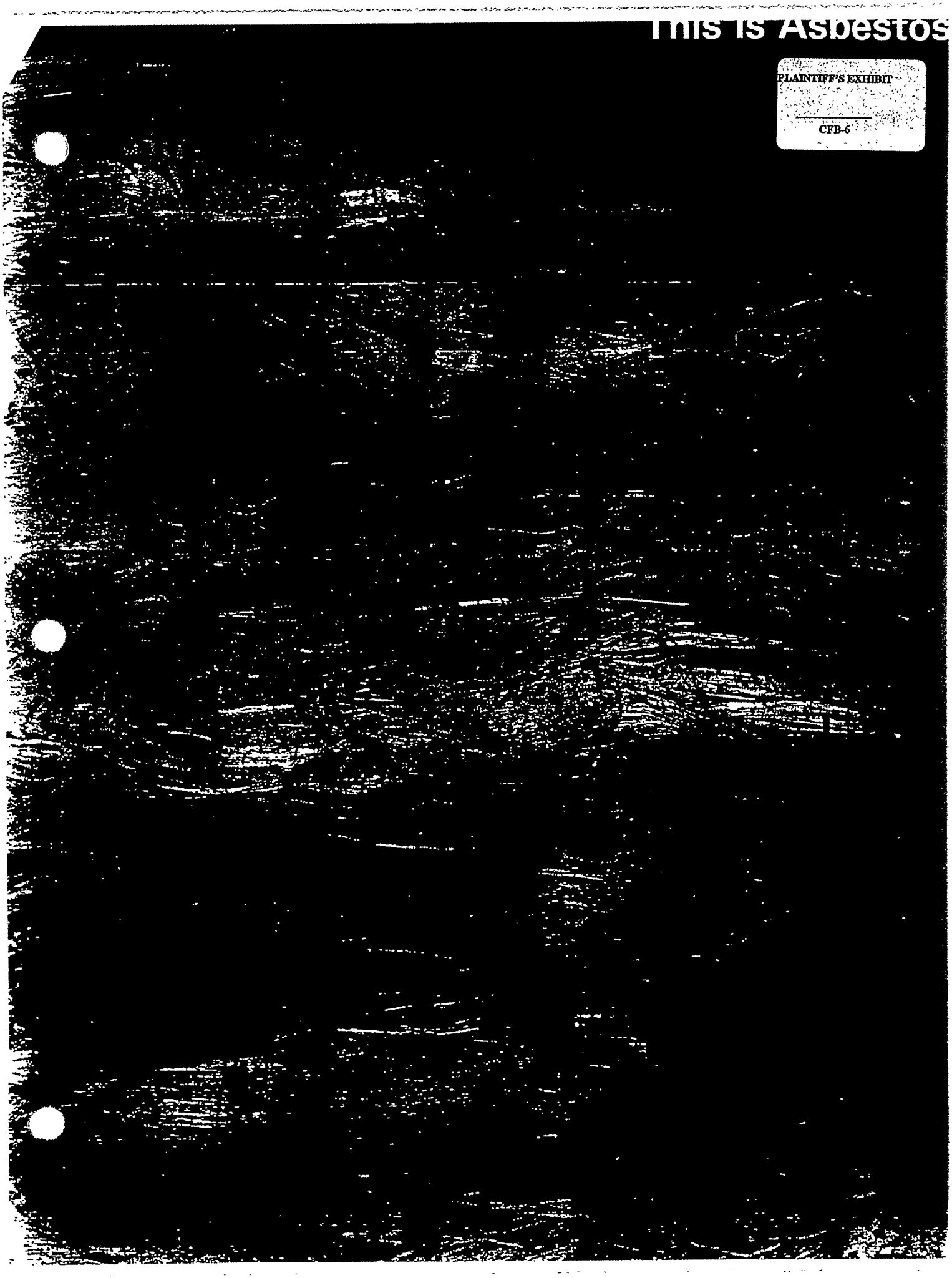
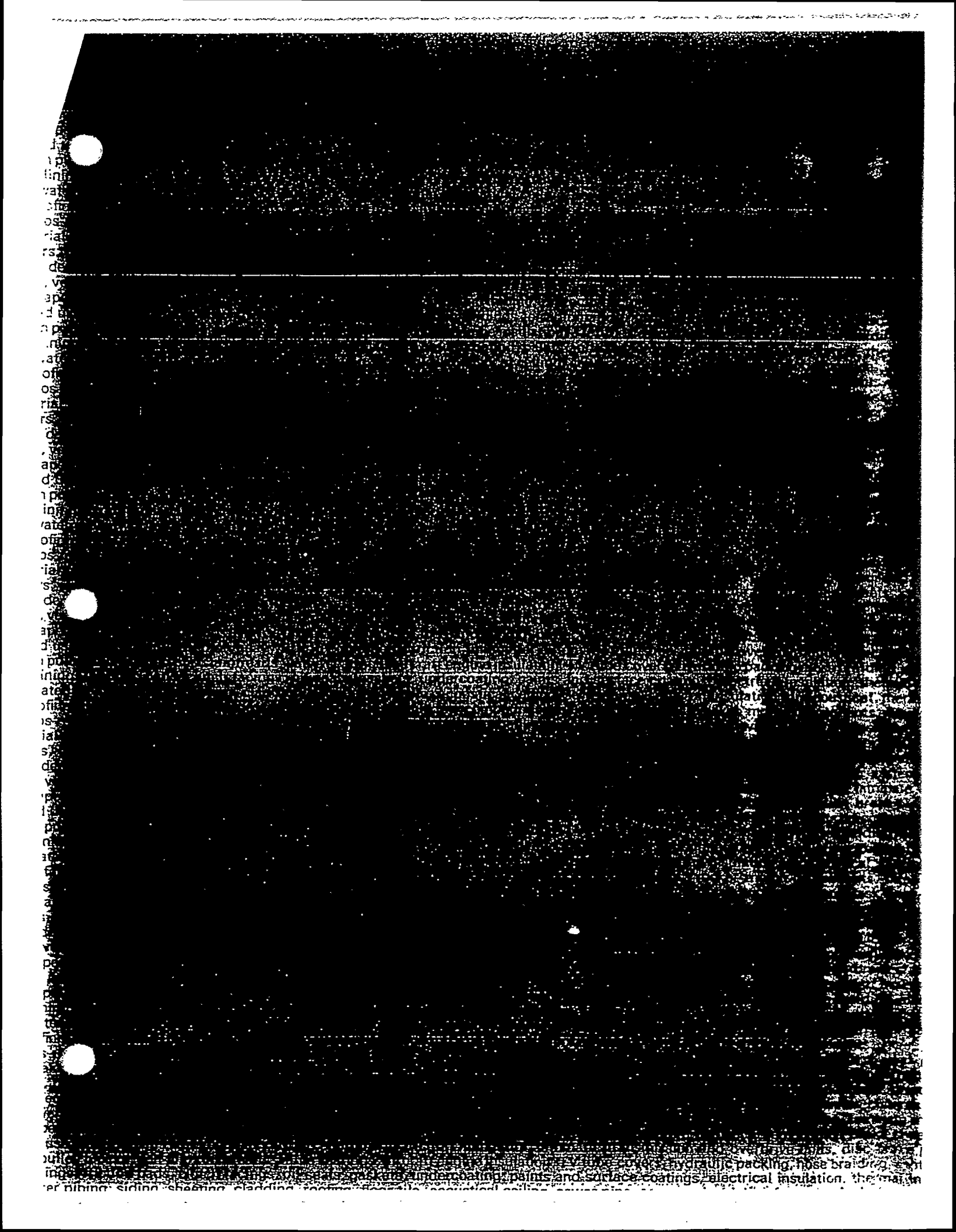

This is Asbestos
PLAINTIFF'S EXHIBIT
CFB-6



,000 Uses

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.

When fact is stranger than fiction

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 incombustible 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 pr[illegible]tion. 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 [illegible]ed 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.

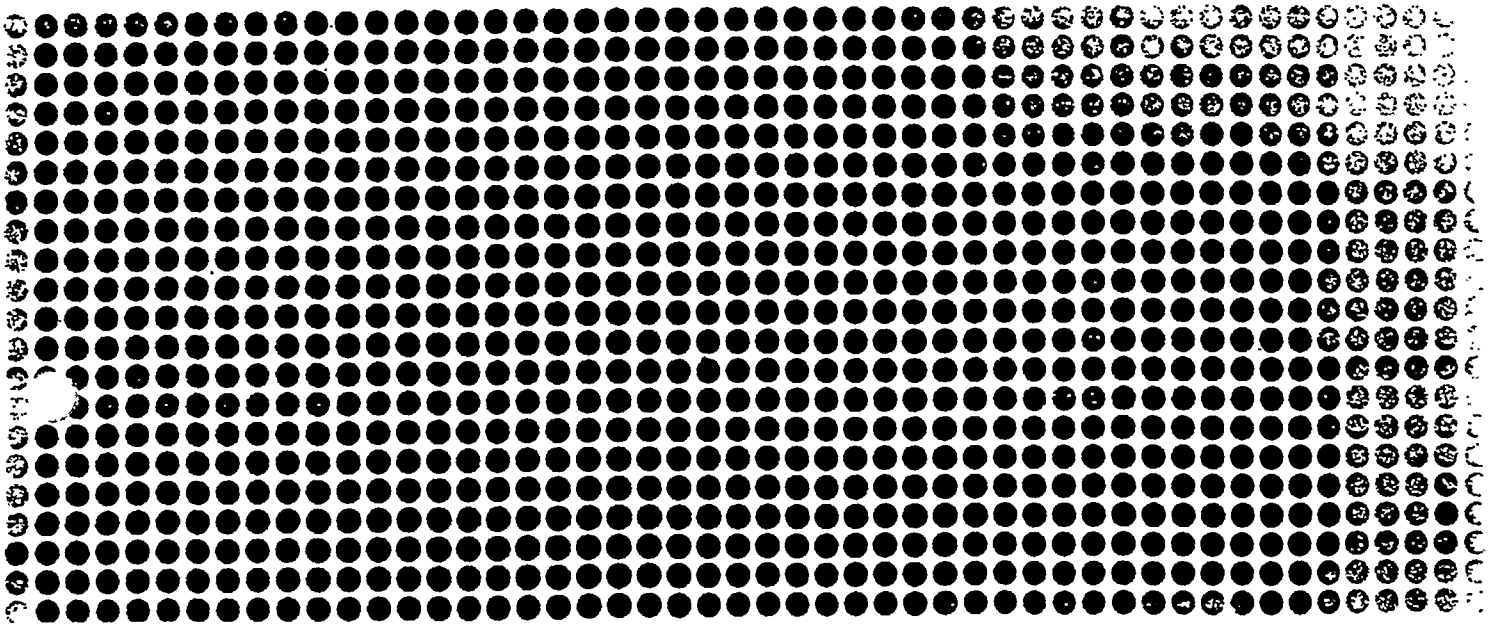
What, where and why is asbestos?

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



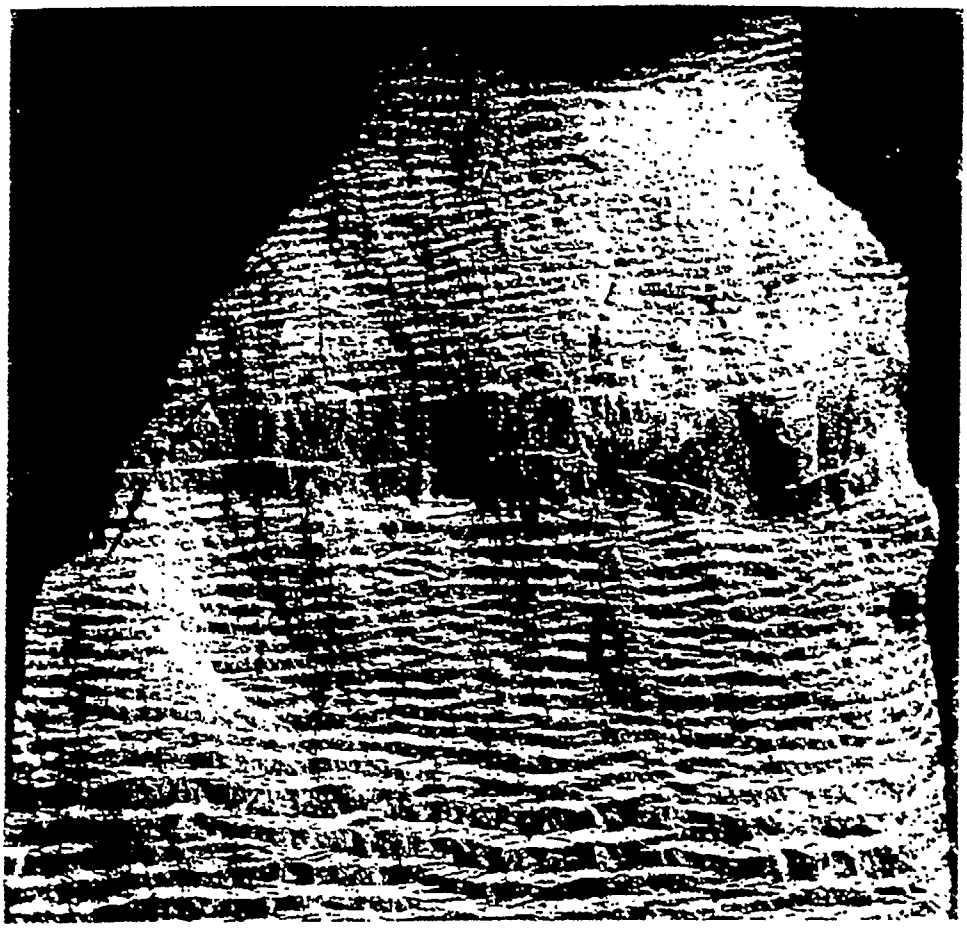
it in Russia, Rhodesia, South Africa, Cyprus, Italy, United States, Australia, China, France, Japan, and in several other countries as well as in Canada.

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 $3MgO, 2SiO2, 2H_2O$. 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.



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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.



How asbestos is mined and milled

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 are 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 powerful and reliable explosive.

Gone, too, are the days of the dramatic 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.

