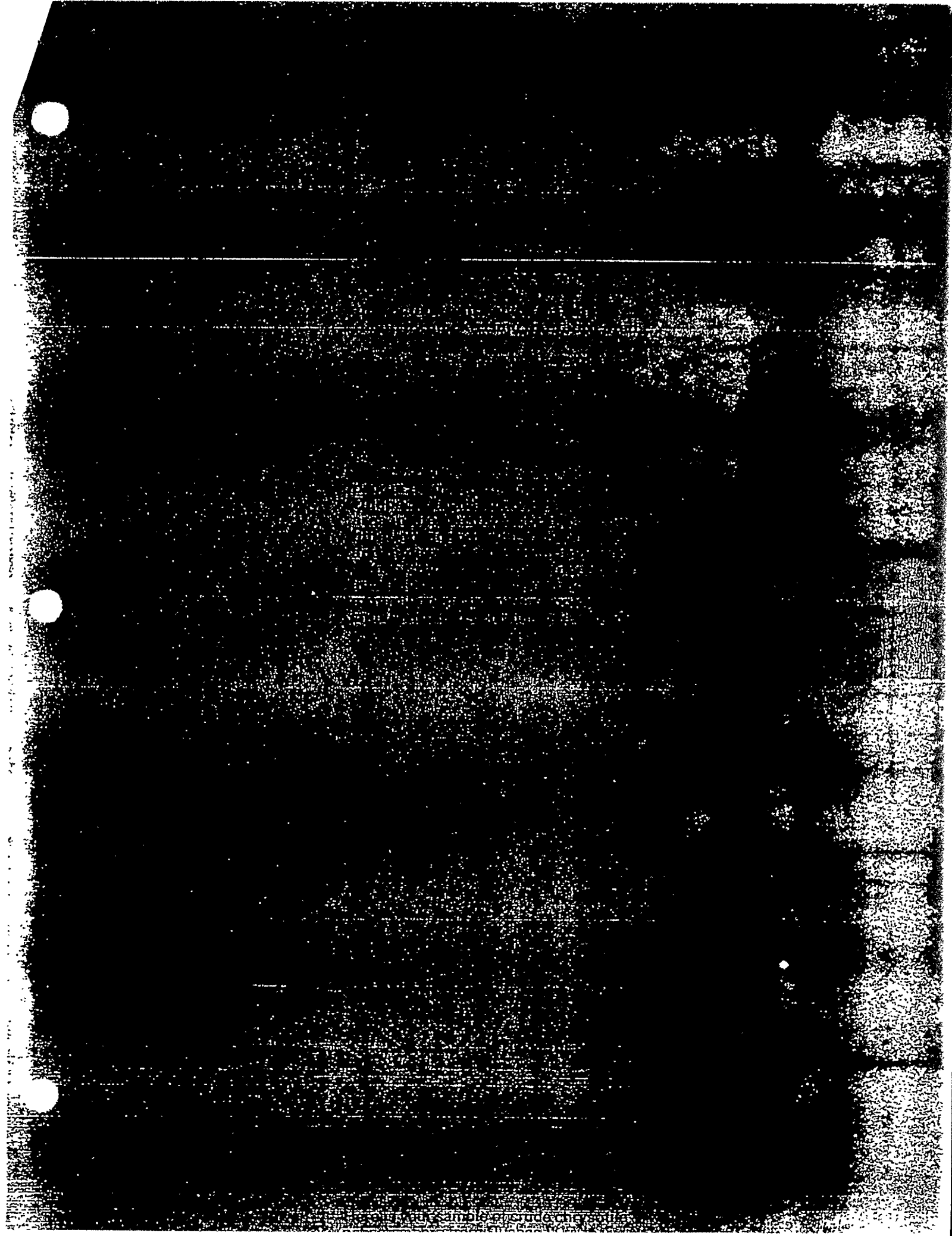


PLAINTIFF'S EXHIBIT

CFB-30



...the main

Industrial applications for Quebec's chrysotile asbestos fibre include the items listed to the left. Resistant to fire, heat, friction and corrosion, asbestos is a poor conductor of electricity and its fibres form a tough, interlocking web when combined with many materials. Except in textile products, asbestos is seldom the main ingredient of any manufactured article. Major worldwide fibre users are the construction and transportation industries, although general industry consumes vast tonnages of asbestos each year.

Subject of old and oft-told tales in the mystic annals of the Ancient World, the magic of asbestos was almost unknown in Canada and Quebec on Confederation Day in 1867. A rural Canada dreamt little of its industrial future in which it would employ this magic to help others send the first rockets to the moon.

Scholars, of course, recalled that the Greek, Herodotus, the world's first historian, reported the use of asbestos in the making of cremation cloths in which were wrapped the bodies of distinguished dead. Indeed, the word Asbestos is derived from the Greek; its meaning, unquenchable.

Plutarch, whose researches were into the lives of the Ancients rather more than into their resources, nevertheless commented on the strange attribute which enabled wicks of asbestos to keep perpetually alive the holy flames in Roman temples.

And it was that medieval travel-writer, Marco Polo (much of whose writing was regarded as more fiction than fact) who during his many adventures in the land of Kubla Khan came upon an incom-bustible substance which he described as "of the nature of the salamander", a kind of lizard reputed to live in the flames. On closer examination, the hair of the salamander turned out to have been mined, much as asbestos was mined in Quebec eighty years ago. Few of Marco Polo's stay-at-home readers,

however, were likely to accept without a grain of salt such an improbable tale.

Of such legends and reports few people living in the remote Eastern Townships settlements in the late 19th century were probably informed. Even less aware were they that they were creating a new asbestos legend of their own. Farmers tilling the soil in the Eastern Townships came in almost daily contact with the magic mineral in their rocky fields and in the hills. Their wives and daughters carefully extracted the silken threads from the rocks and used them for knitting socks or mittens. Occasionally, braving possible accusation of witchcraft, they tossed their knitted products on the hot stove to dry.

Nobody told them they were living on the lid of a vast treasure house containing one of the world's largest hoards of one of its most valuable minerals.

An Old Wives' Tale in a new age of industry

The age of legends, however, was dying as Canada along with the rest of the world was entering the era of scientific production. There were men, of course, who knew about asbestos and understood its unusual properties and how it could be mined. Geologists and mining engineers and one or two astute businessmen heard about the silky, rock fibres in the fields, and a new industry was on its way to being born.

Eighty years later men are still exploring, and drilling and testing; mountains of mine tailings continue to grow and open pits become wider and deeper, big enough in some cases to contain the entire communities which work them. Diesel trucks of immense capacities have replaced pit ponies, and the mills erected to crush the asbestos ore and shake loose the fibres are a mechanical maze which would have astonished nineteenth century producers.

