(Continued from page 1.)

manufacturer, why, the logic of the situation demands, has he not shared in the success and prosperity of the organic chemical industry in America during and since the great war? There are, of course, many successful farmers. There are likewise hundreds—hundreds of thousands—who themselves would be the first to admit that they are far from successful. And it is with these hundreds of thousands of farmers, of organic chemical manufacturers, that this discussion is primarily concerned.

Organic Chemistry Since 1900 Prior to 1900 there existed in America no organic chemical industry worthy of note. Coal tar distillates, in large volume, were fractionated into benzene products of approximate purity but they found, for the most part, their best market on foreign soil. From thence, after further chemical manipulation, they were returned to us in highly developed form. A number of refined organic products came slowly into production in America in the years preceding the World War. Their manufacture, however, can only be construed in the light of a gratuity on the part of foreigners. For the most part, these compounds were of the simplest sort, usually of tonnage output and required no skilled technique in manufacturing operations.

During the World War there arose a great dearth of all chemicals and particularly was this stress felt in the organic field. The cutting off of imports gave the greatest possible protection for which a manufacturer could ask and producers thronged into this field, hoping that by the time the war was over their manufacturing processes might have reached a degree of perfection such that they could continue in this work. A work clearly indicative as a necessity to prevent leading nations. Immediately after the close of the war, the embargo on chemicals was continued in force pending the passage of a protective tariff. To September 1922 the Fordney-McCumber tariff became a low and herein lay the trouble. A MODERN CHEMICAL MANUFACTURING INDUSTRY, PRODUCING CHEMICAL SUPPLYING AMERICA.

There are many people today who look upon the tariff as a political question. If we grant this, then all political parties henceforth must espouse the tariff as the salvation of our country. Those of us of Democratic leaning as well as those of Republican leaning realize more and more fully that the Fordney-McCumber tariff is the greatest tariff ever written for America. The men who sponsored and defended this bill and who secured its passage are responsible for the energies of a nation having been directed into intensive industrial activity, with the result of spurring the mental powers of the individual to higher and higher attainments in the realms of discovery and invention.

Had it not been for the tariff of 1922 with its strong protection for organic chemistry, this enormous industry would have been lost to America and thus the greatest industry of all time left in the control of foreign powers. As it was, Heaven smiled upon us and the manufacture of organic chemicals has progressed by leaps and bounds to an extent little dreamed of even by the early financial promoters. It may not be generally known that the total annual output of all our iron and steel plants is SCARCELY ONE-FOURTH IN VALUE compared with that of our manufactured food products which, exclusive of all farm staples used directly as foods, amounts to \$13,000,000,000 annually.

A Brief Summary A Great War converted America into a chemical-manufacturing nation from a raw-product chemical-supplying America. Had it not been for the Tariff act of 1922 this country would have lost its enormous new organic chemical industry.

RESUME WHALING OFF MEXICAN COAST

The farmer is an organic chemical manufacturer and he is out of step with industry in general. The nineteenth century age of coal-tar gives way to the twentieth century age of cellulose. The time is not far away when the feeding of corn to hogs will be classed with that other unholy act, the feeding of raw bituminous coal to a furnace for heat supply. The farmer is the great producer of cellulose and his future lies in its increased utilization. He is thus a partner in the great organic chemical industry of this country and it is in its development that the only permanent agricultural "refuge" is to be found.

The Tariff of 1922 But, it will be asked at this point, what has all this discussion of the benefits of the Fordney-McCumber tariff to the American organic chemical industry got to do with the present state of affairs in American agriculture. In brief, just this, which is both premise and conclusion of this discussion: The Tariff law of 1922 has made possible the continued

development of an American organic chemical industry in which the American farmer, whether he knows it or not, is a partner. He, therefore, is vitally interested in the continued development of the organic chemical industry in this country as the ultimate and ONLY PERMANENTLY SATISFACTORY solution of his problems. Only as the future development of this chemical industry makes possible the increased utilization of the products of the farm, now only partially used or discarded altogether, will agriculture throw off its ancient and medieval standards. And only then will agriculture be able to claim its RIGHTFUL PLACE in the science of industry in this country and entitled to as full a share in industrial prosperity as are other industries.

