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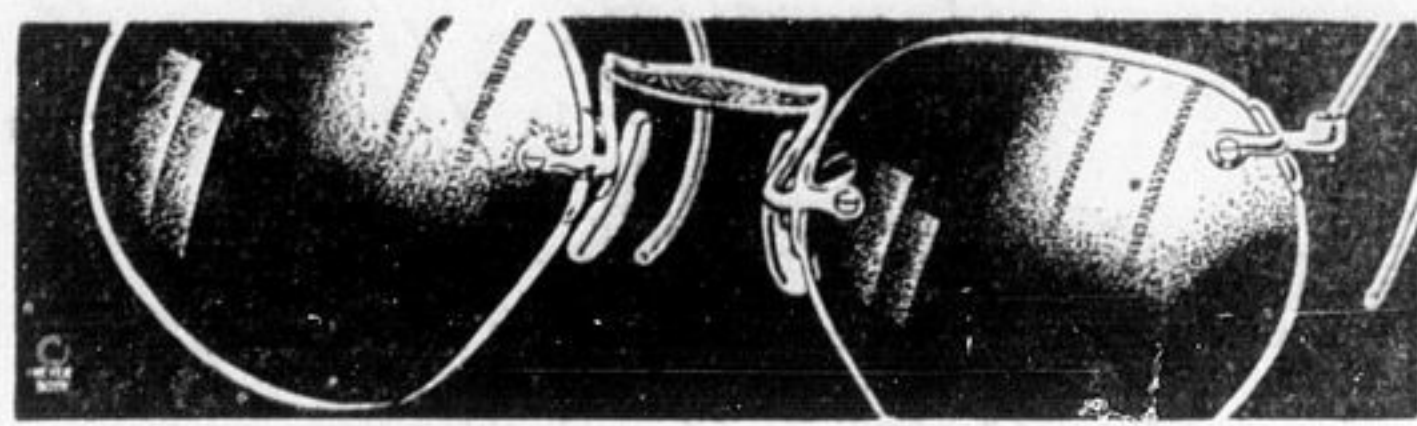
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## Review of Discovery by McIntyre Experts

(Continued from Page One)

In Ontario, with an average of 8,500 men employed underground in the period 1928 to 1936 there was an average of 36 silicosis cases per year allowed by the Compensation Board and in the period 1932 to 1936, with 10,000 men underground an average of 18 cases per year. The incidence of silicosis is approximately one half of one per cent. A conference, some years ago, between the Ontario Department of Health and the Workmen's Compensation Board led to the silicosis provision of the Compensation Act. Mining companies have since paid separate assessment for accidents and silicosis. Mining also became unique with special examining doctors.

A paper telling of the investigation by Denny, Robson and Irwin, read recently before the Academy of Medicine, is published in full in the current issue of the Journal of the Canadian Medical Association. In discussion following its reading, recognized authorities on the subject stated the discovery of Denny and Robson was the outstanding contribution to date in silicosis research and indicated a cure for a condition which is recognized as being perhaps the most important industrial ailment. Tests are being continued to find the most satisfactory method of application.

### Five Year Fight

The cause of silicosis is the inhalation of fine, freshly broken quartz particles into the lungs, where, it has now been definitely determined, a chemical reaction is set up through the dissolving of the silica in the body fluid, causing fibrotic changes in the lung, which with certain changes that occur may predispose the sufferer to tuberculosis.

The investigators started in November, 1932, at the McIntyre mine in Schumacher, Ontario. It was decided to carry out tests with animals at the mine in a manner that would duplicate as far as possible actual industrial conditions. Fifty guinea pigs were placed in the crusher house tunnel of the mill where a considerable quantity of fine dust containing about 35 per cent. free silica was being constantly produced. These animals lived in the atmosphere for periods up to one year and while on autopsy large amounts of dust were found in the lungs not a single case of silicosis had developed.

The next step undertaken was a test of the factor of mine gases in the production of silicosis; the results were inconclusive.

### The Discovery

Accepting the Gye and Purdy conclusion that chemical reaction and not the presence of silicious materials was responsible for fibrosis it was then decided by the investigators that the dangerous silica particles contained in the lungs are under five microns in diameter. It was assumed that, if the solubility of the silicious material could be reduced sufficiently by the addition of some non-toxic element or compound the usual fibrotic response could be modified. Various elements and compounds were then investigated and on March 4th 1936, Denny and Robson discovered at the McIntyre mine that the presence of small amounts of metallic aluminum almost completely prevented silicious material from passing into solution.

