

PROFESSOR O'GARA WRITES OF SOLVING THE SMELTER PROBLEM

Pathologist Tells of Experiments Conducted to Ascertain True Effects of Smelter Gases—Many Supposed Results Due to Plant and Animal Diseases.

Professor P. J. O'Gara, former county pathologist, and for the last year chief pathologist for the American Smelting & Refining company of Salt Lake City, Utah, writes as follows concerning his work:

"My work here is progressing satisfactorily and during the year just passed a great deal has been accomplished. With the beginning of another year's work we have increased the equipment and the personnel of the department of agricultural investigations considerably. We have during the year twenty-five men doing research work on the various lines of agricultural research. In chemistry alone we have eight men. The divisions of plant physiology and pathology, soils, agronomy, irrigation, entomology, dairy and animal husbandry, veterinary science, animal pathology, etc., are all well represented. I have chosen my men from among the best universities, such as Berlin, Munich, Boston School of Technology, Harvard, Nebraska, Kansas, Iowa, California, Lehigh Stanford and others.

Much Work in Research

"It must be remembered that most of the work is research, and for this reason men of exceptional ability had to be chosen, especially those in direct charge of certain fundamental problems. We are doing an immense amount of work on the effects of certain gases on vegetable and animal life, and the very interesting thing that struck us when we began looking up the literature and trying to coordinate it with our results was that other investigators were in error all the way from 100 to 1000 per cent. As a matter of fact, no reliable qualitative or quantitative data were at hand. We sought the best European authorities and found them woefully out of accord with the facts. It must be understood that our facilities for doing careful work are not limited, and this is one reason why we can do work which the other investigator cannot do, because he has to beg for a dollar.

Designs Apparatus

"Much of our apparatus for research work on the effect of certain gases on plants is of our own design. In making certain gas analyses we are able to measure accurately one part of gas in 10,000,000 parts of air. The rapidity with which we can do this is wonderful, less than two minutes being required to make such a delicate test. Furthermore, we have constructed apparatus which will continually measure a flow of gas where the concentration is only one part in ten millions.

"When I began the work of investigating conditions here there was no one who could tell us how much sulphur dioxide in parts per million of air would injure certain crops. No one could tell us what the time ele-

ment would be to produce such injury. We were all in the dark and the farming community knew about as much as did the smelters.

Demonstration Crops

"On our demonstration and experiment farm we grew about seventy crops, some for demonstration purposes, so as to show maximum yields, others for experiment purposes. Just to mention one crop, we grew twenty-one tons of sugar beets per acre without irrigation where only ten tons were made to grow before with irrigation. We did this without adding any fertilizer, showing what was in the soil and what could be gotten out of it by proper agricultural methods. We grew flax, buckwheat, various millets, sorghams, all sorts of truck crops and last, but not least, a fine fruit crop from trees that had been abandoned since the time of Brigham Young. Our fruit exhibits from this farm at the state fair was a surprise. We even had Newtowns that would have been the envy of Hon. John Westerlund. We raised corn that looked as though it had been imported from Nebraska and our yield of rape figured forty-five tons per acre. But the matter of growing fine crops was a mere incident as compared with the experimental work in determining the effects of sulphur dioxide on plants.

Tested Staple Crops

"We tested practically all the staple crops, such as potatoes, corn, beans, sugar beets, etc., and our results were most astonishing. Strange as it may seem, the crop on which the heaviest claims had been made for alleged damages by smelter smoke was potatoes. All the Salt Lake valley farmers were of the honest opinion that the sulphur dioxide gas from the smelters had really killed their potato vines and completely ruined the crop. After careful experimental work we found the potato so resistant to sulphur dioxide gas that if the potato crop during the past years had been injured, as the farmers reported, there would not have been living today a single human being in the Salt Lake valley. To visibly injure a potato plant would require such a high concentration of sulphur dioxide that all animal life under the same conditions of sulphur dioxide concentration would have been suffocated. This is also true of other crops for which damages were claimed.