This must be our starting point. In fact, it is—or rather was—our starting point. Only as the products of our farms are scientifically produced and just as scientifically used will our farmers attain the economic prominence which they have been too often told in the past they had and which they now full well know they do not have. Nor is this otherwise than as it should be. From time immemorial, agriculture seems to have been regarded as almost the one industry open to all free men, and for which little or no training or apprenticeship was necessary. Surely as a man sowers, so does he reap, and farmers of the twentieth century are reaping the sowings of centuries before them. But the old order is changing; it has changed, and it is those of our agriculturists who do not see the change that suffer most. It began two or three decades ago when scientific farming was first talked of in earnest; it is now being completed with the scientific utilization of the products of the farm. A "right farmer" may be a more picturesque individual than an "organic chemist," but in the survival of the fittest, the "right farmer" will need more than his picturesque if he is to compete with his colleague who has seen the handwriting on the wall, and who accordingly regards his farm as a chemical plant and himself a chemist.

The time is not far away when the feeding of corn to hogs will be classed with that other unholy act, the feeding of raw bituminous coal to a furnace for heat supply.

A Chemical Industry Staple agricultural products must not be supplied to the consumer directly, but must come to him indirectly through the chemical manufacturer. In other words, the valuable by-products and co-products that lurk in grains and all other agricultural staples, must needs be removed in order that the main products can be supplied at lower costs. The extent to which this is being done and can be done can best be brought out by a discussion of the accomplishments and possibilities in connection with a few leading agricultural products.

Oats is used primarily as a feed for livestock and for the manufacture of cereals. From the hulls about 10 per cent by weight of furfural is easily obtainable through a simple steam distillation process. This furfural is already finding a market. From the furfural we shall derive a large number of chemical compounds of considerable value. Though the hulls constitute but 30 per cent of the weight of the oats the chemical compounds derivable from this fraction will certainly approach a VALUE EQUAL TO THAT OF THE REMAINING 70 PER CENT OF THE OAT KERNELS.

Sugar cane has been cultivated primarily for its sugar content but one-fourth of the total weight of the sugar cane consists of the tops, and these may serve admirably for silage. One-fourth of all the sugar cane and sorghum stalks grown in our southern states is now furnishing a by-product for further manufacture. In Louisiana we note the average yield per acre of 20 tons of sugar cane stalks, which, after extraction of the 10 per cent sugar content, yield a bagasse capable of giving another 10 per cent of the original weight of cane, in the form of dry fiber, even stronger than weed fiber. From this fiber is now manufactured celestex, a kind of board of non-heat conducting properties, especially suited for the lining of refrigerators and interior wall coverings.

In this connection, we may assume that the stalks of wheat and corn will come into use in the preparation of similar but coarser, wood substitutes. Of greatest interest in the last few years is the development of the soybean industry. This bean is distinctly rich in nitrogen. Soybean oil is used for making lard and butter substitutes, for soaps and for edible oil. It is also used in the making of water-proofing materials, enamels, varnishes, and printing inks. The oil cake is an excellent stock food and finds use further in the manufacture of a man's consumption and for special food for invalids and infants.

Corn gives a great number of products. The germ yields a fine cooking oil (one pound per bushel) and parago, a substitute for rubber. The germ residue is an excellent cattle food. The starch granules of the corn are convertible to laundry starch (33 pounds per bushel) and already 50,000,000 bushels of corn are diverted into this channel. From this corn starch we derive corn syrup, dextrose and crystalline maltose. This latter is a recent development of the bureau of chemistry and is made by mashing starch

with malt and allowing the mixture to hydrolyze for a week. About 25 pounds of sugars can be made from a bushel of 56 pounds of corn and a residue of about 15 pounds of molasses collected. From the corn hulls we obtain gluten (14.5 pounds from each bushel). This is a valuable tissue building food for livestock. From this same source we also obtain phytin, a food containing 21 per cent assimilable organic phosphorus, especially valuable for those suffering from nervous disorders. The cobs of the corn, which amounts, all told, to 20,000,000,000 bushels, may be made to yield, by simple steam distillation, an adhesive substance valuable as a brignetting material and also an appreciable quantity of furfural, previously mentioned in connection with oat hulls.