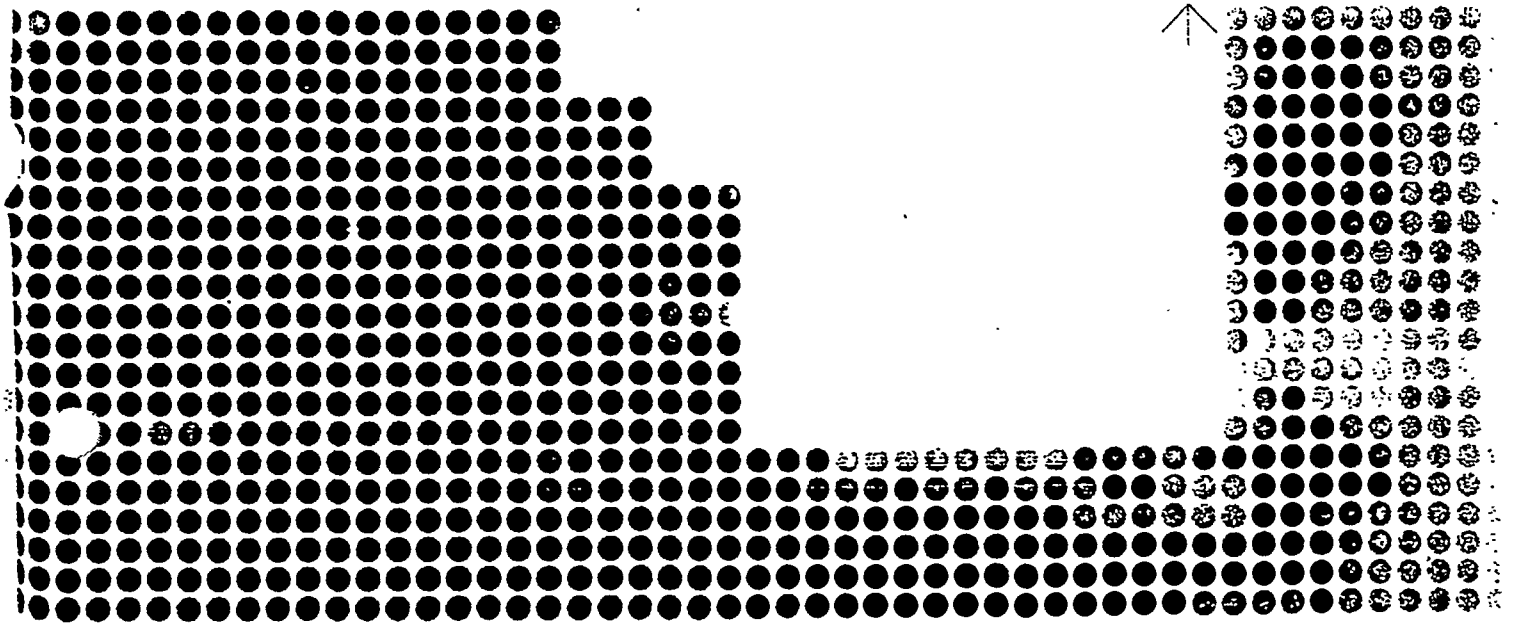
From the underground mine or open pit, the asbestos-bearing ore is transported by truck, or in underground mines by trains, to the crushers. The huge jaw-crushers chomp away and reduce rocks to rubble in a matter of seconds. Then the ore is dried and stored until it is needed in the mill.

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.

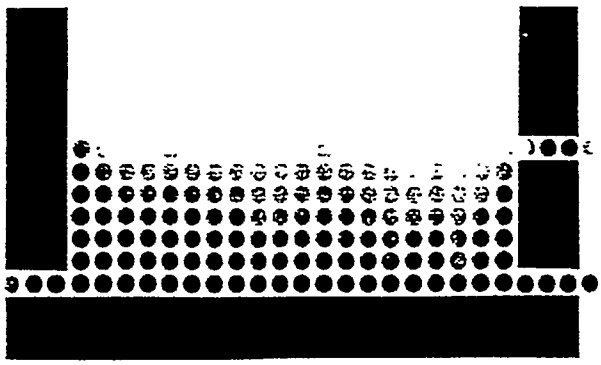
Asbestos is valueless as long as it lies in the ground. Quebec's eight mining companies which recover it have invested hundreds of millions of dollars in plant and equipment. They spend more millions each year on materials and supplies, maintenance, modernization, expansion, wages, salaries, transportation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







The cities and towns asbestos built

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 achievements, 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.

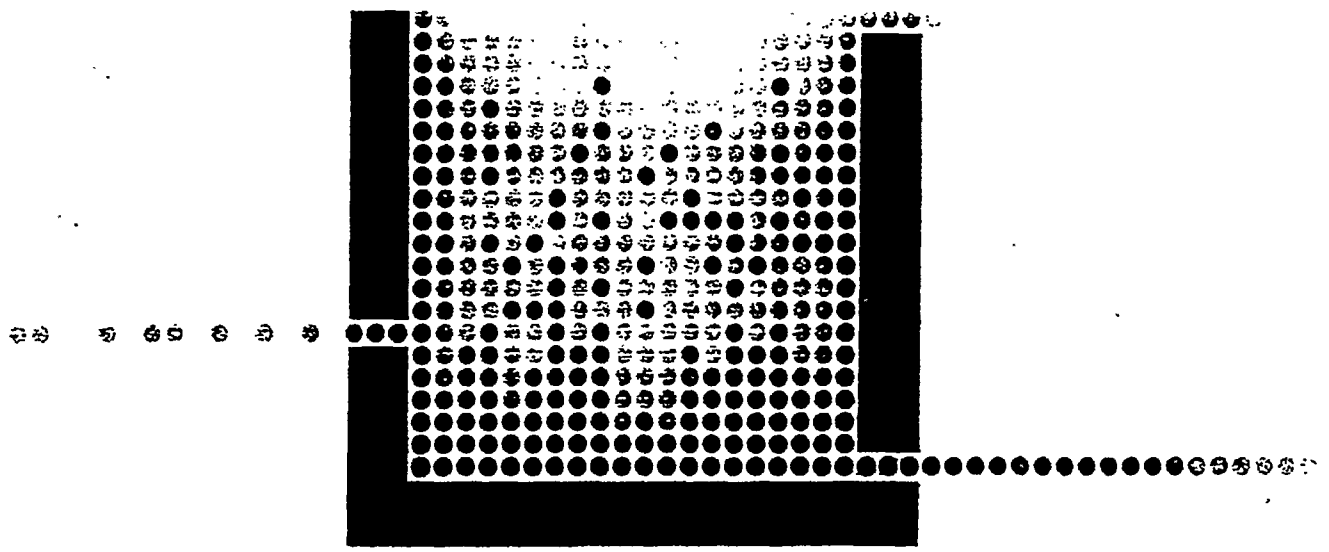
Some 65 miles northeast, Thetford Mines, with a population of more than 20,000, is the largest of the asbestos mining centres. Thetford is an important regional centre and federal government statistics show that in 1966 its citizens were second only to Montrealers as the highest average income earners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





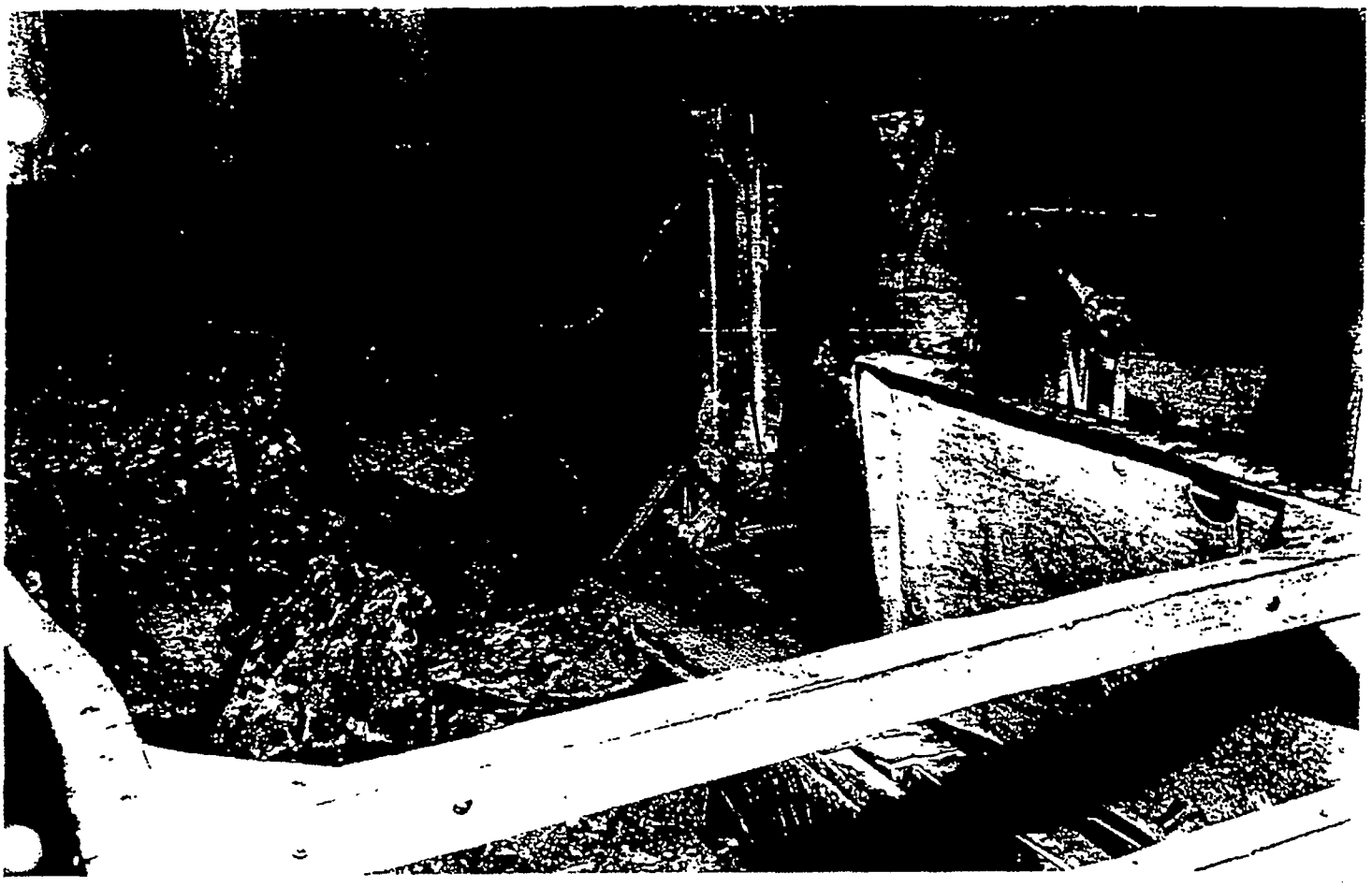
For another century or more, it is expected men will be mining chrysotile asbestos in Quebec. Methods will change to become more efficient and more economical. The people who work in mines and mills will change, becoming each year more highly trained and more technically skilled.

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.



Quality is the key in asbestos 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 almost 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.

Who does what with asbestos fibre?

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.

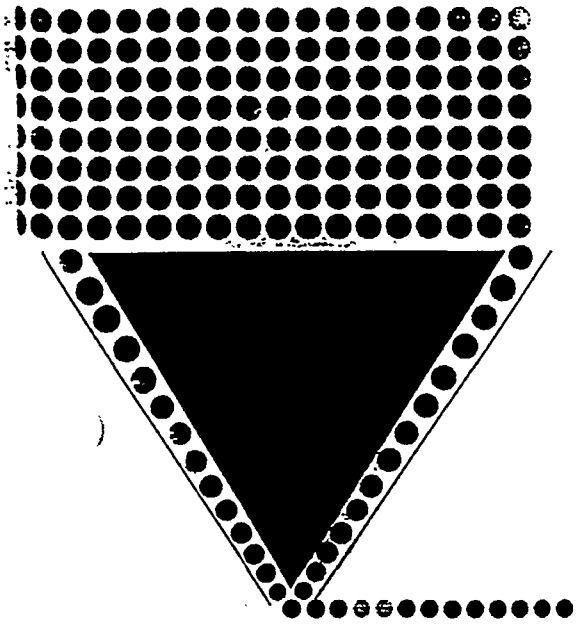
It is found, too, in plastic tiling, in paints and caulking compounds.

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 tonnages 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.



An invisible ingredient and an economic law

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 an 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.