Since 1876, when asbestos was first commercially produced in Quebec, men and machines have drawn out of the earth more than 30 million tons of the fibrous mineral. From a geographical rectangle fifty miles long and fifteen miles wide, they extract each year forty per cent of the entire world's supply. There may be enough there still to last another hundred years. It will need to be mined with care, and with firm but increasingly costly efficiency. Within the rectangle eleven mines

owned by eight major companies now produce some 1,500,000 short tons of asbestos fibre a year. Ninety-five per cent of it is exported, to become one of Canada's largest revenue producers—nearly \$160,000,000 in cash a year, \$60,000,000 of this sum from the United States alone.

An Old Wives' Tale became industrial reality in 1877. That year, just 10 years after Confederation, the new industry mined exactly fifty tons of asbestos.

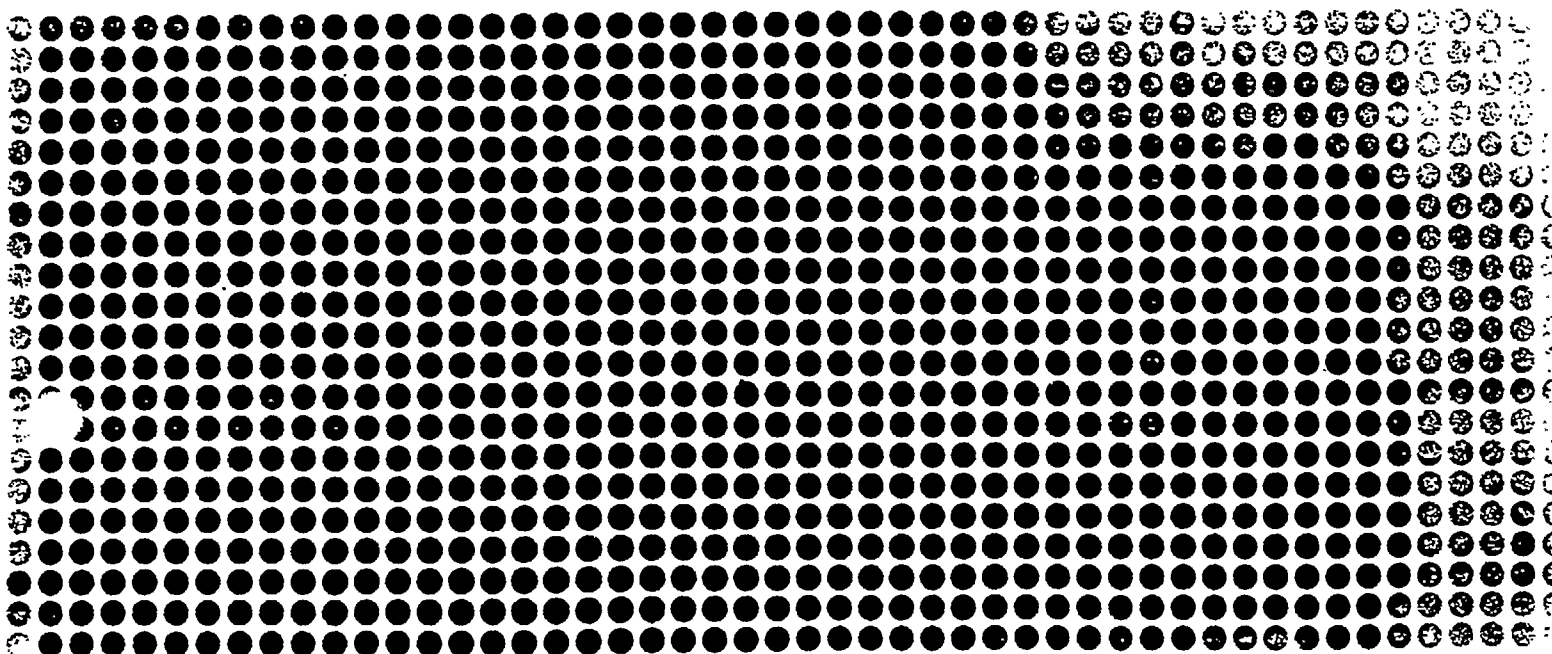
What, where and why is asbestos?

Like iron or copper or nickel or gold, asbestos is a mineral. But, look at it as it is plucked out of the rock and you would think, as one visitor to Quebec's asbestos country suggested, that it was grown from a seed. Or, as another visitor, an enterprising entrepreneur seeking new products for his assembly line, believed, that it was made in a factory.

The second observer was actually nearer the truth though he mistook the manufacturer's identity. Asbestos ore is the product of one of the longest, toughest and most haphazard of manufacturing processes. It is contained, geologists say, in rock which has been twisted, shredded, squeezed and superheated by primeval convulsions of the earth's crust. Millions of years of time, combined with heat, pressure and gradual cooling, crystallized the rock and left it in a fibrous state lying in serpentine veins.

Nature was the manufacturer and though modern scientists and engineers have tried again and again to duplicate its processes and produce asbestos synthetically, they have never succeeded in developing a satisfactory product. Instant asbestos is still no more than a glint in a scientist's eye.

Outcroppings served the Ancients and attracted the womenfolk in Quebec's Eastern Townships. Modern man has discovered it in more substantial quantities underground and has mined