### First Tests

Animal experiments were carried on from June 10th, 1933, and on March 4th, 1936, "dusting" a group of rabbits with quartz alone and with quartz to which a small amount (less than one per cent.) of metallic aluminum had been added was begun. The animals were sent at various times to Dr. Irwin of the Banting Institute at Toronto and upon sectioning it was found that all the quartz dusted controls showed a picture varying from early to well established silicosis. The animals subjected to silica dust containing metallic aluminum showed either minimal or no fibrosis of the lungs. What was equally important from the viewpoint of the investigators was the fact that no damage was seen in the lungs or other organs that could be attributed to the presence of aluminum. The heart, kidneys, and liver appeared to be quite unaffected. The conclusion was that silicosis was inhibited in this small group of rabbits by the admixture of less than one per cent. of metallic aluminum.

The experimenters then expanded the test. Special drums were built for the

rabbits. These drums carried devices scientifically designed to produce a certain amount of quartz dust under fully controlled conditions. In one group the rabbits got a straight quartz dust; in the other by the addition of aluminum balls in the quartz charge a small amount of aluminum dust was created and careful check was kept of the results. Rabbits were used and the lungs of these animals sectioned. The pathological work was done by Dr. Irwin at the Banting Institute. The net result confirmed the first experiment; those animals which breathed the metallic aluminum showed practically no silicosis while those dusted with quartz only showed well developed silicosis.

The importance of this conclusion can scarcely be over-emphasized, particularly when it has been noted that aluminum in metallic form has no injurious reactions.

Just how the new discovery will be given practical application has not been decided. It would appear to be feasible to include the metallic aluminum in the tamping of drilled holes, to disseminate the metal with the dust caused by explosion. It may be possible that injections periodically would answer the purpose or that an inhalation at regular intervals would serve. In any event the important point has been established that aluminum will halt the condition and will prevent it in fresh subjects.

Until recently the bulk of the animal experimentation was done at the McIntyre mine but now this phase of the work has been transposed to the Banting Institute in Toronto, as it is deemed advisable to extend it broadly.

### McIntyre Assistance

The paper describing the experiments and their conclusion was read at a special meeting of the Academy of Medicine in Toronto three weeks ago. The co-authors, in conclusion, said:

"It affords us real pleasure to record that the experimental work, above described, was made possible by the enthusiasm of R. J. Ennis, general manager of McIntyre Porcupine Mines, Ltd. and by the financial support of the same company, supplied on the recommendation of its president, J. P. Bickell.

"We would particularly express our appreciation of the assistance so generously proffered and supplied by and through the good offices of Sir Frederick Banting and Dr. W. R. Franks of the Banting Institute, and finally we would record that same appreciation of the splendid work and dependable results provided through the efforts of F. Bremner, chief chemist of the McIntyre Porcupine Mines, Ltd., and H. L. Collins, of the Department of Medical Research."

One of the features of the Denny-Robson experiments with rabbits and guinea pigs, indicating the scientific care taken in the trials, was the devising by Dr. Denny of a method of producing a pure quartz dust. The ordinary method of producing it was to either crush quartz in a steel crusher or to grind it in a metal cylinder. In either method steel came in contact with the quartz and there would of necessity be some iron content in the resulting dust. Dr. Denny lined a box with quartz slabs and loaded in pure quartz fragments, rotating the whole. The resulting dust could not be anything but pure.

Dr. Chas. H. Hair, president of the Academy of Medicine before the members of which organization the Denny-Robson paper on silicosis was read, when interviewed by The Northern Miner was emphatic in his declaration that the two investigators had made a scientific discovery of note. "It is a very important development and it settles for all time the question as to whether silicosis is the result of a chemical or a mechanical process. It has been proven that the chemical reaction set up in the body fluid by the dissolved silica is responsible for the condition and not the irritating action of the particles in the lungs."

### Silicosis and Tuberculosis

Dr. Hair, apart from his connection with the Academy of Medicine is medical officer for Class 5 Accident Prevention Association and this class includes industrial diseases, hence his interest in silicosis. He points out that anyone exposed to silicious dust is liable to contract the condition. Silicosis, he states, is not a disease but a condition for which there is no known cure but which is seldom fatal.