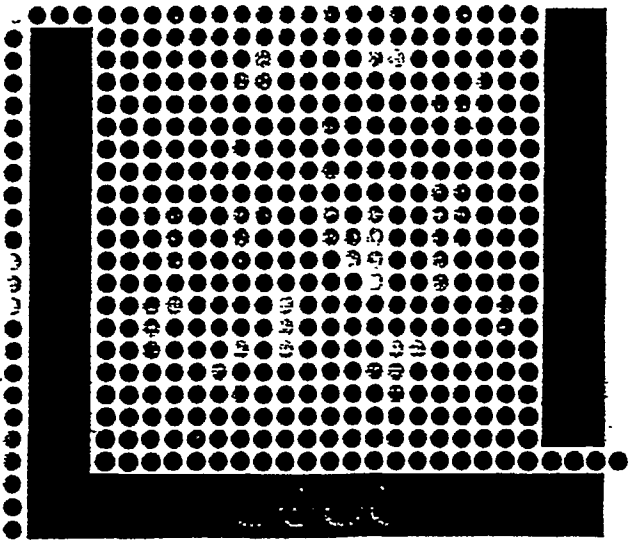
It is as if the salt miners were to insist that all bread must be baked in some remote mining area to be convenient to their salt supply. Obviously, the baker prefers to have his bakeshop in a metropolitan centre close to his market and to have the salt shipped there. Asbestos manufacturers share his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

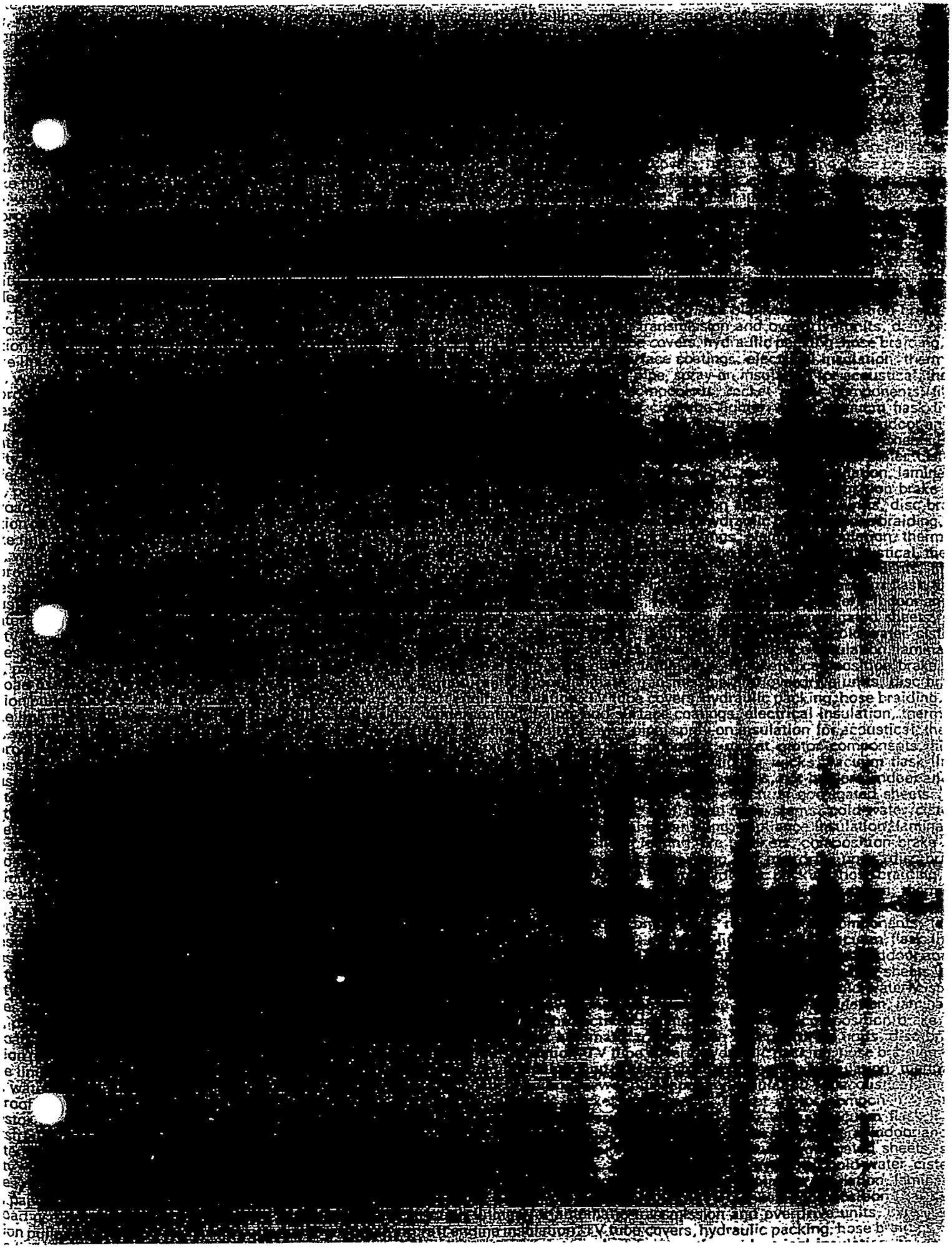
Where it is economically practical, the Quebec asbestos mining industry encourages the establishment of conversion industries in Quebec or in other parts of Canada, and their number grows continually as the Canadian market increases. But at home, as abroad, asbestos fibre sales ultimately depend upon 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.

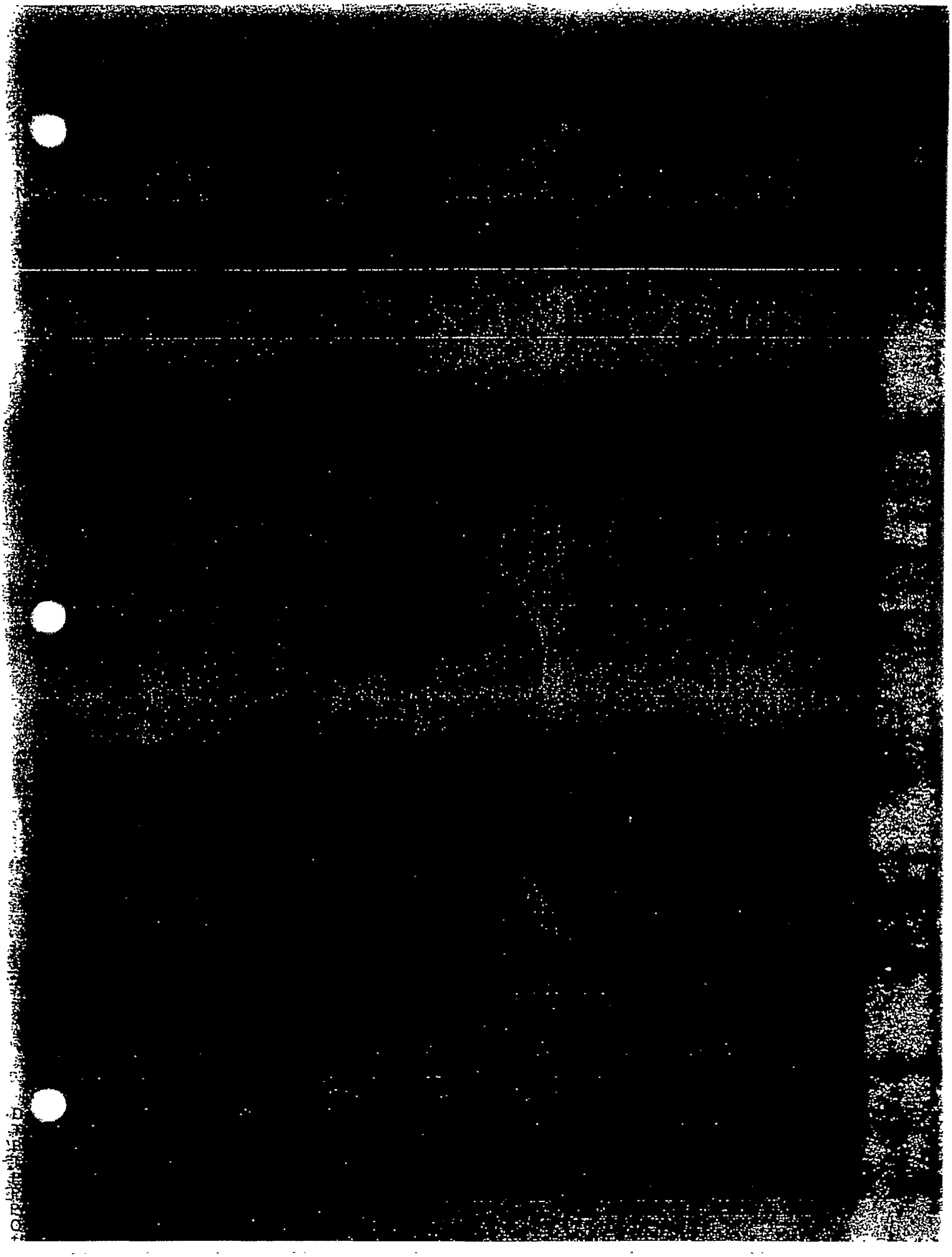
Asbestos cement sheets, for example, are a popular construction material both here and abroad. They contain ten per cent asbestos and 90 per cent cement. Simple logic dictates that these sheets shall be manufactured not at the fibre source but at the site where the cement is manufactured or the sheets 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.

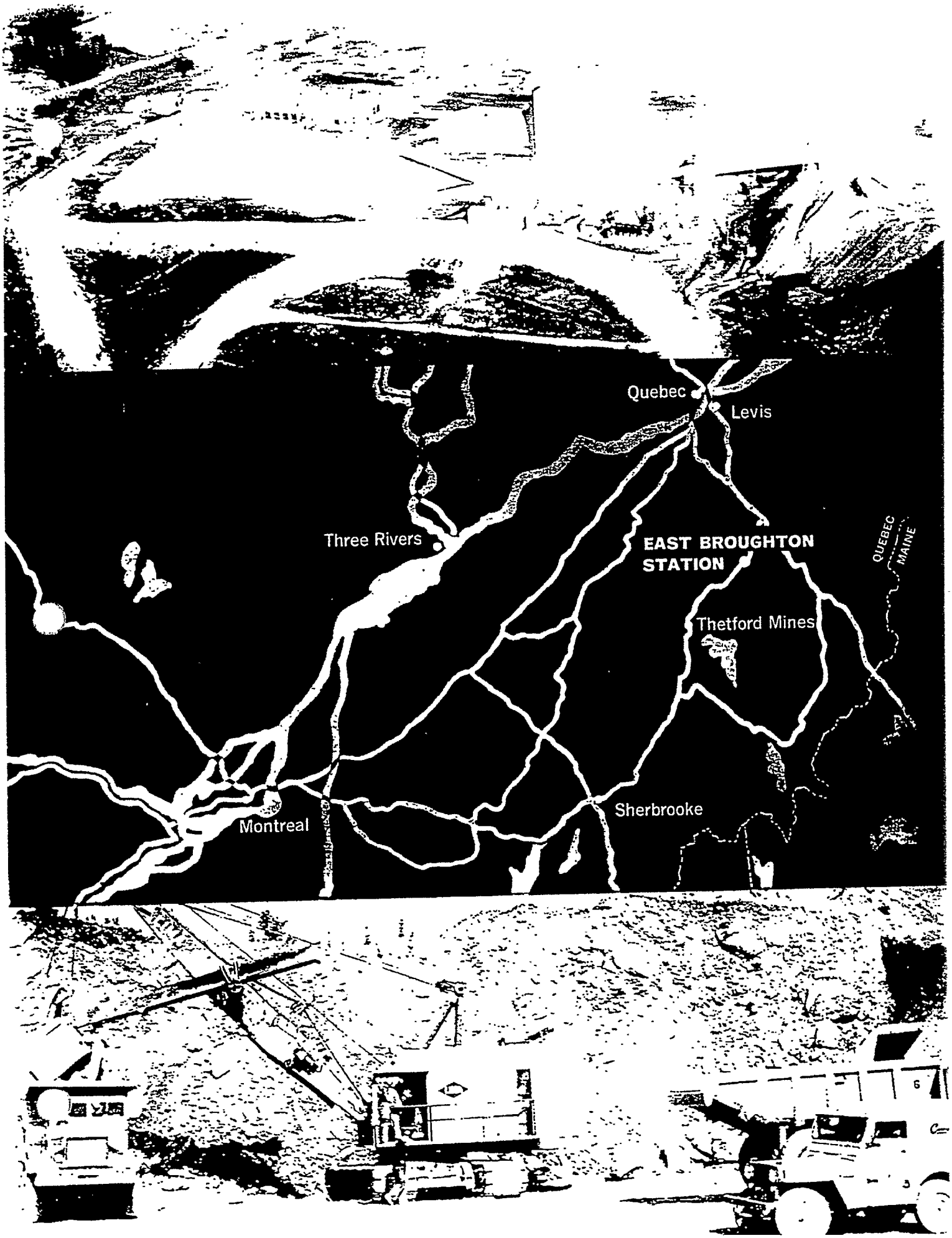
Quebec's asbestos mines and their 6,000 workers—together with the many thousands employed in allied trades—depend for their security upon a steady flow of asbestos exports. The world is their market; without it, their industries would die and their jobs disappear. In the natural processes of industrial 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.







CAREY-CANADIAN ASBESTOS
SUPPLIES THE WORLD


Quebec
Levis
Three Rivers
EAST BROUGHTON
STATION
QUEBEC
MAINE
Thetford Mines
Montreal
Sherbrooke



Self-Propelled Pneumatic Drill

fibre of many uses

Canadian Chrysotile Asbestos

Asbestos! One of the most fascinating developments of Nature, it serves man through its unique combination of properties. Found in serpentine rock, Chrysotile Asbestos is a fibrous mineral which can be made into such products textiles and papers, and, at the same time, maintain the qualities of an indestructible mineral.

Many varieties of asbestos, found throughout the world, have commercial value. But of these, one—Chrysotile Asbestos—is so superior that it accounts for a major portion of the world's industrial consumption, and Canada is one of the leading sources for Chrysotile Asbestos. Soft, white, silky, and yet as strong as steel, Chrysotile inorganic fibres serves mankind in many ways. Canadian Chrysotile Asbestos has increased the world's standard of living in traditional fire and heat resistant products and in numerous exciting new developments in this Age of Science.

CAREY-CANADIAN MINES, LTD.