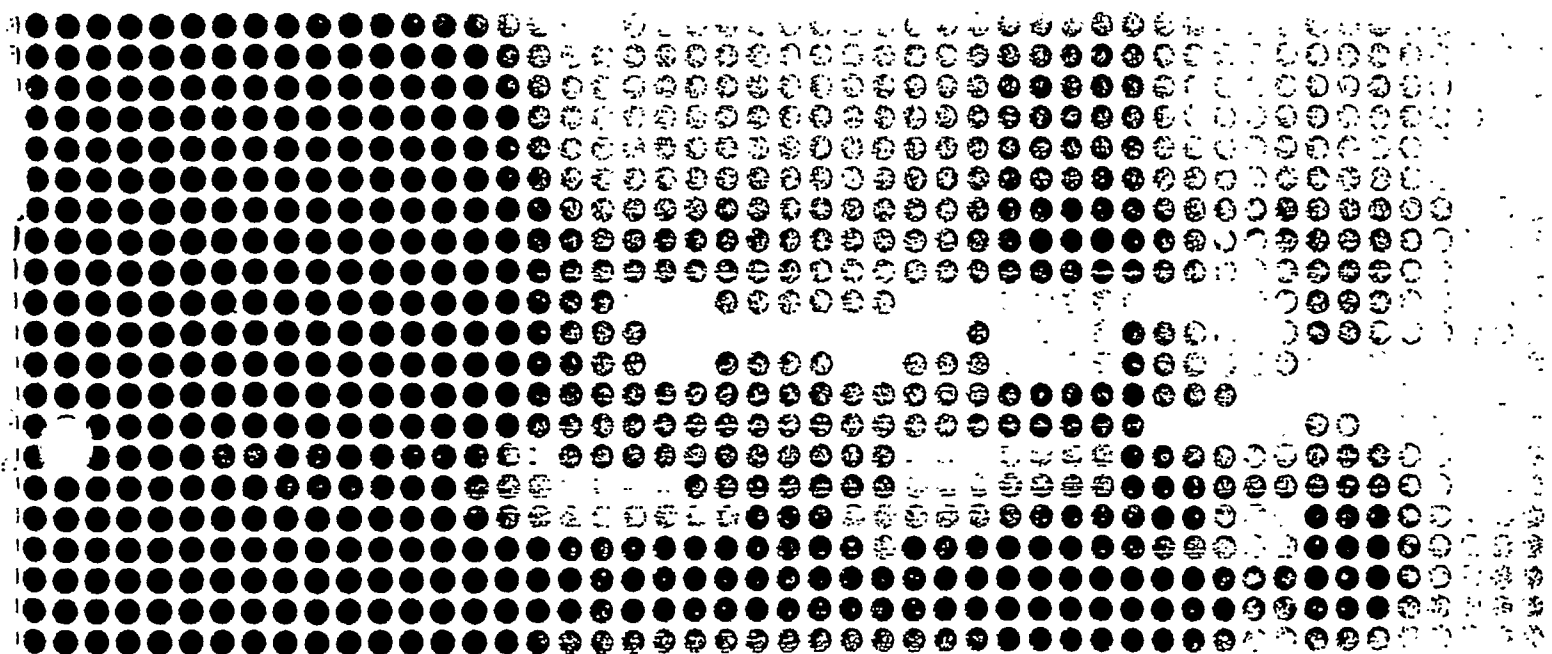
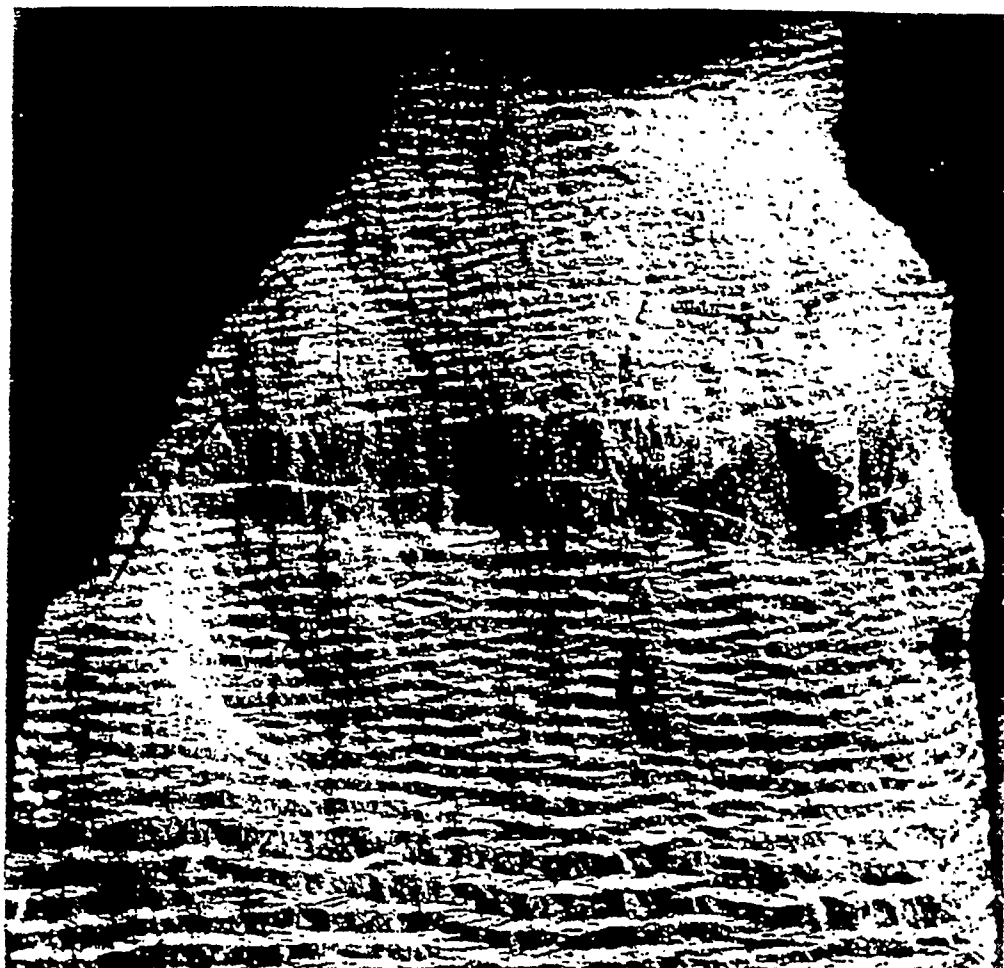
it in Russia, Rhodesia, South Africa, Cyprus, Italy, United States, Australia, China, France, Japan, and in several other countries as well as in Canada.

More asbestos lies beneath the Eastern Townships rectangle than under any other comparable area of the earth's surface. Or so today's geologists believe. But in Canada new deposits are constantly being discovered; important ones at Cassiar, in British Columbia, in Newfoundland and up north in New Quebec near Hudson Strait.

To the chemist, Asbestos is spelled 3MgO , 2SiO_2 , $2\text{H}_2\text{O}$. These are the symbols for the magic formula which created chrysotile, a hydrous magnesium silicate—the type of asbestos mined in Quebec. Its specific gravity is from 2.53 to 2.59. Although its fibres may seem silky-soft, and fragile, they are so tough that even when exposed to ordinary acids, they maintain their strength. Don't let the silky feel of the fibres fool you; when twisted, they possess the tensile strength of steel.

In Canada—it's Chrysotile

Unlike other minerals such as copper, coal or zinc, asbestos comes in different varieties, each with its own set of characteristics. Commercially, the most valuable kind of asbestos is chrysotile (from the Greek words meaning fine hair of gold). Chrysotile is the only variety mined in Canada.