"Does silicosis cause tuberculosis?" Dr. Hair was asked.

"No. It predisposes the subject to tuberculosis but does not directly cause it. On the other hand, a person with tuberculosis is highly susceptible to silicosis. I may also state that tuberculosis is far more prevalent in the Northern

## Turning of First Sod for New Residence for Nurses

Mayor had Honour of Turning First Sod of New Hospital Building on Monday. To Provide Also Maternity Wards and Special Accommodation for Children. Interesting Ceremony.

Quiet dignity marked the turning of the first sod which officially started the construction of the new combined Nurses' Residence and Pediatric Building.

The ceremony took place at 4:00 p.m. Monday and His Worship Mayor Bartleman had the honour of forcing the first shovel into the earth, which soon will be dug up with large steam shovels and carried away in powerful trucks.

Sister Superior Mary Liguori followed the mayor and dug heartily at the hard earth as if she could hardly wait to get the work under way.

"It is a realization which is really becoming true," said the mayor, "and not only will the new building serve as

a home for the nurses but it will be accommodation for the child patients."

Following Mayor Bartleman and Sister Liguori, many other interested citizens took their turn at the shovel and threw away the cold earth which will soon be replaced by a beautiful building.

Among those who took part in the ceremony were—Mrs. J. P. Bartleman, Sister Anselm, Dr. H. H. Moore, D. R. Franklin, Father O'Gorman, Walter Eccleston, Father Theriault, Father Cloutier and Dr. R. LaHaye.

The Lions Club Boys Band, under the direction of Fred Wolno, provided the music for the ceremony.

Refreshments were served in the hospital following the formalities.

## More Road Contracts Awarded in Ontario

Hon. T. McQuesten Signs Contracts on Sick Bed. Some North Land Work.

Hon. T. B. McQuesten, Minister of Highways, on Monday signed highway construction contracts with a total value of \$1,700,000. The contracts were signed by the Minister on his sick bed in Hamilton.

Seven bridges are included in the program, together with 4.5 miles of concrete paving, 75 miles of grading, and 2.75 miles of penetration macadam.

Largest contract, grading Matheson to Shillington, Northern Ontario, goes to McNamara Construction Company.

Three miles of concrete paving near Ayler is awarded to the Scott-Jackson firm. Grading from Northbrook to Cloyne is to be done by C. V. Billie

mining areas than is silicosis, despite the large number of men engaged in the mining industry," stated the doctor.

The Ontario Mining Association has for years been fighting silicosis. Dr. Hair added, Large sums had been spent in improving ventilation, masks had been provided on certain jobs, wet drilling had been introduced, periodical X-ray examinations had been insisted upon and physical examination centres had been established. An expert engineer is in the service of the Association, continually testing the dust content of underground workings. Methods have been worked out to determine with great exactness the dust count and thus indicate relatively dangerous spots.

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The article proceeds to enlarge upon these points with practical suggestions. In a preceding contribution he dealt with "Choosing a Homesite" in which he summarized the health requirements for an ideal home that depend largely upon location. "Among these," he points out, "are proper drainage, light, ventilation, water supply, freedom from harmful dust, fumes and noise, protection from extremes of temperature, suitable distance from the place of work or home transportation facilities or from markets, the view and type of neighbourhood." He favours country or suburban lots, but says: "If one must build a home in the city, the larger the lot the better, other things being equal; and a corner lot will ensure more light than one elsewhere in the block. But not all corner lots are equally good. The best corner is the one which allows the windows of those rooms that need the most light to face toward the south and the west. Such sites are expensive, it is true; but as health insurance, it would often be a

good plan to spend a little more for the lot and a little less for the house than is the common practice in cities."

Globe and Mail:—Fort Erie cannot get a dog-catcher. This is an unattractive occupation, but here's a chance for some one tired of unemployment. There will be plenty of activity, as the town has no equipment for the work, and his quarry, no doubt with the dog's friends in pursuit of him.

## DON'T SUFFER FROM RHEUMATISM

No sensible person should continue to suffer from rheumatic pains and miss the pleasures of life because of stiff joints. Before resorting to operations, injections or other drastic measures try a bottle of Curtis Rheumatism and Arthritis Treatment.

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