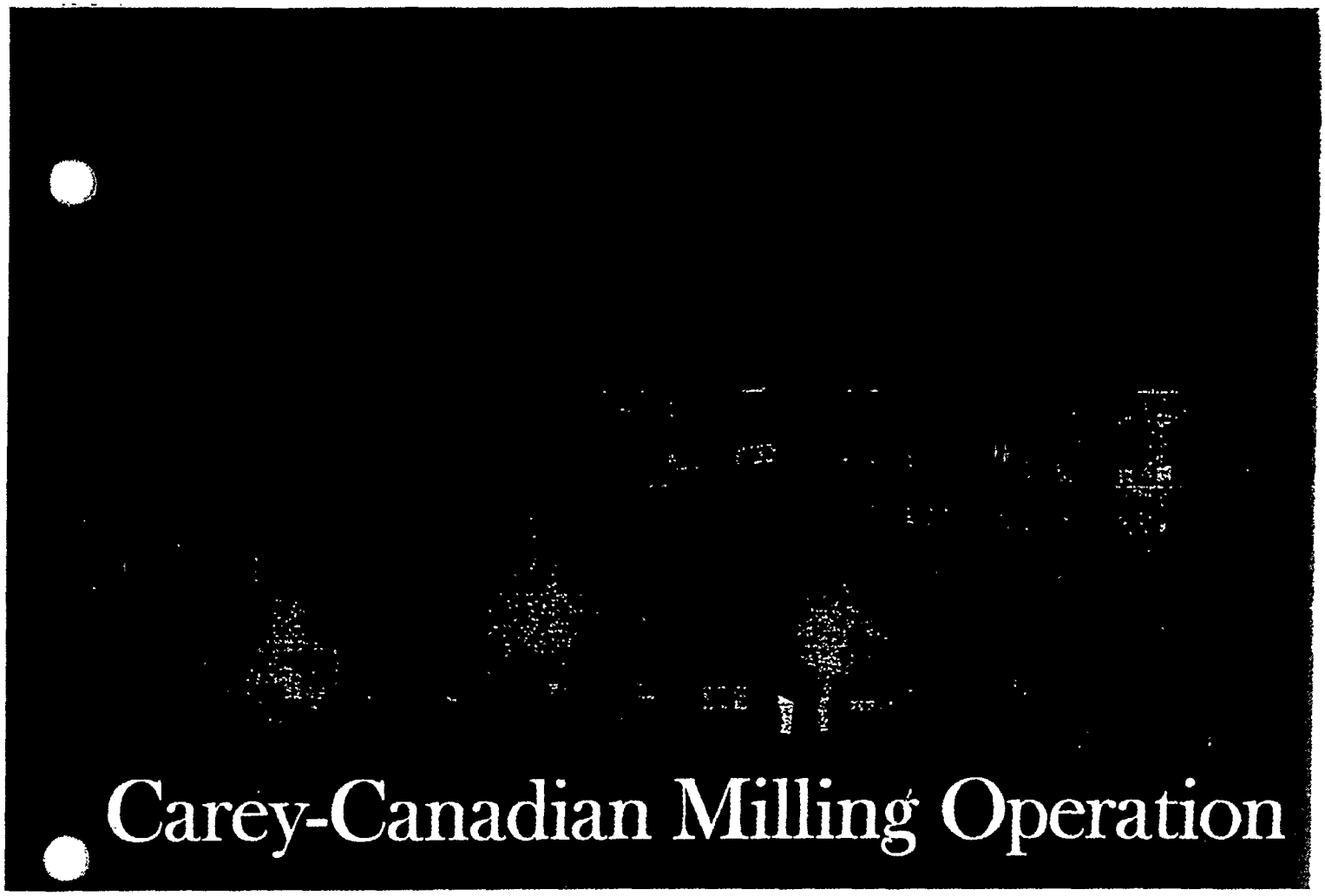
Nowhere did Nature produce a finer Chrysotile Asbestos than in one small rectangle in the eastern section of Quebec. The deposits are located in the Serpentine Belt running northeasterly through the Eastern Townships of the Province. To this small rectangle, The Philip Carey Manufacturing Company came in 1918, acquiring an interest in two operating companies at East Broughton Station. In 1924, Carey took over complete control of the two properties and formed the Quebec Asbestos Corporation, Ltd., as a Canadian subsidiary. For thirty-four years Carey mined, milled and supplied high quality Chrysotile Asbestos from its Quebec Asbestos Corporation property.

In 1948 it became apparent that ore reserves were becoming exhausted and company geologists began a search for new deposits. A magnetic survey in 1949 indicated the possibility of an exciting discovery, a large anomaly four miles northeast of East Broughton Station on the northeast end of the Pennington Serpentine Dike. After extensive title searches, options were obtained and, later, drilling and sampling were started.

It soon became evident that not one but several large ore bodies had been discovered. The overburden of clay and gravel was removed from one of these ore bodies and a modern asbestos mill was erected on the property. The new mill went into operation on September 1, 1958, under the newly organized subsidiary, Carey-Canadian Mines, Limited.

CAREY-CANADIAN MINING OPERATION

Highest quality Carey-Canadian asbestos ore is mined by the efficient open pit method. A track-mounted, self-propelled pneumatic drill bores 4" holes for blasting. After blasting, power shovels load the ore into diesel trucks which haul the ore a short distance to the mill.



Carey-Canadian Milling Operation

The large twelve-story asbestos mill was designed to process 2,000 tons of ore per 24 hours. Now, the mill can handle a much larger volume of ore per day. The mill is powered by electricity, and the heat dissipated by hundreds of motors is sufficient to keep the mill building warm in the winter time.

The ore is unloaded at the primary crushing building where it is reduced to a maximum of 4" pieces by a primary jaw crusher. The ore is then conveyed to the drying building for further [illegible]

[illegible]

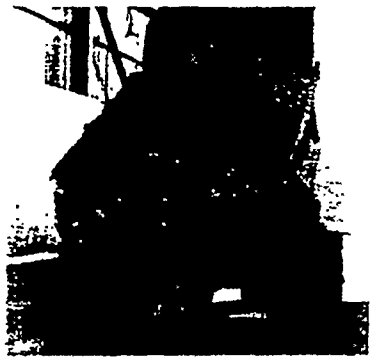
[illegible] building which is [illegible] ore differs in length [illegible] the mine. Ordinarily, the ore is [illegible] the mine. Thus, the character [illegible] mine to mill dictates the milling operation. [illegible] Carey-Canadian's new method of selective [illegible] selective feeding provides complete control [illegible] ore from different sections of the mine is [illegible] locations in the rock storage building. [illegible] trol panel in the mill, a particular type [illegible] selected and fed to the mill at a regulated rate [illegible] three varieties of ore [illegible]

Thus the right selection or mixture of ores can be fed to the mill for the desired grades [illegible] This modern [illegible] of uniform and selective [illegible] engineering [illegible]

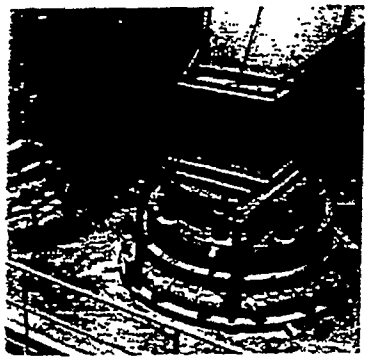
[illegible]

[illegible] requirements. Quality control was foremost in the [illegible] of the designers of this mill; e.g., large-capacity [illegible] blenders were provided to assure uniformity.

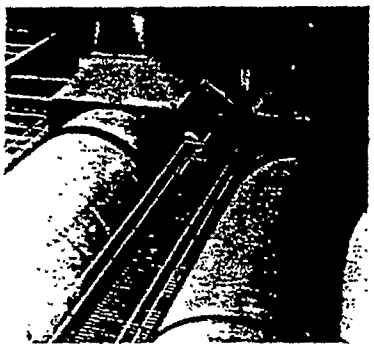
1. Receiving ore at primary crusher building



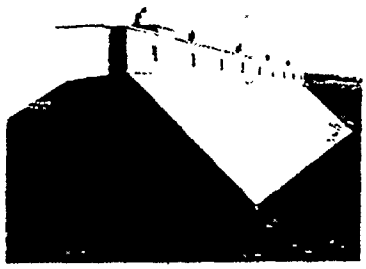
2. Secondary and tertiary crushers



3. Oil-fired rotary dryers



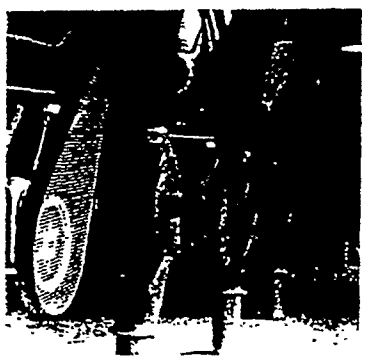
4. 24,000-ton ore storage bin. Push buttons control feed to mill



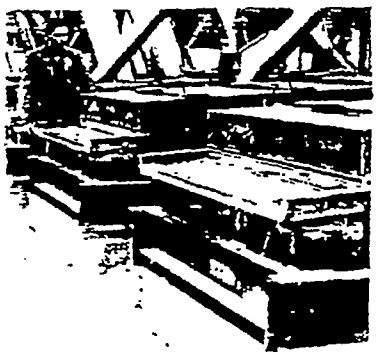
5. Every ton of ore processed requires 13 tons of air



6. Cyclones collect fibres from the air stream



7. Gyrating screens for cleaning and grading fibre



8. Specific gravity separators remove unwanted grit



Quality Control

To assure asbestos of the highest quality and uniformity, two laboratories operate continuously in Carey-Canadian's asbestos mill. The Production Control Laboratory runs quick tests at frequent intervals to check uniformity and grading. Samples are obtained by pushing buttons. The buttons actuate solenoid valves in the finished fibre flow lines, and the samples drop through piping into small bins installed in the wall of the laboratory.

The Shipping Test Laboratory performs specific tests for individual customers to check the fibre before shipment. Samples are taken from every tenth bag throughout each lot and composited for testing.

MILLED GRADES OF CANADIAN CHRYSOTILE ASBESTOS

Standard Canadian Chrysotile Asbestos Grades were set up by the Committee on Uniform Classification and Grading of Asbestos Mines Products, by authority of the Minister of Mines of the Province of Quebec.

Classification of milled asbestos grades is based on the Quebec Standard Testing Machine. This machine separates and classifies into its component fibre lengths a one pound sample of asbestos fibre on ½", 4 and 10 mesh screens and pan by shaking action. The screens are shaken exactly 600 times at a speed of 328 R.P.M. The weight, in ounces of fibre, retained on each screen and in the pan determines the grade. For example, Grade 5R tests 0-0-10-6. ½" mesh screen—0 oz. 4 mesh screen—0 oz. 10 mesh screen—10 oz. Pan—6 oz.

Canadian Chrysotile Asbestos Classification

7D	0	0	4	12	
7F	0	0	3	13	
7H	0	0	3	13	
7K	0	0	2	14	
7M	0	0	1	15	Group 7 (Shorts)
7R	0	0	0	16	
7T	0	0	0	16	
7RF (Floats)	No Test				
7TF (Floats)	No Test				
8S	No Test				

†Guaranteed minimum shipping test is that test below which the actual shipping test shall not fall. The shipping test is the average for each carload or smaller shipment of tests of representative samples taken at time of shipment.

Canadian Chrysotile Asbestos is an essential raw material for a wide variety of products. To meet the requirements of specific industries, sub-grades or grades within grades have been developed. These are arbitrarily grades are divided [illegible] with [illegible] degree of "crudiness" and amount or size of fines. Variations of this combination can change such characteristics as density, absorption, wet volume and setting rate. Carey Canadian produces a wide range of sub-grades as listed in the table below.

Cements	7RF-8, 7RF-10, 7TF-8
Dry Wall Joint Compounds	5D-1, 5R-1, 5D-1, 7D-2, 7MS-1
Fireproofing	6D-1, 7D-3, 7M-5, 7M90, 7T-5
Insulation Finishing	5R-1, 6D-1, 7M-5, 7M90
Refractory	[illegible]
Plastics	[illegible]
Gold Molds	[illegible]
Molding Compounds	[illegible]
Paper Making	[illegible]
Radiator Sealing Compounds	[illegible]
Sheet Packings	5D-1, 5K-1, 5K-2, 7R-10, 6D-1
Textiles	3T-1, 4K-1, 7D-2, 7F-8, 7R-8
Welding Rods	7M-5, 7R-8, 7T-5

[illegible] Caution [illegible] Very [illegible] Chemical [illegible] Grades indicate: [illegible] Absorption [illegible] Fiber [illegible] Fiber [illegible] Absorption [illegible] Fiber [illegible]

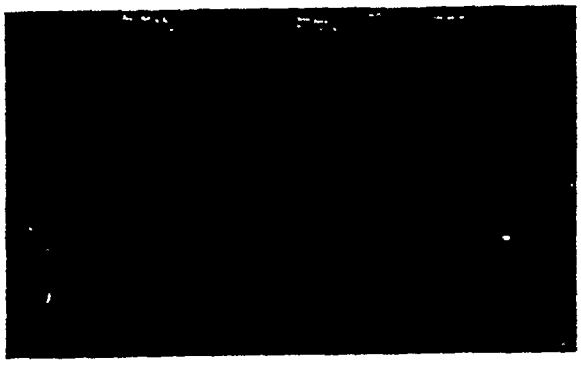
Growing Importance of Asbestos Short Grades

The use of Canadian Chrysotile Asbestos Shorts has grown tremendously. Shorts are used in liquids, semi-solids and solid compositions where strong flexible, inorganic fibres are needed to form interlocked reinforcing webs which add durability and toughness for resistance to heat, wear, breakage and abrasion. Carey-Canadian is a large producer of uniform grades of asbestos shorts.

COMPOSITION OF CHRYSOTILE ASBESTOS

Chrysotile asbestos is a hydrous magnesium silicate represented by the chemical formula $3Mg\ 0,\ 2Si\ 0_2,\ 2H_20$. The fibre is finer than cotton, but, at the same time, the fibre is tough, flexible, infusible and resists time, fire, weather and many acids and alkalies. The fibre is as dense or heavy as the rock in which it occurs, yet these fibres when milled are light as thistledown.

Chrysotile asbestos was formed millions of years ago when a combination of high pressures, hot liquids and gases acting at great depths dissolved the serpentine. Later the mass cooled and the liquified material recrystallized in the form of fibrous asbestos in cracks and seams in the serpentine. The percentage of fibre to rock in the ore is relatively low. Therefore, tremendous quantities of ore must be treated to produce finished fibre.



Research laboratories at the mine and in Cincinnati are ready to assist you with asbestos problems.

Physical Properties of Carey-Canadian Asbestos Fibres

Carey-Canadian Chrysotile Asbestos is noted for very light color, uniformity of grading, relatively low iron content and freeness from rock particles and large fibre bundles.

Other physical properties are: Specific gravity—2.2 to 2.3. Hardness—3.5 on Moh's scale. ph value—9.4.

Carey-Canadian Research

Two complete research laboratories, one at East Broughton and one at Cincinnati, Ohio, constantly probe for better methods, to produce, test and use asbestos. Carey's extensive experience with asbestos and asbestos products is at your service to help solve problems relating to grade selection, blending and application of asbestos.

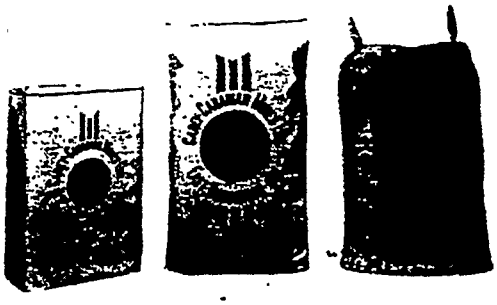
Packaging and Shipping

The following 100 lb. bags are available for particular grades as shown below:

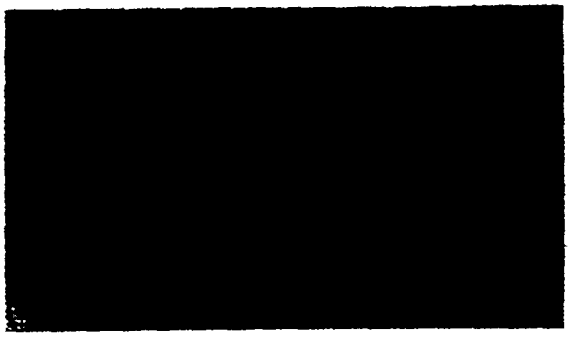
Type of Bags	*Grades Available*
Loose filled jute	All grades
Pressure-packed jute	All grades except 3 group and floats
Pressure-packed 3 ply paper (Pressure-packed 5 ply paper for overseas shipments only.)	All grades except 3 group, floats and 7M-90.
Loose filled 4 ply paper (Loose filled 5 ply paper for overseas shipments only.)	Short grades only.