Asbestos-bearing rock, mined in the same manner as many other minerals, goes not to a smelter but to a mill. In the mill it is crushed in tough steel jaws, screened, fiberized, graded and bagged, ready for shipment to fabricating plants. Air is the lifeblood of the asbestos mill. To separate a ton of the thistledown-soft fibres from its mother-rock as it is ceaselessly agitated on screens, roughly ten tons of air, in the form of suction, is required. The residue of crushed rock is deposited on the tailings piles, or dumped into an abandoned open pit. Of the many types of equipment used in the milling process, the most elaborate, and most costly are the ventilating and air systems that remove asbestos dust from the air.

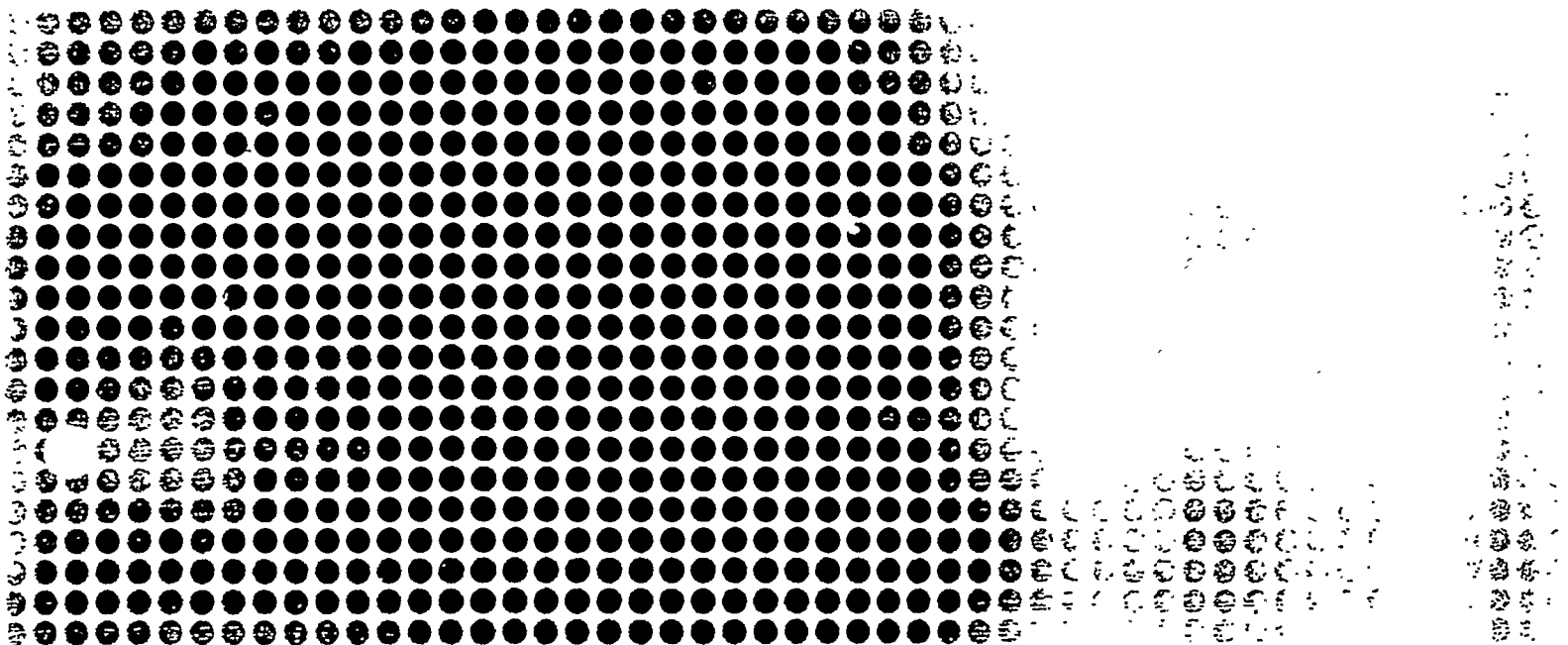
As in all other industries, however, it is the man behind the machine that makes the mine. In the 1880's, a Quebec asbestos miner spent his days, winter and summer, in an open pit gathering by hand chunks of crude asbestos-bearing rock. These he deposited in a horse-drawn cart. For this task he was paid an average of one dollar a day.

Today, the crude-picker has almost disappeared. In his place is the "team", the miner and mill worker who operate mechanical equipment in open pit, underground mine or modern mill. Explosives, air drills, trucks and other mechanized equipment of high safety

standards and great variety are their implements. They earn more than \$2.75 an hour with additional welfare benefits which add fifty cents or more to their hourly wage.

Quebec's 6,000 asbestos workers are some of the highest paid hourly wage earners in the Province.

Before a pound of asbestos goes to market, however, an asbestos mine must have on its staff not only miners and millworkers but a whole host of modern technologists, many of whom may seem to have little to do with mining—accountants, tinsmiths, electronic technicians, diesel mechanics, blacksmiths, maintenance engineers, safety experts, lawyers, nurses, railroadmen, millwrights, carpenters, purchasers, computer technologists, draftsmen, research scientists, market research men.



Asbestos is mined at depths ranging from ground level to 1,500 feet, or more, below the surface. At one mine, a lake was drained so that miners could have access to the ore. As vast open pits were mined deeper and deeper, it is necessary to widen them. Surface buildings, including schools, shops and dwellings, have had to be relocated so that the supply of job-creating wealth from the earth may continue.

There are two kinds of asbestos mines—the underground mine and the open pit. Asbestos companies prefer open pit mining because it is not only cheaper, but permits the fibre to reach the mill in a better state for processing.

First step in the asbestos-mining process is to blast the rock from the ground. Huge air drills punch a pattern of holes, into the "bench" of ore to receive the blasting agent. With their benches—staggered mining levels extending around the pit—many of Quebec's asbestos mines resemble vast Roman amphitheatres.

Dynamite, which can be awkward to transport, store and, at times, to detonate, is no longer the blasting agent exclusively used. Chemical fertilizer is used instead. Ammonium nitrate—the fertilizer that Prairie farmers use to produce their wheat—is mixed with diesel-fuel at the blast hole to become a powerful and reliable explosive. In Quebec, too, are the days of the dra-

matic blasts when smoke and rock would plume high to the heavens in a deafening reverberation. Such explosions mean energy gone to waste and today's asbestos mine engineers prefer quiet blasts that, without fuss or flurry, topple thousands of tons of rock at a time.