Matter With Potatoes

"What, then, was the matter with the potatoes? A pathological, entomological and physiological survey showed that the poor potato had more than twenty troubles, all of which tended to injure the plant, and, therefore, reduce the yield. The potato crop in the Salt Lake valley was such a failure for 1914 that growers did not get their seed back. All farmers were of the opinion that it was the worst year in the history of potato growing in the Salt Lake valley, and yet scarcely a claim was made against the American Smelting & Refining company for alleged losses due to smelter smoke. "The reason for this remarkable change of heart was due to the edu-

ational effect put forth by the company. We gave the farmers the facts as to the causes which led to the loss of the potato crop, as well as giving them specific information as to the result of our experimental work.

Overcoming Troubles

"We also gave them instructions as to how to overcome the potato troubles by careful seed and soil selection, seed treatment, cultivation and irrigation, all of which has been much appreciated. Not for a moment have we charged the farmers with dishonesty in making their alleged claims. They had no information and naturally the one factor which they thought responsible for crop losses must be the smelter. I have only mentioned the potato crop as an instance, but the same is true of practically all the field crops growing in the Salt Lake valley.

"Strange as it may seem, there has been practically no plant pathological work done in the Salt Lake valley, and the same may be said of the entire state of Utah. Until very recently plant pathology was not a part of the curriculum of any of the state educational institutions. Even today there is not a chair of botany, as such, at the state university.

Seventy Species Fungi

"During the season of 1914 I found no less than seventy species of economic fungi causing great losses to crops, and which had not been reported from the state of Utah, insofar as I am able to find. I also found and described four new species of economic fungi. Much better work has been done along entomological lines than plant pathological lines, but there still remained an enormous amount of work to be done in economic entomology. In the dry farm wheat section of the Salt Lake valley, where crop rotation has not been practiced, wheat growing has become practically profitless, due to certain insect agencies, principally the wheat straw worm and the sheath worm. Our economic entomologist sprang some surprises on these dry farm wheat growers when he showed them very plainly why the wheat plant grew only six to ten inches high. The farmers supposed that the grain had been stunted by smelter smoke, but after being shown that insects were responsible for the dwarfed growth and reduced yield, they were satisfied that they had been in the wrong.

Relations Most Pleasant

"It has been a real pleasure to work with the farmers in the Salt Lake valley. Although they know that we are employed by the corporation with which they have differed, they have, nevertheless, treated us with the greatest courtesy. It has been a pleasure to have them come to our farm and laboratory for instruction and advice. "We have done a lot of work on the animal situation and have found many interesting things. In the past, practically every animal that died was said to have been killed by the smelters. We have found in a number of cases which, upon post mortem, showed that nothing less than pieces of halving wire ingested by the animals had finally lodged in the heart or lungs after penetrating the stomach walls and diaphragm. Likewise, tuberculosis and contagious abortion have been demonstrated in dairy herds, as well as outbreaks of cholera in hogs. We willingly make

various tests for disease as well as provide treatment without charge, it being our purpose to help the farmer and make him prosperous, believing that both the great mining and smelting industry as well as agriculture may find plenty of room in the Salt Lake valley without one industry encroaching upon the other's rights.

Corporations as Employers

"It has been a pleasure to work with the big corporation and to have my efforts appreciated. When I prepared my budget for 1915, outlining the needs of my department, I was happily surprised to learn that the board of directors in New York not only approved of the budget, but asked that it be increased so as to provide for more work. Of course, I am dealing with men who can appreciate the value of a suggestion, and therein lies the difference between working for a great corporation as compared with the public. I have worked for both, and certainly appreciate the difference. Of course, I appreciate the value of public service in that it has taught me many a good lesson. I probably would not have learned to know people and to judge them so well as I am now able to do if I had not been a public servant for a number of years. "I want you to pardon this long letter, but feeling that you might be interested in what I am doing I thought I would explain to you what I have done during the twelve months since leaving the Rogue River valley. "With my very kind personal regards, I am sincerely yours, "P. J. O'GARA, "Chief in charge." "Salt Lake City, April 11."