From the corn which enters the butyl alcohol industry we obtain per bushel about ten to eleven pounds of solvents made up of about 3 per cent acetone, 60 per cent normal butyl alcohol, and 10 per cent ethyl alcohol and certain high boiling acids, all of which are meeting with increasing demands in the industries. In this fermentation of starch, present in corn to 60 per cent by weight, a large quantity of carbon dioxide and hydrogen in equal volume is simultaneously evolved. These gases constitute a weight almost twice that of the combined solvents. The remaining 40 per cent, or non-starchy materials of the corn left after fermentation, contains 10 per cent of protein and considerable fiber and pentosans. This residual mixture when carefully dried is well adapted as food stock and will be returned to the farm in ever increasing proportions. The gaseous hydrogen evolved in these fermentation processes is soon to be employed for the synthesis of ammonia by combination with atmospheric nitrogen and thus is insured of low priced ammonia. The ammonia in turn may then be made to react with the waste carbon dioxide under pressure to yield urea, one of the most desirable forms of fixed nitrogen for fertilizers.

When we reflect upon the great waste in our corn today—some 40 per cent for swine, 20 per cent for horses and mules, 15 per cent for cattle, and only 10 per cent for man and 15 per cent for manufacture, we know full well that the chemical utilization of this crop is inefficient. More of the corn must come into fermentation processes and more soybeans must be raised to furnish greater and greater amounts of food for livestock. These vitamins which are present in the corn and have such beneficial influence upon hogs must be isolated and supplied to the hogs through some other medium than raw corn. The coming utilization of corn stalks in chemical processes will naturally lower the price of the corn grains and it may still be possible to feed livestock with appreciable quantities of corn without encouraging chemical waste.

Worthy of particular attention on the part of southern land owners is the assuredly growing importance of peanut oil. From this oil, hydrogenation, an excellent substitute for lard is obtainable. Hogs take particular delight in rooting out the ungarnered peanuts left in the ground. Each acre can thus afford nutriment to fatten 30 hogs up to within three weeks of sale when corn, for the present, must be used to bring the hogs into first class condition.

Moreover, we must introduce new crops into various parts of the country for cultivation. A Chinese seed, *aleuritis fordii*, has recently been planted in central Florida. From this seed we shall obtain tung oil, especially adapted to high grade varnishes, paints and linoleums.

Upon poor southern land we shall grow dasheens and yams which yield such large starch crops, particularly adapted for fermentation. The long-leaf pine is destined to come into prominence by reason of the new developments in the chemistry of turpentine. From the pine resin fraction of turpentine synthetic camphor is now produced abroad at such prices as to make it highly competitive with natural camphor. Whereas the remaining portion of the turpentine by careful halogenation and oxidation yields an excellent substitute for the best quality of Nitrocellulose.

Upon poor northern lands, notably in Michigan, Norway spruce will be planted. In 25 years, the spruce will be ready for cutting and shipment to artificial silk plants. With the replacement of young trees for those cut each year, this will give the Michigan farmers something to secure them against failure in other crops. A new waste product in the artificial silk industry is found to possess qualities approaching those of wool; though not so soft to the touch nor of the same warmth, in garment form, these desirable properties will soon be supplied either by admixture with other organic chemical products or with wool itself.

When we consider the mounting costs attached to the cultivation of such well known crops as cotton, we cannot overlook the possible introduction of the culture of weeds or such material inherently resistant to all ravages of disease and insects. It is not beyond hope that common milkweed will more than likely claim the attention of our organic chemical manufacturers. And certainly the expense of its cultivation can not be appreciable. Such weeds will be

grown primarily for their plant juices and secondarily for linters and cellulose. The Jerusalem artichoke (*Helianthus tuberosus*), or the sunflower that grows wild on western lands, will soon be domesticated and diverted into food manufacture. The war food committee of the Royal Society of Great Britain reported this plant capable of producing the greatest amount of food per acre. It can be grown on waste land and without cultivation. The average yield per acre may be made to approach 20 tons, whereas the Irish potato yields not more than 3 tons per acre. Freezing does not affect the tubers; hence they may be left in the ground until needed. These tubers contain a carbohydrate known as inulin, a product hydrolyzable into levulose or fructose, with a yield amounting to 10 or 12 per cent of the weight of the tuber. This fructose is 50 per cent sweeter than ordinary sugar and its preparation in pure crystalline form has just been completed by investigators at the bureau of standards. Although this sugar is somewhat deliquescent, this need for interference with many of its possible uses. When fermented the carbohydrates of the artichoke yield alcohol and acetone but this fermenting proceeds somewhat more slowly than in the ordinary fermentation of glucose. The artichoke may also be used as food in the same manner as potatoes and the seeds undoubtedly will find a market for the production of oils and meal.