Mining is a more complex business in underground asbestos operations—there are two of them in Quebec, both in Thetford Mines. The technique is called "block-caving" and it consists of undercutting the ore deposit—its dimensions having been previously determined by geologists—and mining the asbestos ore from below.

Conducted at depths ranging from 300 to 1,200 feet below the surface, the block-caving method employs the sheer dead weight and immense downward pressure of the ore to assist the mining process.

Underground asbestos mining is safe. The rock is stable and no explosive gasses are present. Whether the surface temperature is 90 degrees or a crisp 30 below, the air temperature in the underground mines is a steady 55 degrees the whole year round.

From the underground mine or open pit, the asbestos-bearing ore is transported by truck, or in underground mines by trains, to the crushers. The huge jaw-crushers chomp away and reduce rocks to rubble in a matter of sec-

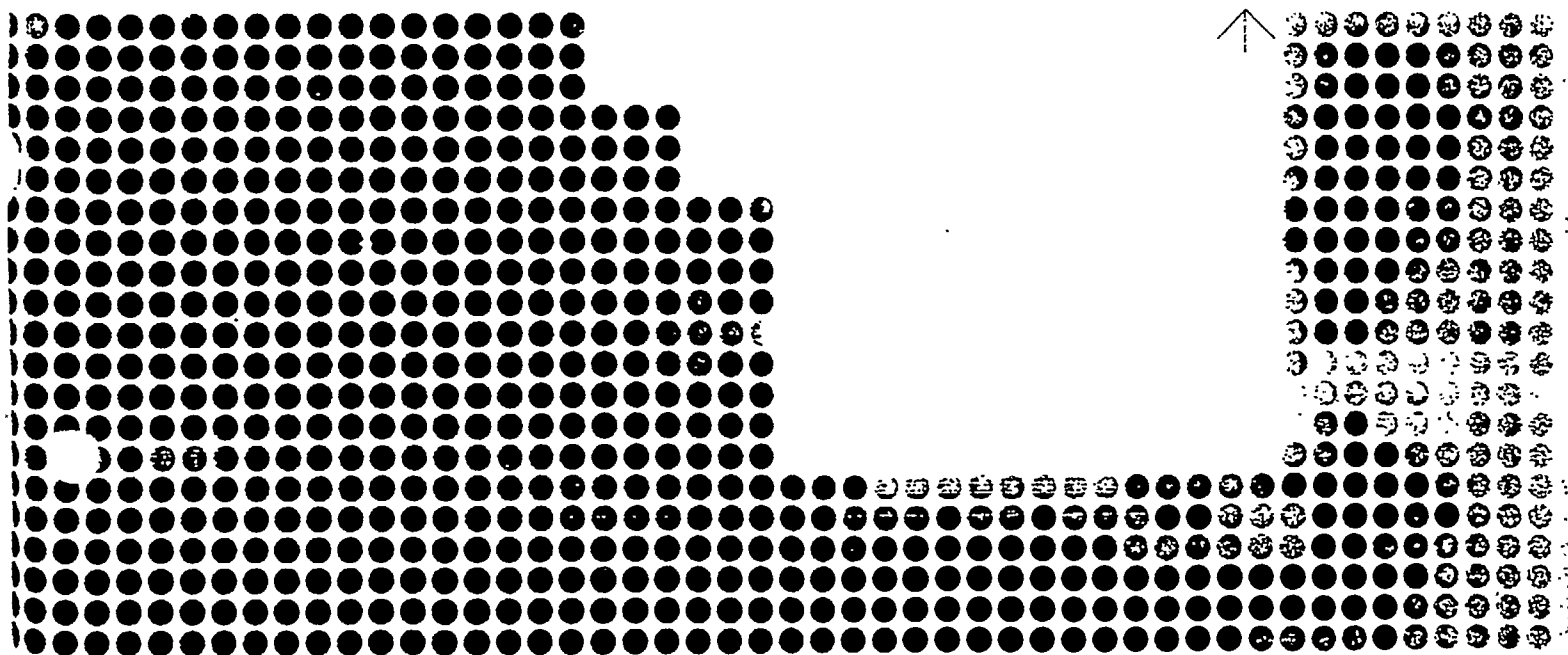
onds. Then the ore is dried and stored until it is needed in the mill.

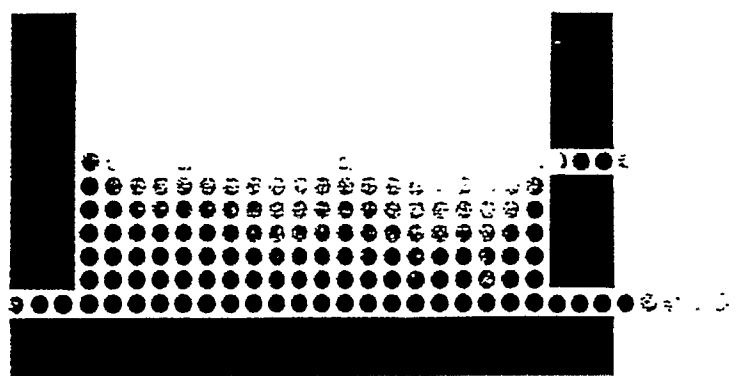
Once there, it is subjected to further crushings and repeated shaking, screening and fiberizing, all aimed at separating the last shred of fibre from the smallest particle of asbestos rock. As this occurs, powerful air suction through the massive aspirator hoods draws the fibre away for grading, packing and final shipment.

Asbestos is valueless as long as it lies in the ground. Quebec's eight mining companies which recover it have invested hundreds of millions of dollars in plant and equipment. They spend more millions each year on materials and supplies, maintenance, modernization, expansion, wages, salaries, transportation and other services.

The continuing investment in improvements during the past ten years has cost Quebec's asbestos mines an average of \$12,000,000 a year.

Investment on this scale enables the mines to employ directly some 6,000 men and women and to give indirect employment to approximately 48,000 other Canadian workers in the industries from which Quebec's companies purchase the goods and services needed to keep the 10 asbestos mines and 11 mills operating.





Asbestos mining is not only a major Quebec industry; it is also a community builder, seriously concerned about the health and happiness of its employees.

The ore-bearing region of the Eastern Townships, it is responsible for cities like Thetford Mines and towns like Asbestos, Black Lake, Coleraine, Danville and East Broughton and contributes to the prosperity of nearby communities.

Without the capital which has poured into the area by way of the mining companies and the skills and research that have been applied to the industry, many of these prosperous and lively communities would be tiny, unknown hamlets, if indeed, they existed at all.

These are the communities asbestos built. They are remarkable not only for the product which sustains them but for the spirit and enthusiasm that carries them on. Like miners everywhere, asbestos miners are realists. They know that someday, long after they are gone perhaps, the mines will be exhausted and the communities' reasons for being will disappear.