UNIVERSITY ACTORS AT STAR TONIGHT

The University of Oregon Dramatic club will present at the Star this evening the four act drama entitled "My Man and Lady," by Robert R. Ramsay. This play is a very strong piece tending toward the tragic and is sure to hold the attention of the audience from the time the curtain rises on the first act till it descends on the last. It is considered one of the best plays the dramatic club has put on in all the years of its existence. The plot deals with a young man who has left home when very young and is wound around a career of crime, as he has become a "gentleman burglar." The play is put on under the auspices of the Junior class of the Medford high school and local merchants are helping the class to make it a financial success. Among those helping to back the play are Brownlee and Lindley, Shapleigh Hardware Co., Warner, Wortman and Gore, McBrides and Wordford Book store.

MULTNOMAH VOTES FOR PAVED HIGHWAYS

PORTLAND, April 16.—With complete returns from all precincts, the good roads bonds carried in the special election by a majority of 13,386. The total vote favorable to the bonds was 25,008, and the opposition vote stood at 11,622. There were 33,630 votes cast out of a total registration in the county of 93,946.

SMYRNA DESERVES TITLE OF ETERNAL CITY OF NEAR EAST

WASHINGTON, D. C., April 16.—Describing the Turkish city of Smyrna, which has been bearing the brunt of an alleged attack in the near east, today's statement of the National Geographic society says:

"Smyrna has occupied its place upon the map for more than 3000 years, and through all this time it has retained its ancient name. Its mixed character of east and west, and its significance in the world of trade. From the first, it has been a rich produce exchange, a great caravanary, and an important harbor, receiving merchant fleets under every flag. Known to the olden Greeks as 'The First City of Asia,' it survives, in the present, the greatest city in Asia Minor, and the second port of a nextensive empire.

Always Held Its Own

"While Ephesus, Miletus, Sardis, Magnesia, Pergamus, and Halicarnassus have faded away, Smyrna has continued its story of untiring centuries. It has risen superior to every stress, remaining today what it was yesterday, as lasting as Mount Paganus at its back. The rise, splendor and decay of great empires have formed but momentary episodes in this city's life, whose history stretches from the 11th century before the birth of Christ down to the present day. It, most truly, deserves the title of Eternal City, for it, like the phoenix of mythology, has ever renewed its nervous age by a more magnificent youth.

Smyrna was founded by Aeolian Greeks upon the natural outlet of an important trade route. It grew rapidly into wealth and power, and early took the lead among the cities of Asia Minor. Ionian Greeks conquered the city in the 7th century B. C., and under these masters it played a leading role in the Ionian League.

Captured by Lydians

Jenious of its tremendous riches the Lydians captured and conscientiously destroyed Smyrna in 575 B. C. Their endeavors were so thorough that there remained but a village until after the Macedonian conquest. Alexander the Great caused the city to be rebuilt, and it was laid out with extravagant magnificence. Among the many beautiful buildings of this new city was the Homereum, where the poet, Homer, was worshiped as a hero. The Seleucidae declared the city sacred and inviolable.

"In the days of the Roman conquest, Smyrna was the great world center of art and learning, somewhat the Paris of that early age. The Romans, who treated the city well, called it the 'Philosophers' Grove,' and also 'The Oasis of the Muses and the Graces.' For many generations, Smyrna was the proudest Asiatic possession of the Byzantine Empire of the East. In 1402, it was destroyed by the Mongols of Tamerlane, and such of its inhabitants as could be found were killed. When it fell to the Turks, Smyrna received another

loving nickname. It was called 'The Eye of Asia Minor.'