There thus appears no end of possibilities for farm lands and likewise it is evident that the adaptation of all sorts of agricultural wastes to a multiplicity of uses has only just begun. There are as many possibilities ahead of this enterprise as there were a century ago for the utilization of coal tar. This statement may seem utterly absurd to the layman but TO THE CHEMIST IT IS A CERTAINTY.

Coming Age of Cellulose

Just as the nineteenth century from one chemical standpoint may be regarded as the coal tar age, will the chemical progress of the twentieth century center around the chemical adaptation of cellulose. It is this that brings us directly to the crux of the entire problem of agriculture and it is this also which ought to make the analogy between the farm and the organic chemical plant perfectly obvious. The predictions made preface the continuation of prosperity in the modern chemical industry. The manufacturers in this industry, as indicated above have prospered greatly through our protective tariff policy. The same tariff that has protected the organic chemical industry in the past few years and which has brought success to so many manufacturing industries is the same tariff at whose doors the unscientific mind would lay the farmers' troubles. As rough as has been the farmers' road during the last several years, had it not been for the protection afforded the organic chemical manufacturers by the tariff act of 1922, not only would the farmers' present plight be infinitely worse but there would be no signs of a brighter dawn. As

the industries manufacturing organic chemicals extend their researches and increase their developments, MORE AND MORE will agricultural products enter into these industries and hence more and more will the farmers emerge from their complete and total dependence upon consumers' markets. This development is surely coming, although its progress appears not so rapid as the agriculturist may desire. Those who talk of solving the farmers' troubles simply by marketing surplus farm products live only for today, even as they see it. WE SHALL BE IMPORTING LARGE QUANTITIES OF GRAIN WITHIN TEN YEARS.

In this connection we must not belittle the efforts already put forth by agriculturists and manufacturers to bring agriculture into a better economic position. Our agricultural colleges and farm bureaus have everywhere outdone themselves in the dissemination of scientific methods making for increased production on our lands. The farmers have applied well these teachings, but have they not overlooked the first and foremost point in all business—the creating of an increased demand before building up an increased supply? Now this is all changed. The demand is increasing enormously from year to year. Our farm products are becoming increasingly the greatest source of raw material for manufacturing plants—second only, for the time being, to coal tar in importance. Our farmers therefore must cooperate with American industrialists and in

close association with them work for their own good and the good of all.

The Tariff Problem There is thus, as we must see it, no tariff problem between the industrial east and the agricultural west. There have been signs in the past which made it look as though this were so, but they are passing or already gone. Every force and influence which aids in the increased chemical utilization and adaptation of cellulose benefits the organic chemical producer, whether he operates a farm or a factory. At the present time an adequate protective tariff which will foster the growth and development of the organic chemical industry benefits the chemical plant in New Jersey and in Michigan, and the farmers in Iowa and Indiana.

Acclimated ornamental nursery stock, evergreens, rose bushes, fruit and shade trees at Peary Bros. in season. We have our own nurseries. 178 S. Com'l. (*)

Elker Auto Co., Ferry at Liberty St. Autos stored and bought and sold. Cars washed day and night. Low prices and service will make long friends. (*)

Mrs. H. P. Stith, millinery. Most beautiful hats in Salem; all shapes and colors; full stock from which to make fine selections. Best quality. 333 State St. (*)

The Dixie Bakery leads on high class breads, pies, cookies and fancy baked supplies of every kind. Best by test. Ask old customers. 439 Court St. (*)

SEE

Wilson's Fashion Shop

Style and Quality Without Extravagance

Latest Styles for Women

in Coats, Dresses and Millinery

Those new Sport Coats so much in demand are now on display in our store. Come in and see these smart coats.

A Small Deposit Will Hold Any Garment

Wilson's Fashion Shop

Oregon Building State Street and High

Use Your Credit at Kafoury Bros.

Springtime Atmosphere Is Evident

Spring Merchandise Is Ready and Awaiting You

Coats Dresses Suits

In selecting the new assortments we have carefully chosen only those styles, fabrics and colors that will be correct and in quantities that can be depended upon to give satisfaction.

That's One of the Reasons for our Growth— Dependable Goods—Fair Prices— Another Charge Accounts

Charming Silk Dresses, New Prints and Colorings \$11.48 up to \$49.50

Stylish New Coats \$15.00 up to \$59.50

Cunning Suits \$11.48 up to \$39.50

We are specializing in large sizes in both dresses and coats—sizes up to 50½.

Kafoury Bros.

Easter Is Only Four Weeks Away

Salem Store 466 State St. Portland Silk Store 362 Alder St.

"CAN AND DO"