Yet, encouraged by the companies, they have developed all the civic amenities. They have concert halls and recreation centres, sports arenas, schools and colleges, fine stores, clubs and movie houses, and all the municipal services. They take pride in their improvements, and produce stalwart, responsible citizens.

Among the principal mining communities is Asbestos, whose 10,000 inhabitants produce more chrysotile fibre per capita than anyone in the western world. The site of Quebec's largest asbestos mine and mill, it produces almost half the Province's output of fibre.

Some 65 miles northeast, Thetford Mines, with a population of more than 20,000, is the largest of the asbestos mining centres. Thetford is an important regional centre and federal government statistics show that in 1966 its citizens were second only to Montrealers as the highest average income earners in Quebec.

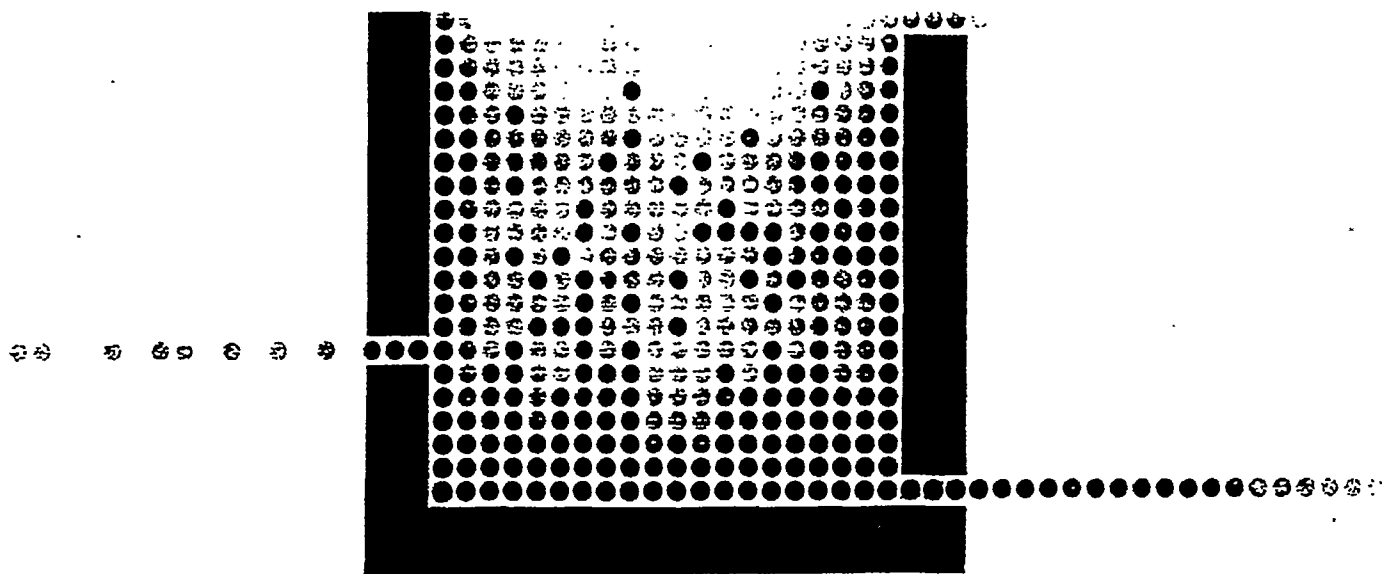
Mines are also operated in Black Lake, Coleraine, East Broughton and Norbestos.

In common with other mining industries, asbestos mining and milling have been regarded as sources of respiratory diseases. This has been a constant concern of the mining companies and has led to extensive engineering development and regular inspection routines to reduce the presence of dust to a minimum.

In 1966, the companies through their association, established with the co-operation of international medical experts and university staffs, an Institute of Occupational and Environmental Health to examine, study and preserve the health of the industry's present and future employees and extend the

benefits of this research to asbestos workers around the world.

Many people, too, think of mining as hazardous. Statistically, a man's chance of being involved in an accident at an asbestos mine is much less than when he's at home or driving his car. Safety engineering has made asbestos mining safe; the occupation in Quebec is classified as that of a "light industry" and every year, millions of man-hours of accident-free labor are worked in the mines.





For another century or more, it is expected men will be mining chrysotile asbestos in Quebec. Methods will change to become more efficient and more economical. The people who work in mines and mills will change, becoming each year more highly trained and more technically skilled.

Most of the hard labor of the early days of asbestos mining will have disappeared. Life in the mining communities will have become even more comfortable and affluent and the people of asbestos-land will more and more be able to combine the enjoyments of rural and urban living.

Some mines now operating will disappear; new ones will be opened—and developed. As new ore bodies are uncovered, municipal boundaries, streets and buildings will change—but change will be preceded by thoughtful planning.

Cultural, economic and health standards will be raised in the mining communities as the new generations of mining folk take over. The aid that has been provided for today's schools, recreational and medical institutions is evident throughout the asbestos communities.

All this will be possible—and all will come true—because within the Quebec mining and processing industries, the research will go on, seeking constantly new ways to make chrysotile asbestos fibres of use to Man and his World.



Like every business, mining has a language all its own. These are just a few of the words that asbestos mine or mill workers use in their everyday work:

Cobber: a person who separates by hand crude fibre from rock.

Cyclone: a piece of milling equipment.

Dryer: the plant where crushed ore is heated and its water content removed.

Feed: the supply of ore to the mill.

Grizzly: grillwork in an underground mine preventing the passage of over-size ore.

Jumbo: a piece of equipment in the crushing section.

Nipper: an underground miner whose job it is to deliver supplies.