Asbestos short grades may be packaged in 50 lb. loose filled paper bags at an additional cost.

When packages other than standard bags listed above are required, quotations will be furnished on request.







Palletized with interlocked stacks for stability or unitized with bags glued together to prevent shifting.

PRESSURE-PACKED BAGS

This new type bag has many advantages: a. Suitable for palletizing for lower handling costs. b. Smaller, squared off package takes up less storage space and is easily stacked. c. Lower ocean rates on export shipments.

The 3 ply kraft paper pressure-packed bag has these additional advantages: a. Not only can this bag be palletized, but it can be unitized to allow mechanical handling. b. Paper is cleaner, and keeps fibre dryer. c. No contamination from loose jute fibres, bag ravelings and twine. d. Easier grade identification. e. Faster bag opening.

Palletized and Unitized Shipments

All pressure-packed bags can be palletized by interlocking during stocking to make a stable pallet load. Pressure-packed paper bags can be palletized and unitized on expendable fibreboard pallets at point of shipment to allow mechanical unloading at destination. Mechanical unloading with fork-lift trucks can effect big savings over manual labor.

Overseas Export Shipments

Overseas export shipments are made through the Port of Quebec. Freight rates are higher during the winter months than for the other months of the year. Information on inland and ocean freight rates, surcharges, insurance, etc., is available from the Sales Department upon request.

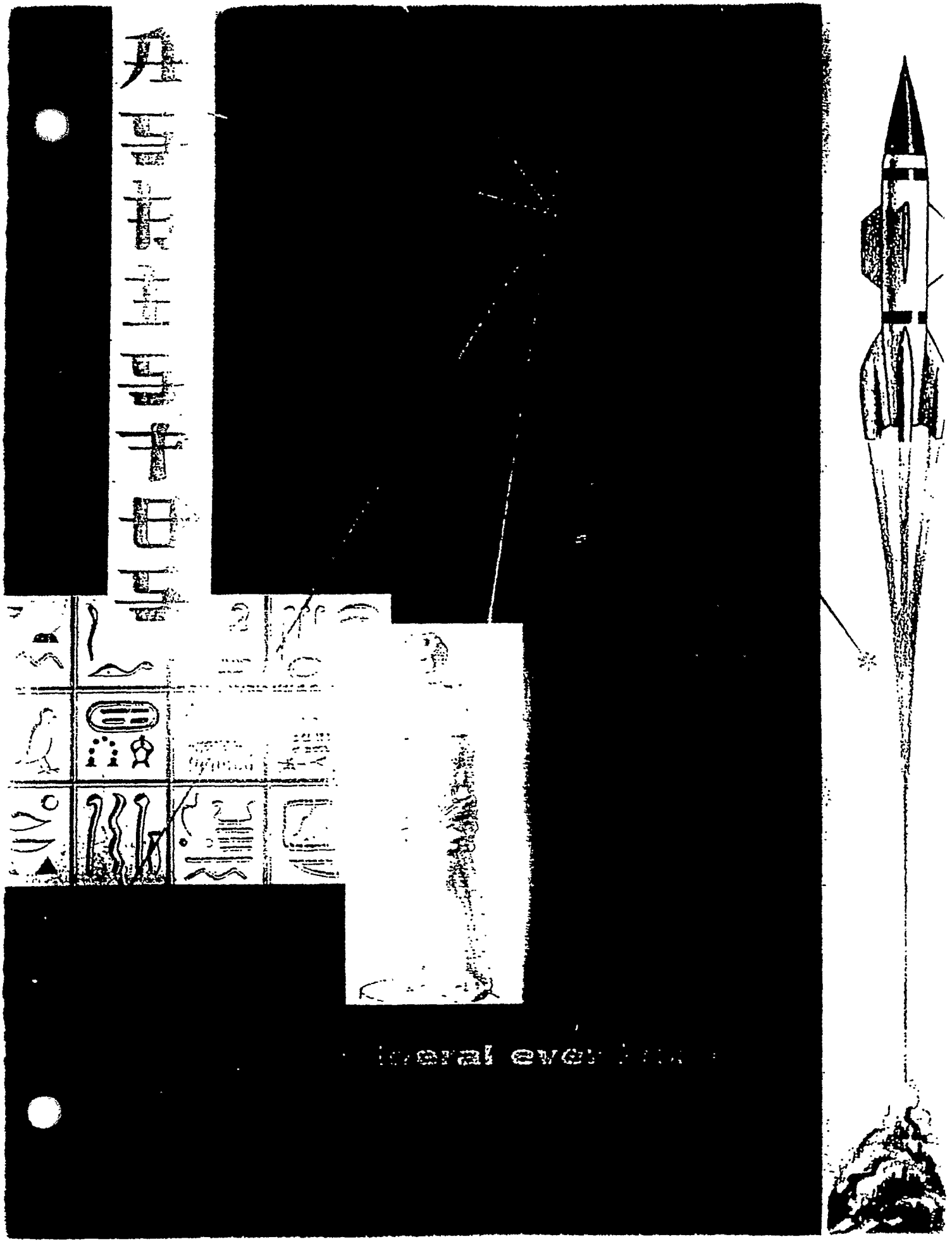
Service

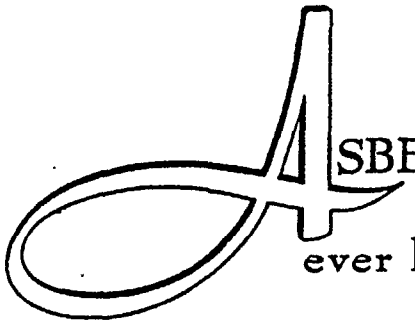
Excellent facilities and trained personnel at Carey-Canadian Mines, Ltd., assure you of high quality asbestos and prompt service. A staff of qualified Sales Engineers is at your service for information and assistance. Strategically located Carey-Canadian Distributors stock popular grades for prompt service.

For further information please write Carey-Canadian Mines, Ltd., at either address: East Broughton Station, Province of Quebec, Canada or P.O. Box 15070, Cincinnati, Ohio 45215, U.S.A.
Cable Address—PHILCAYO.

CHICAGO FIRE BRICK COMPANY
1461 ELSTON AVE.
CHICAGO 22, ILLINOIS

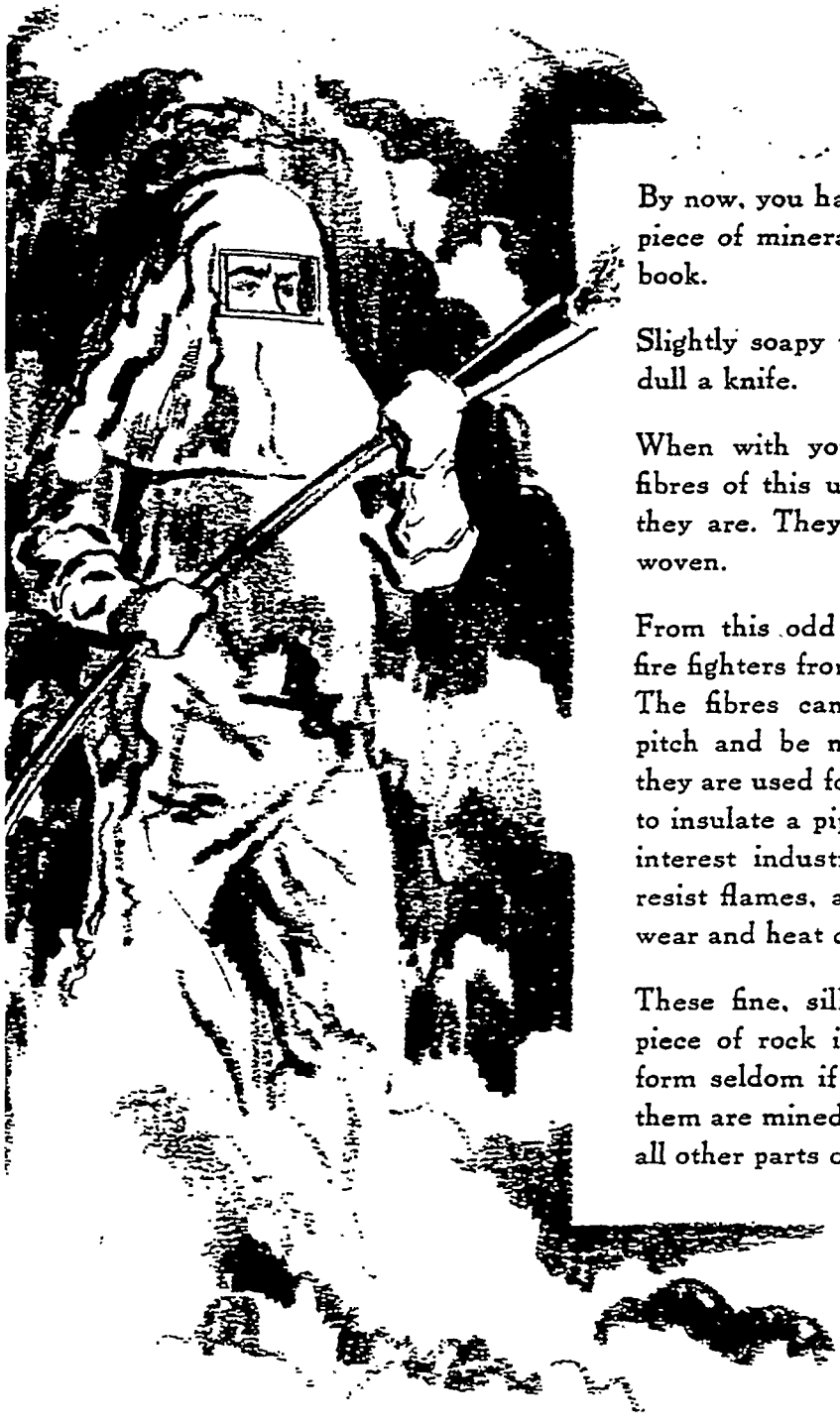
LITHO IN U.S.A.





SBESTOS, the strangest mineral ever known, has interested explorers, scientists and writers since ancient times. Today, it is one of Canada's most important natural resources and this book has been published so that those who write, broadcast or simply talk about Canada in this industrial age may know the facts about this magic mineral.

your sample of the textile from the rocks



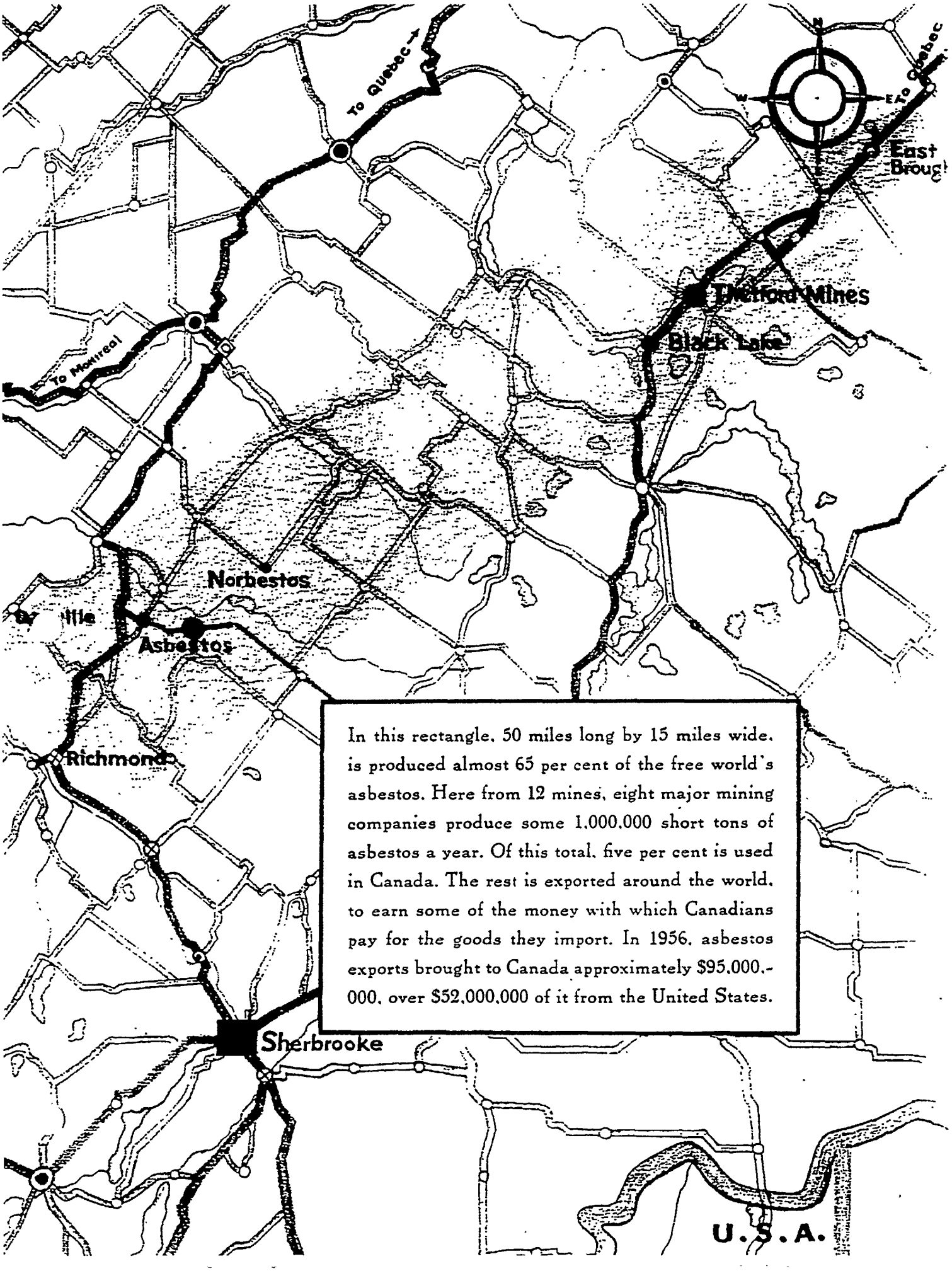
By now, you have probably examined and felt the piece of mineral in the envelope attached to this book.