Quarter Million Population

The city lies at the head of the Gulf of Smyrna, some 200 miles southwest of Constantinople, with which it is now connected by rail. The foreground of the port is level ground, while the background is cut by the sharp shoulder of Mount Paganus. There is a population of more than 250,000, of which about one-half is Greek, one-fourth Mohammedan, while Armenians and Jews make up the greater part of the remainder. There were also a large number of European residents before the war, who, in the order of their numbers, were French, English, Italian, Swiss and German. Greek is the language of greatest currency, and, at the war's outbreak, French was the most useful tongue for the visiting foreigner.

"Smyrna was divided into five quarters, for the Turk, the Jew, the Armenian, the Greek and the European. The Turkish and Jewish quarters were devious, over-crowded,

squalid and forbidding. The Armenian and Greek sections were well built, with wider, cleaner streets, and of more satisfying appearance. The European section was Smyrna's glory. Here were the finest thoroughfares, the most imposing buildings, a sharply contrasted cleanliness, and the lovely water front. The strange organization of the city has given occasion for the development of a curious municipal government. The Christian and Jewish communities have separate elected councils, which are presided over by their respective religious heads."

UNCLE JOE REGRETS DEATH OF ALDRICH

DANVILLE, Ill., April 16.—Former Speaker Cannon, when told of the death of Former Senator Aldrich, said: "Senator Aldrich was one of the strongest legislators during his service in the national congress. "The republic is better that he lived. I sincerely regret his loss."

Women Everywhere

Praise Lydia E. Pinkham's Vegetable Compound

Women from the Atlantic to the Pacific, from all sections of this great country, no city so large, no village so small but that some woman has written words of thanks for health restored by Lydia E. Pinkham's Vegetable Compound. No woman who is suffering from the ills peculiar to her sex should rest until she has given this famous remedy a trial. Is it not reasonable to believe that what it did for these women it will do for any sick woman?

Wonderful Case of Mrs. Crusen, of Bushnell, Ill.

BUSHNELL, ILL.—"I think all the trouble I have had since my marriage was caused by exposure when a young girl. My work has been housework of all kinds, and I have done milking in the cold and snow when I was too young to realize that it would hurt me. I have suffered very much with bearing down pains in my back and such miserable pains across me, and was very nervous and generally run down in health, but since I have taken Lydia E. Pinkham's Vegetable Compound my back never hurts me, my nerves are stronger, and I am gaining in health every day. I thank you for the great help I have received from your medicine, and if my letter will benefit suffering women I will be glad for you to print it."—MRS. JAMES CRUSEN, Bushnell, Illinois.

A Grateful Atlantic Coast Woman.

HONOLULU, ME.—"I feel it a duty I owe to all suffering women to tell what Lydia E. Pinkham's Vegetable Compound did for me. One year ago I found myself a terrible sufferer. I had pains in both sides and such a soreness I could scarcely straighten up at times. My back ached, I had no appetite and was so nervous I could not sleep, then I would be so tired mornings that I could scarcely get around. It seemed almost impossible to move or do a bit of work and I thought I never would be any better until I submitted to an operation. I commenced taking Lydia E. Pinkham's Vegetable Compound and soon felt like a new woman. I had no pains, slept well, had good appetite and was fat and could do almost all my own work for a family of four. I shall always feel that I owe my good health to your medicine."—MRS. HAYWARD SOWERS, Hodgdon, Maine.

For 30 years Lydia E. Pinkham's Vegetable Compound has been the standard remedy for female ills. No one sick with woman's ailments does justice to herself if she does not try this famous medicine made from roots and herbs, it has restored so many suffering women to health. Write to LYDIA E. PINKHAM MEDICINE CO. (CONFIDENTIAL) LYNN, MASS., for advice. Your letter will be opened, read and answered by a woman and held in strict confidence.



DOUBLE STAMPS FRIDAY AND SATURDAY ON ALL CASH PURCHASES

Saving *S. & H.* Green Trading Stamps Is the Surest Road to Economy We Know Of. Ask for Book and Ten Free Stamps

The Joy of giving and receiving is within the reach of all who save *S. & H.* Green Stamps.