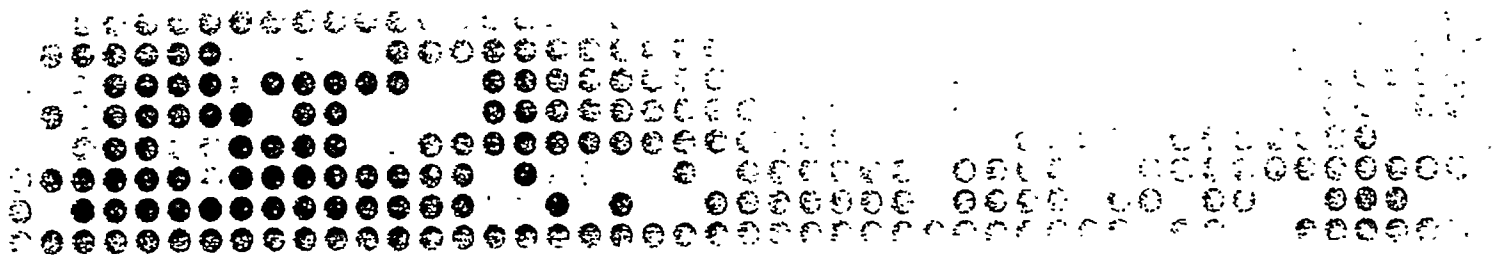
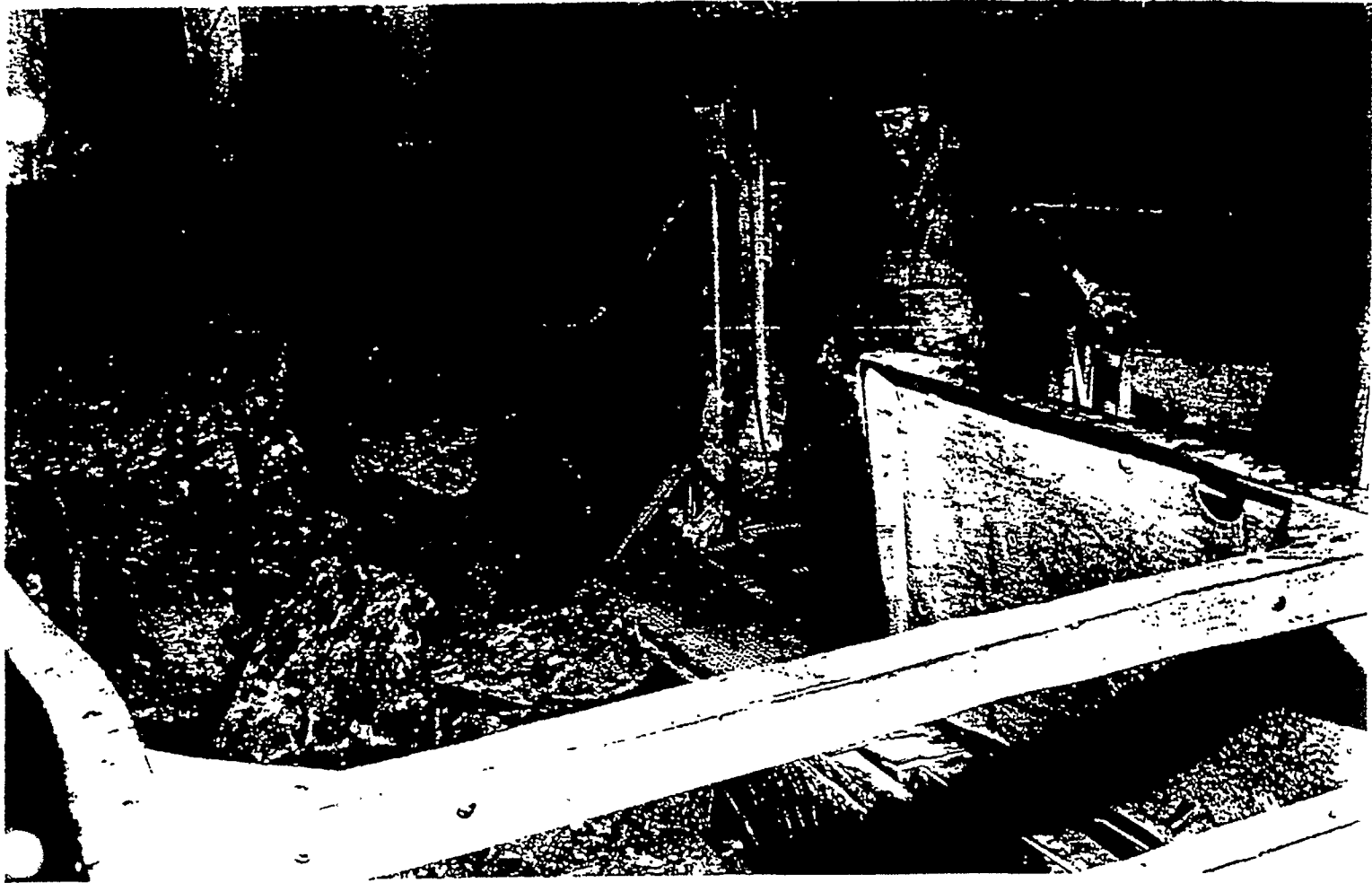
Skip: a container in which ore is raised to the surface.

Spotter: a man who controls the movement and positioning of trucks unloading.

Sump: the lowest part of mine, where pumps are located.

Tailings: pulverized waste rock discharged from a mill.

Whizzer: piece of high-speed equipment used in milling fibre.



Not all chrysotile asbestos fibres are the same. Some are better suited than others for a specific manufacturing purpose.

Quebec's asbestos mines produce most 150 different grades of fibre, determined by combination of its length, strength, absorptivity and other varying characteristics. In the 1930's, asbestos mining companies decided to establish these grades on a rational basis so that purchasers anywhere in the world would be assured of the uniformity and quality of the Quebec asbestos they bought.

The standard they adopted is known throughout the world as the Quebec Standard. It is as valid a symbol of integrity in the mineral world as is the label Manitoba Number One Hard when applied to wheat.

To a miner, a silky fibre of chrysotile asbestos drawn from a chunk of Quebec rock is a lovely thing to behold. To him, it represents not just a rare mineral. It is the very staff of life. From billions upon billions of fibres such as these, he and over 6,000 co-workers earn their livelihoods. His fibre would be worthless, however, had not other men developed for it more than three thousand industrial uses. Even more uses for it are constantly being found through intensive research.

In one way or another, most people use asbestos, or the products and services produced with the aid of asbestos, every day of their lives. They use it because asbestos resists fire, heat, friction and corrosion. And it is a poor conductor of electricity. These characteristics, plus the ability of fibres to form a tough, interlocking web when combined with many substances, make chrysotile asbestos an invaluable substance.

Principal users of asbestos are the manufacturers of construction materials. Combined with cement, asbestos is used in siding and shingle materials, wallboard, roofing and in water and sewage pipes.

It is found, too, in plastic tiling, in paints and caulking compounds.