Slightly soapy to the touch, it is tough enough to dull a knife.

When with your finger nail you scrape up the fibres of this unique ore, you can feel how silky they are. They can be twisted into threads and woven.

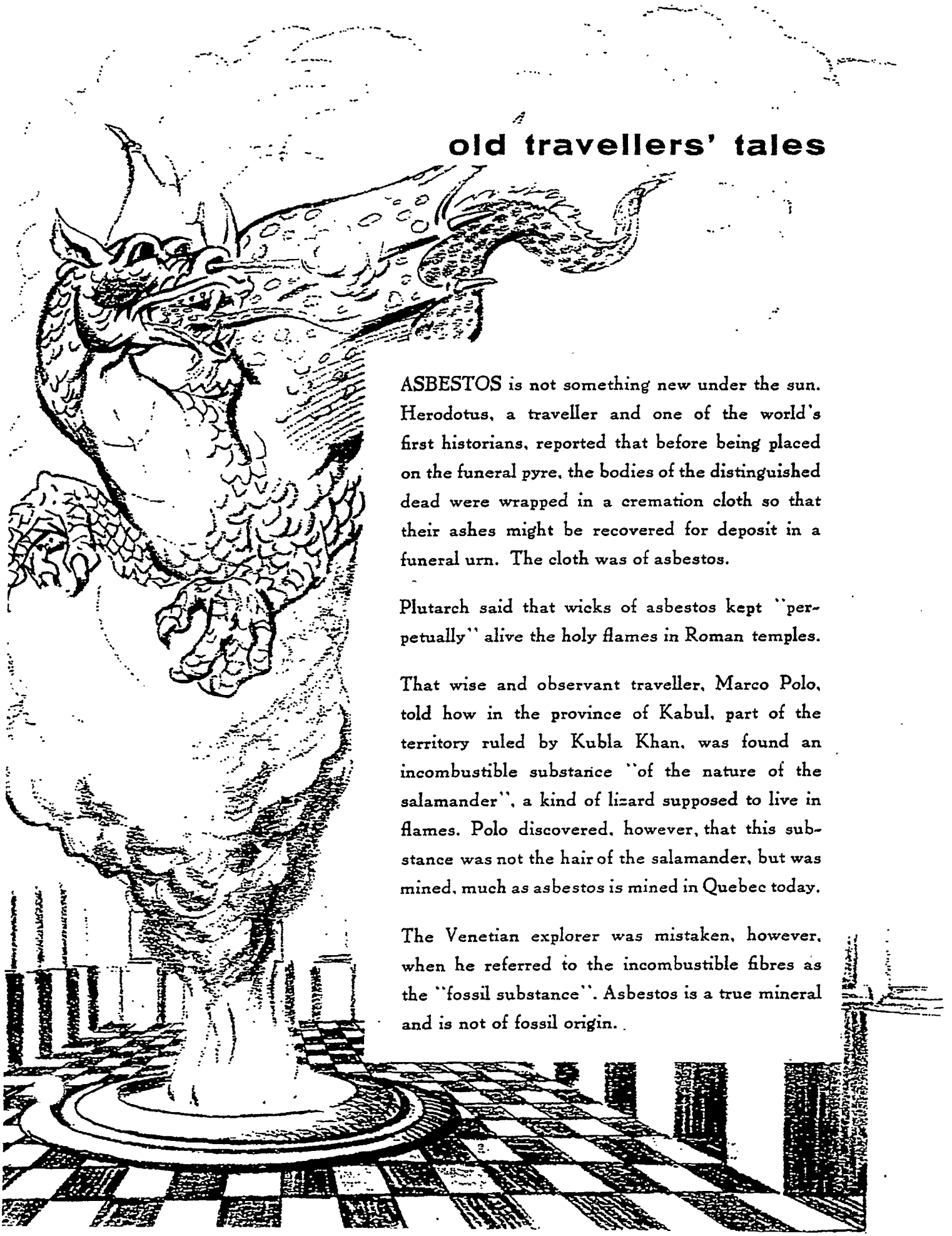
From this odd textile are made suits to protect fire fighters from the fury of a burning oil well . . . The fibres can be compressed with paper and pitch and be made into roofing . . . Sometimes they are used for brake linings or theatre curtains, to insulate a pipeline or to cover a floor . . . They interest industry, and consumers, because they resist flames, acids and alkalis, weather and the wear and heat caused by friction.

These fine, silky fibres you can draw from the piece of rock in the envelope are asbestos in a form seldom if ever seen by the public. More of them are mined in the Province of Quebec than in all other parts of the world combined.



In this rectangle, 50 miles long by 15 miles wide, is produced almost 65 per cent of the free world's asbestos. Here from 12 mines, eight major mining companies produce some 1,000,000 short tons of asbestos a year. Of this total, five per cent is used in Canada. The rest is exported around the world, to earn some of the money with which Canadians pay for the goods they import. In 1956, asbestos exports brought to Canada approximately $95,000,000, over $52,000,000 of it from the United States.

old travellers' tales



ASBESTOS is not something new under the sun. Herodotus, a traveller and one of the world's first historians, reported that before being placed on the funeral pyre, the bodies of the distinguished dead were wrapped in a cremation cloth so that their ashes might be recovered for deposit in a funeral urn. The cloth was of asbestos.

Plutarch said that wicks of asbestos kept "perpetually" alive the holy flames in Roman temples.

That wise and observant traveller, Marco Polo, told how in the province of Kabul, part of the territory ruled by Kubla Khan, was found an incombustible substance "of the nature of the salamander", a kind of lizard supposed to live in flames. Polo discovered, however, that this substance was not the hair of the salamander, but was mined, much as asbestos is mined in Quebec today.

The Venetian explorer was mistaken, however, when he referred to the incombustible fibres as the "fossil substance". Asbestos is a true mineral and is not of fossil origin.



...ing silk like flax.

"This, after being exposed to the sun to dry, is pounded in a brass mortar, and is then washed until all the earthly particles are separated. The fibres thus cleansed and detached from each other, they then spin into thread and weave into cloth. In order to render the texture white, they put it into the fire, and suffer it to remain there about an hour, when they draw it out uninjured by the flame and become white as snow. And so again whenever they become dirty they are bleached by being put in the fire.

"It is said that they preserve at Rome a napkin woven from this material, sent as a gift from the Great Khan to the Pope to make a wrapper for the Holy Sudarium of Jesus Christ."

Marco Polo, 1254-1324

the miracle of heat, pressure and time

ASBESTOS is entirely mineral.

Geologists say it is transformed rock, twisted and squeezed by prehistoric volcanoes. Heat and pressure and superheated steam and millions of years of time crystallized the rock and left it lying in serpentine veins. Asbestos deposits are found in Italy, Cyprus, Rhodesia, South Africa, Australia, New Zealand, Bolivia, Peru, Finland, Russia, Czechoslovakia, the United States, and many other countries.

Canada, however, is the main producer and almost 65 per cent of the world supply is mined in the Province of Quebec, though there are also asbestos mines in Ontario and British Columbia.



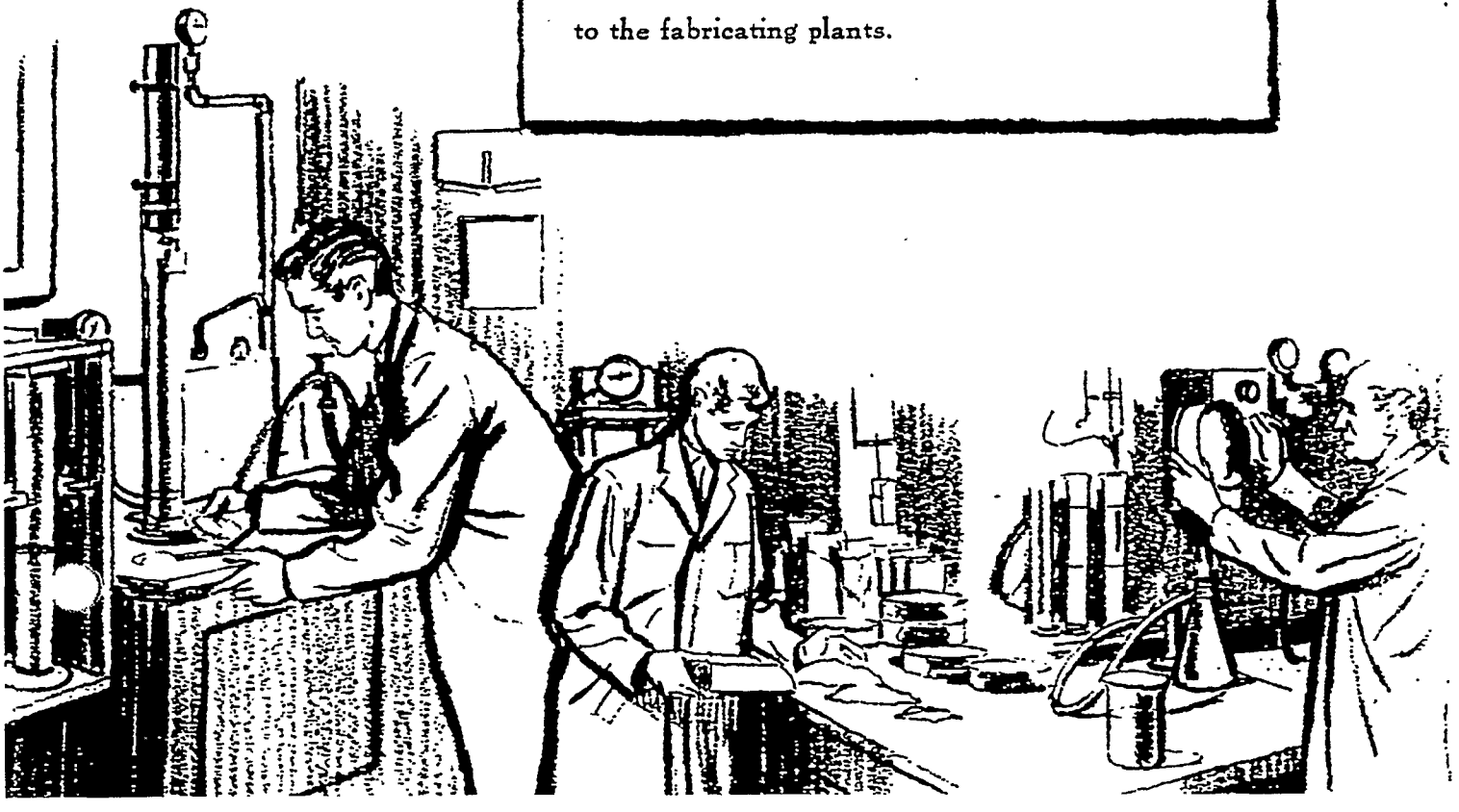
$3MgO, 2SiO_2, 2H_2O$

This is the magic formula which created chrysotile, a hydrated magnesium silicate.

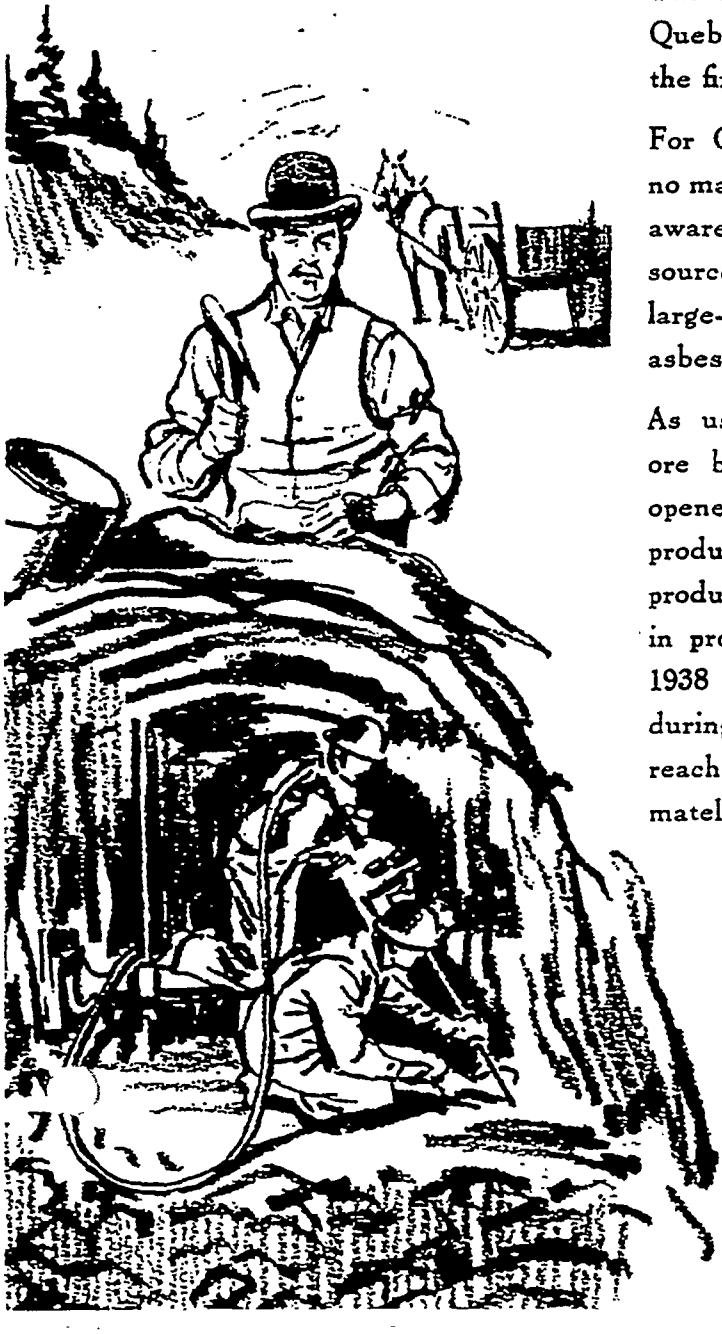
Specific Gravity
From 2.25 to 2.59

Although seemingly delicate, the fibres are so tough that even when exposed to ordinary acids, they maintain their strength.