M. M. Department Store

Reliable Merchandise Reliable Methods

The high cost of living gets an awful jolt when you begin to save *S. & H.* Stamps.

<p>LADIES' SHOES</p> <p>Patent Leather, cloth tops.....\$3.00</p> <p>Kid Cloth top, tip toe.....\$3.00</p> <p>Gun Metal, high or low heel.....\$3.00</p> <p>Two-Strap Vici Pumps.....\$2.50</p> <p>Three-Strap Cloth and Patent Leather Pumps for.....\$3.00</p> <p style="text-align: center;">Double Stamps.</p> <p>CHILDREN'S LOW SHOES</p> <p>Two-Strap Baby Doll Child's Pumps—</p> <p>5½ to 8.....\$1.29</p> <p>8½ to 11.....\$1.50</p> <p>11½ to 2.....\$1.75</p> <p style="text-align: center;">Also Gun Metal Leathers.</p> <p>MEN'S TAN MULE SHOES</p> <p>Outing and Orchard Wear.</p> <p>Sizes 6½ to 10.....\$1.98</p> <p>Boys', sizes 2½ to 6.....\$1.89</p>	<p>SILK POPLINS</p> <p>The M. M. Silk Poplin in all of the leading shades, just received. Our showing this season, is the largest and most complete we have ever had. Russian green, Copenhagen blue, battle-ship gray, sand, navy and black, price.....98¢</p> <p>RENFREW DEVONSHIRE CLOTH</p> <p>The only cloth made that has an absolute guarantee not to fade by boiling or sunlight. Just the cloth for children's wear, men's shirts and street dresses. Price, yard.....20¢</p> <p style="text-align: center;">Double S. & H. Stamps.</p> <p>MEN'S HIGH TOP ORCHARD SHOE</p> <p>Just the thing for plowing and summer outdoor work, sizes 6½ to 10. Price.....\$3.50</p>	<p>SPRING COATS</p> <p>Our Spring Coats show authentic styles, from all of the best makers. Every desirable material is represented, checks, stripes and plain colors. Prices \$6.75, \$7.50, \$8.50, \$10, and \$12.50.</p> <p style="text-align: center;">Double S. & H. Stamps.</p> <p>BOYS' SPRING SUITS</p> <p>Gray mixtures, 2 pair pants.....\$4.50</p> <p>Black and white mixtures, 2 pair pants.....\$5.00</p> <p>Oregon cashmeres.....\$6.00</p> <p style="text-align: center;">Sizes 5 to 17 years.</p> <p style="text-align: center;">Double S. & H. Stamps.</p> <p>MEN'S UNION SUITS</p> <p>Porisknit.....\$1.00</p> <p>Munsing ribbed.....\$1.00</p> <p style="text-align: center;">Cream or white.</p>
<p>MUSLIN UNDERWEAR</p> <p>April shower of white. We have many garments that will astonish the most expectant bargain hunter.</p> <p>Skirts.....49¢ to \$1.49</p> <p>Gowns.....49¢ to \$1.98</p> <p>Drawers.....49¢ to \$1.98</p> <p>CHILDREN'S KOVERALLS</p> <p>We carry a complete stock of patterns and sizes in the famous play suit Koveralls, sizes 1 to 10 years, once used always used, colors and white. Price.....75¢</p> <p>BOYS' KNEE PANTS</p> <p>5 to 17 years.....65¢ to \$1.50</p> <p>BOYS' WAISTS</p> <p>5 to 16 years sizes, prices.....29¢ to 50¢</p>		

Regardless of what any other merchant in Medford may do, we will continue to give *S. & H.* Trading Stamps as heretofore. The *S. & H.* Green Stamp Company will redeem all *S. & H.* Green Stamp Books in cash after May 15th.