Next largest user is the transportation industry. Asbestos fibre goes into brake linings and pads, not only for

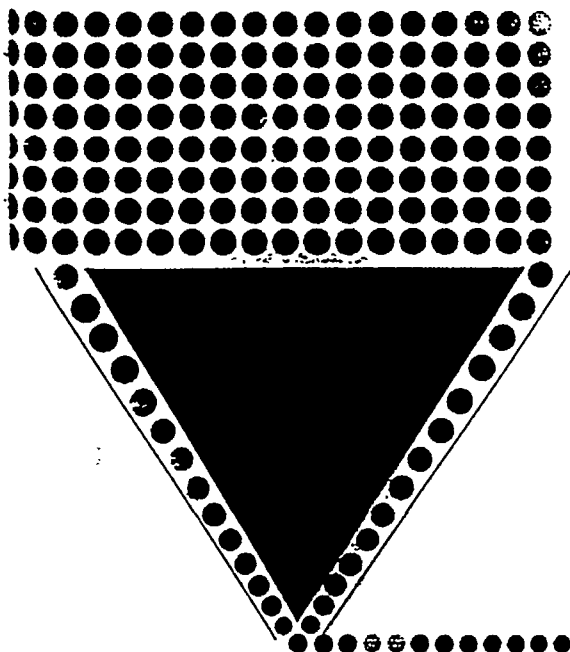
cars and trucks but in the largest jet aircraft. It is also used in gaskets and facings for automatic and manual power transmission systems.

General industry demands huge ton-nages of asbestos, too. Combined with other materials, asbestos goes into high-temperature insulation, machinery packings, and special lubricating compounds. It is also part of firemen's suits and fireproof draperies including of course, the theatre curtain. Inside operational rockets and missiles, insulating materials and asbestos-reinforced plastic components are widely used because of their high strength-to-weight ratio and resistance to searing temperatures.

In Canada and the United States, an increasing number of government authorities specify the use of asbestos as an additive to highway asphalt. This combination results in a tough yet resilient paving that resists the hammering of heavy axle-loads and expansion and contraction caused by sharp temperature changes.

Men do all these things with asbestos today. Tomorrow, they will use it in ways now undreamed of. In the mining industry's laboratories and in the research departments of the manufacturing companies, the search goes on—to find new and better ways to employ the magic mineral for the benefit of mankind.

Asbestos fibre is a natural mineral product. It is not a synthetic material. It is not a chemical compound. It is a natural mineral product.



Asbestos is seldom the main component of any of the manufactured articles into which it enters. Its production, sale and use are, therefore, subject to a universal economic law which, in all countries and under all but the direst circumstances, determines where, how and why certain products of everyday use are to be made.

Like salt, also the product of a mine, asbestos fibres that form part of another product are seldom seen and never heard. In a vast number of finished goods they are an essential but invisible ingredient. Because they are so industrially desirable, however, many people believe that their ultimate processing, or conversion into parts of finished products should always be undertaken either at the mine site or at least within the provincial or national boundaries of their country of origin.

It is as if the salt miners were to insist that all bread must be baked in some remote mining area to be convenient to their salt supply. Obviously, the baker prefers to have his bakeshop in a metropolitan centre close to his market and to have the salt shipped there. Asbestos manufacturers share his feelings.

Where it is economically practical, the Quebec asbestos mining industry encourages the establishment of conversion industries in Quebec or in other parts of Canada, and their number

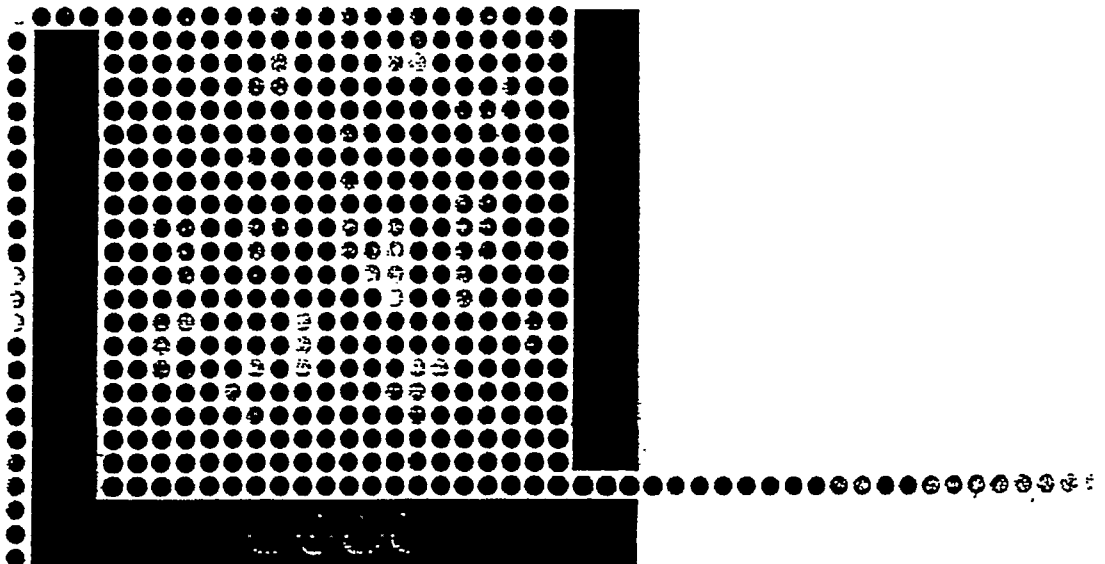
grows continually as the Canadian market increases. But at home, as abroad, asbestos fibre sales ultimately depend upon what suits the buyer, rather than convenience of the seller. To maintain its position in a highly competitive world market, where Quebec asbestos faces not only the competition of other asbestos-producing countries but that of manufacturers of other natural and synthetic materials as well, it becomes a matter of giving the non-Canadian customer guaranteed continuity of supply of high-quality fibres at a competitive price which will enable him to use them economically in products of his own manufacture.

Asbestos cement sheets, for example, are a popular construction material both here and abroad. They contain ten per cent asbestos and 90 per cent cement. Simple logic dictates that these sheets shall be manufactured not at the fibre source but at the site where the cement is manufactured or the sheets are to be used. It is much more economical to ship a hundred pounds of asbestos fibre to the market and add it to the cement, than it is to mix the ingredients together at the mine site and ship a thousand pounds of asbestos-cement sheets to the customer.

Few countries have their own asbestos fibres; most can and do make cement. To suggest that in order to make asbestos-cement sheets available to

their construction industry, they must also import Canadian cement would quickly drive them to substitute materials.

Quebec's asbestos mines and their 6,000 workers—together with the many thousands employed in allied trades—depend for their security upon a steady flow of asbestos exports. The world is their market; without it, their industries would die and their jobs disappear. In the natural processes of industrial material integration, the mineral they mine disappears into almost complete anonymity. Invisible ingredient it will usually be; essential it will remain only as long as it is economically available.



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