Note: Asbestos is not, as some people suppose, grown from seed. Nor is it, as one visitor to the asbestos country had always believed, "made" in a factory. Mined, like gold or iron, it goes not to a smelter but to a mill. There it is crushed, screened, graded and bagged, ready for shipment to the fabricating plants.



an old mineral – a young industry



Asbestos has been in the rocks of Quebec's Eastern Townships for hundreds of thousands of years. It has been mined there for less than a century.

The first asbestos to be commercially mined in Quebec was shipped in 1876. Total production for the first year was 50 tons.

For Quebec's first asbestos there was literally no market. Only when industry as a whole became aware that here in Canada was a dependable source of the magic mineral did it begin to develop large-scale industrial uses for it. Until then, asbestos was considered a freak of nature.

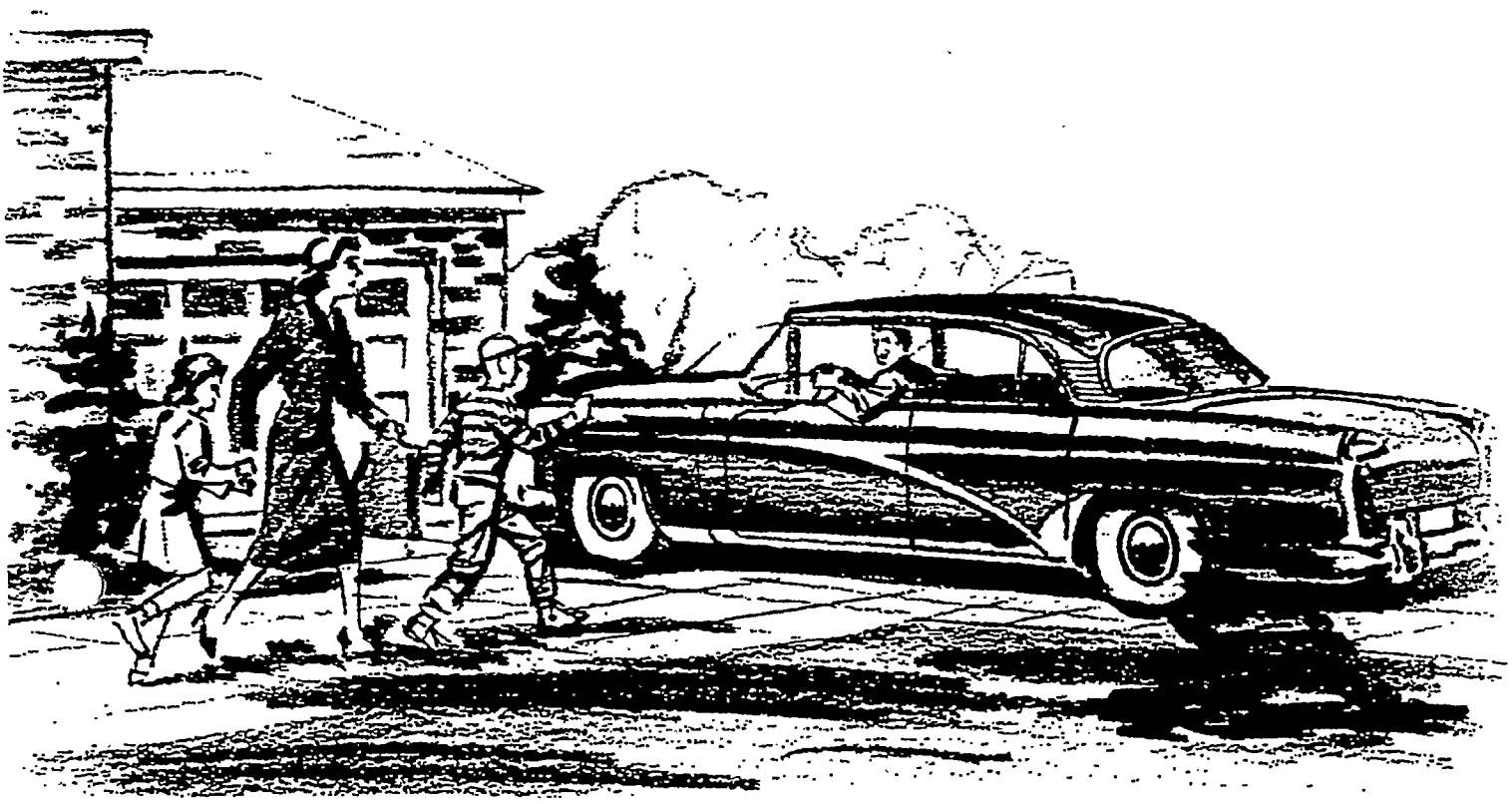
As uses increased, exploration increased. New ore bodies were discovered. New mines were opened. By 1911, Quebec asbestos mines were producing 100,000 tons a year; in 1929, annual production reached 300,000 tons. Following a drop in production during the depression, tonnage in 1938 rose to 400,000. This figure was maintained during the war. In 1948, the 900,000 figure was reached and production has continued at approximately that level ever since.

Quebec's best-paid worker

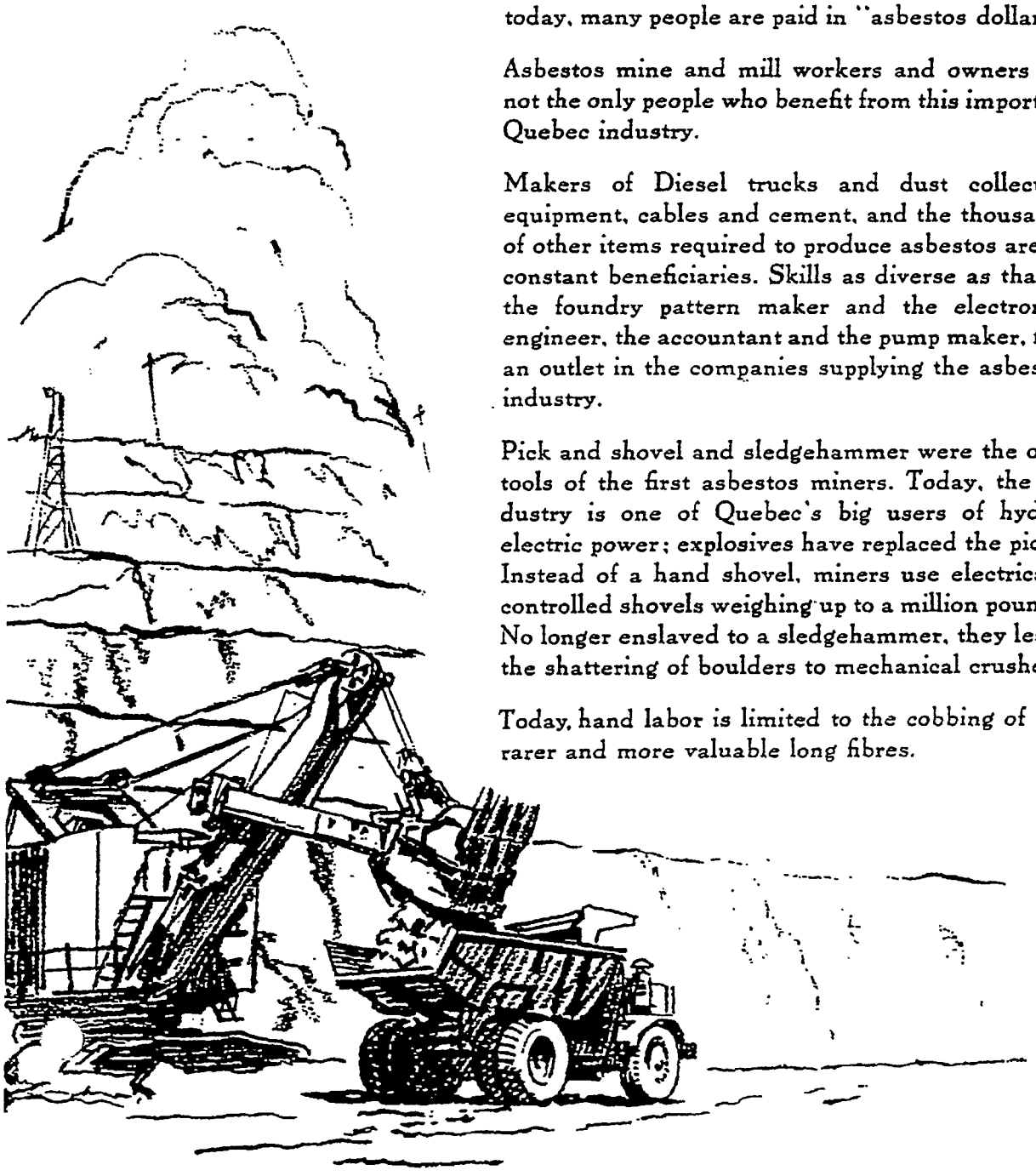
In the 1890's a Quebec asbestos miner spent his days in an open pit, carefully gathering chunks of asbestos bearing rock by hand. For his labor, he was paid $1.50 a day.

Today, the asbestos miner and mill worker who form a modern industrial team to prepare asbestos fibres for market, work in open pits and underground mines and in modern mills. Aided by explosives, pneumatic drills, and by mechanized equipment of great variety, they earn an average of $1.93 an hour.

Quebec's asbestos worker is the highest paid hourly wage-worker in Quebec.



many pay cheques begin with asbestos



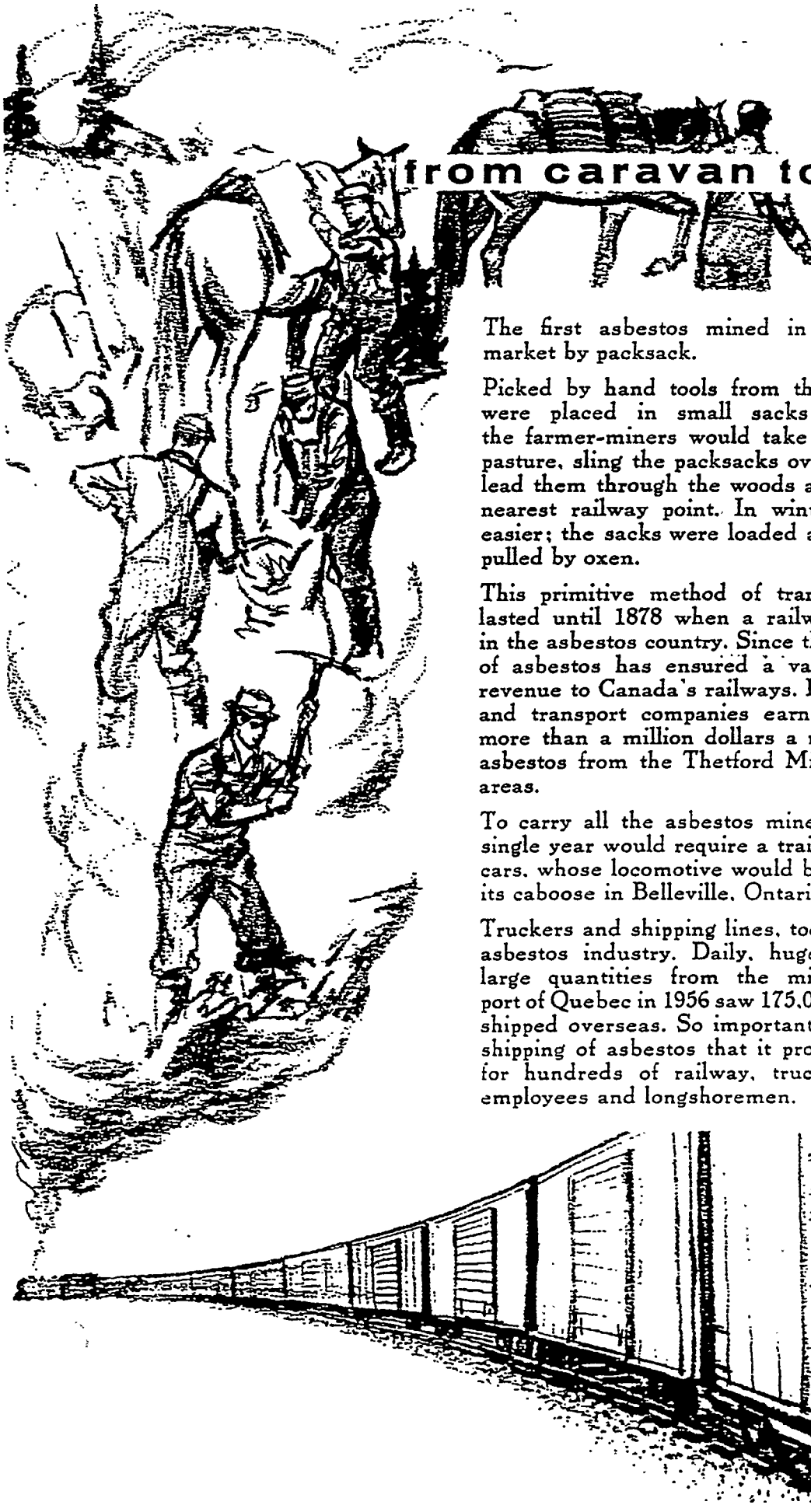
An Italian scientist once suggested that currency be printed on asbestos, so that it would not burn. His suggestion was never adopted, but in Canada today, many people are paid in "asbestos dollars".

Asbestos mine and mill workers and owners are not the only people who benefit from this important Quebec industry.

Makers of Diesel trucks and dust collecting equipment, cables and cement, and the thousands of other items required to produce asbestos are its constant beneficiaries. Skills as diverse as that of the foundry pattern maker and the electronics engineer, the accountant and the pump maker, find an outlet in the companies supplying the asbestos industry.

Pick and shovel and sledgehammer were the only tools of the first asbestos miners. Today, the industry is one of Quebec's big users of hydro-electric power; explosives have replaced the picks. Instead of a hand shovel, miners use electrically controlled shovels weighing up to a million pounds. No longer enslaved to a sledgehammer, they leave the shattering of boulders to mechanical crushers.

Today, hand labor is limited to the cobbing of the rarer and more valuable long fibres.



from caravan to diesel

The first asbestos mined in Quebec went to market by packsack.

Picked by hand tools from the rock, the fibres were placed in small sacks and periodically the farmer-miners would take their horses from pasture, sling the packsacks over their backs and lead them through the woods and swamps to the nearest railway point. In winter, transport was easier; the sacks were loaded aboard sleighs and pulled by oxen.

This primitive method of transporting asbestos lasted until 1878 when a railway line was built in the asbestos country. Since then, the freighting of asbestos has ensured a vast and continuing revenue to Canada's railways. Last year, railways and transport companies earned an average of more than a million dollars a month by carrying asbestos from the Thetford Mines and Asbestos areas.

To carry all the asbestos mined in Quebec in a single year would require a train of almost 30,000 cars, whose locomotive would be in Montreal and its caboose in Belleville, Ontario.

Truckers and shipping lines, too, benefit from the asbestos industry. Daily, huge transports carry large quantities from the mining centre. The port of Quebec in 1956 saw 175,000 tons of asbestos shipped overseas. So important a business is the shipping of asbestos that it provides employment for hundreds of railway, truck, and steamship employees and longshoremen.

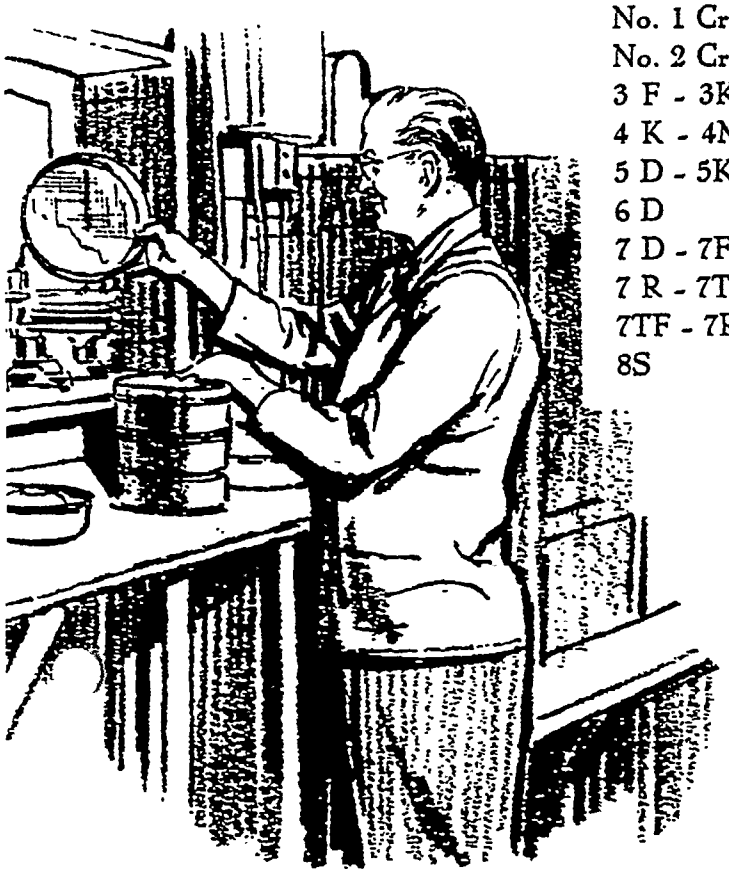
the "Quebec Standard"

To the consumer, all asbestos may look the same. To the fabricator and miner, however, there is a great difference in fibres.

As the world's main producer of asbestos fibres, the Quebec mining industry has also given to the world a rigid quality standard. All asbestos fibres produced in Quebec are graded according to lengths and the grading is conducted under the supervision of the Quebec Department of Mines.

This grading system is known the world over as the Quebec Standard, a symbol of integrity as important to Canada as, for instance, the grade of Manitoba Number One Hard for wheat.

These are the standard grades:



No. 1 Crude	
No. 2 Crude	
3 F - 3K - 3R - 3T - 3Z	- spinning fibres
4 K - 4M - 4T - 4X - 4Z	- shingle grades
5 D - 5K - 5M - 5R	- paper
6 D	- waste
7 D - 7F - 7H - 7K - 7M	
7 R - 7T	- shorts
7TF - 7RF	- floats
8S	- sand and gravel

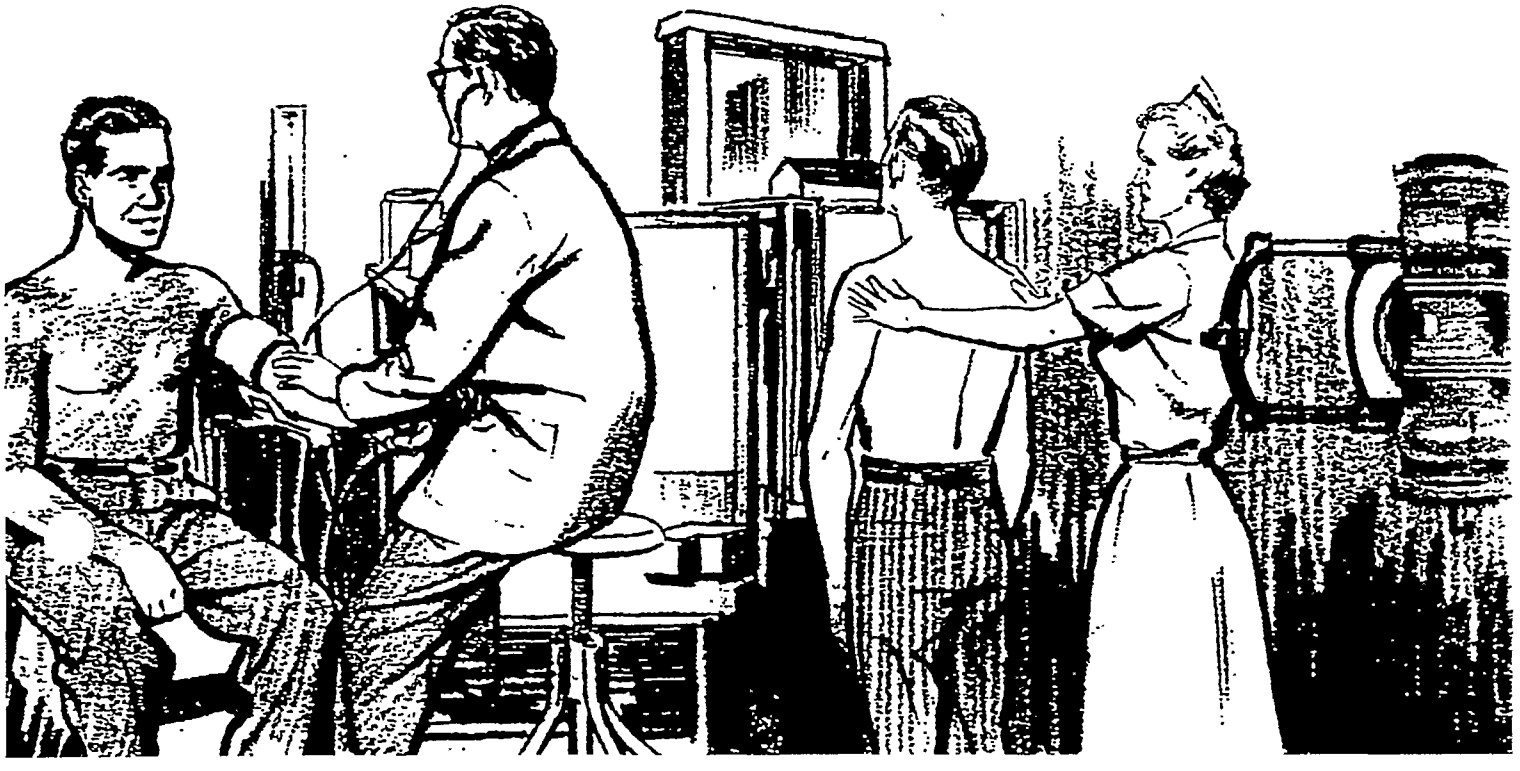
asbestos miners are healthy

The Quebec asbestos mining industry was one of the first to provide medical aid to its workers. One company began to employ industrial doctors to serve its employees more than 60 years ago and today there are well staffed and well equipped clinics and hospitals operated by the industry in Asbestos and Thetford Mines.

In the asbestos mines and mills are many men hale and hearty after more than half-a-century of working at their trade. Many of them have sons and grandsons in the industry.

X-ray, physiotherapy and cardiographic apparatus are operated as standard equipment in the industry clinics. The health of asbestos workers is good. Regular medical examination and constant care and counsel encourage workers to take care of their health.

In common with other mining industries, asbestos mining and milling have been regarded as a dusty industry. A problem peculiar to the industry is the prevention of asbestosis, an uncommon ailment that used to occur infrequently from the breathing in of minute fragments of asbestos fibre. Through extensive engineering efforts, highly effective methods of dust control have been introduced.



putting wealth into a mine



In trying to picture the wealth of a mine, many are inclined to think of its value as being all underground.

While it is true that its ore is a mine's greatest single asset, the capital investment needed to produce the ore is tremendous.

Putting a mine into production can take years and cost many millions of dollars before a single pound of ore is mined.

Although any kind of mining requires capital for the purpose of equipment, asbestos mining puts its owners to some expenses that are probably unique in the mining industry. For instance, wooden cribwork, or any kind of wood, cannot be used in an asbestos mine lest its splinters adulterate the asbestos fibres. Accordingly, the mines use immense quantities of metal and cement.

Already one of the world's most highly mechanized industries, Quebec asbestos mining is constantly investing more money in even better machinery. During the period from 1952 to 1957, Quebec's eight major producers have invested more than $75,000,000 in mines and mills. This does not take into account the many millions of dollars already invested over three-quarters of a century.

where Quebec's asbestos producers live

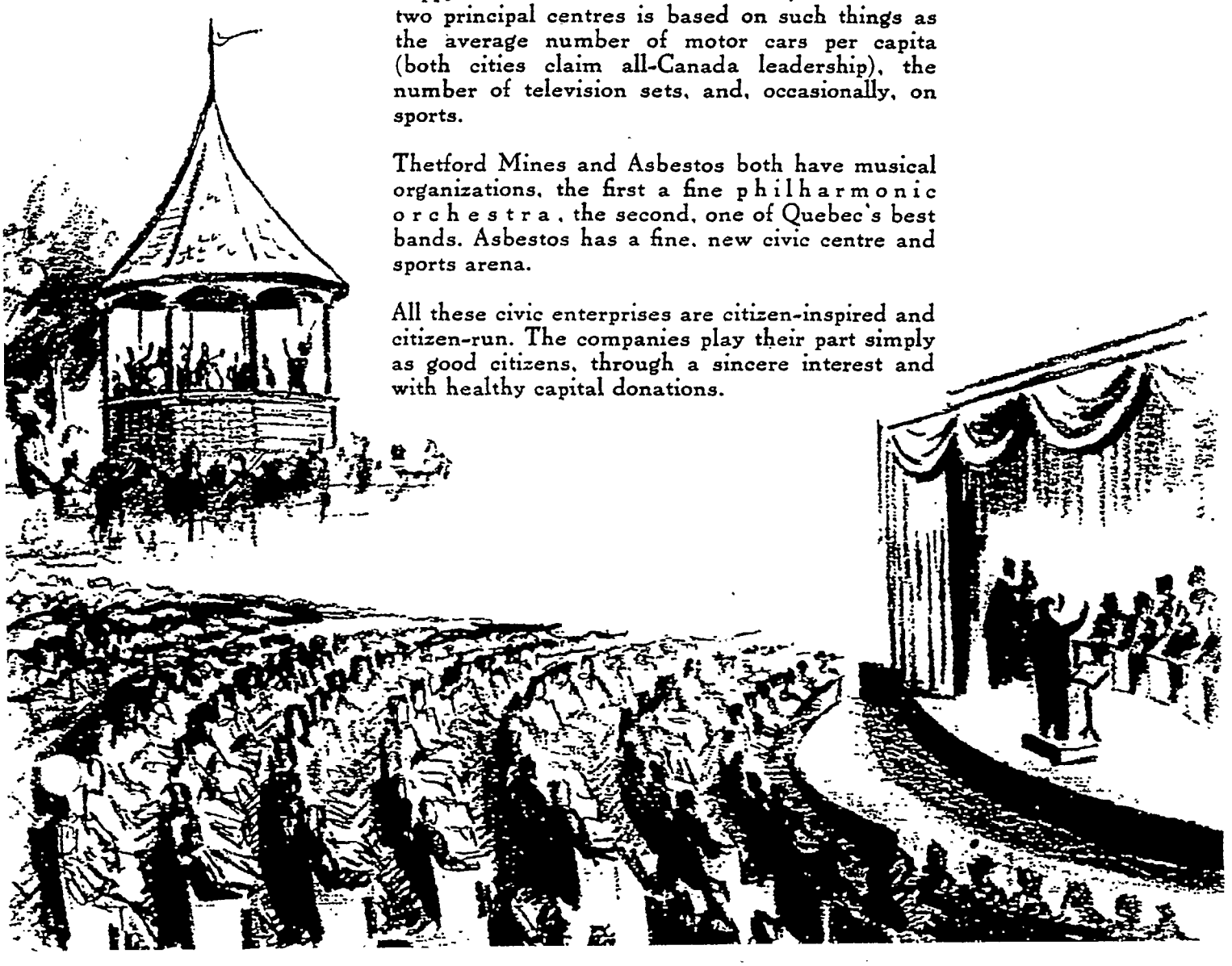
In Quebec's asbestos region there is no such thing as a "company town".

The principal mining communities are Asbestos, with a population of 10,500 and Thetford Mines, with a population of 20,000. Mines are also operated in Black Lake, East Broughton and Norbestos.

Miners and mill workers number approximately 7,000. Well paid, in good health, they live in happy, well-run communities. Rivalry between the two principal centres is based on such things as the average number of motor cars per capita (both cities claim all-Canada leadership), the number of television sets, and, occasionally, on sports.

Thetford Mines and Asbestos both have musical organizations, the first a fine philharmonic orchestra, the second, one of Quebec's best bands. Asbestos has a fine, new civic centre and sports arena.

All these civic enterprises are citizen-inspired and citizen-run. The companies play their part simply as good citizens, through a sincere interest and with healthy capital donations.



one of the world's safest industries

Many people think of mining as hazardous.

It can be, if not done properly. But care and capital can make it safe.

The asbestos industry has taken the care and provided the capital. Safety programs, protective devices, many of them costly, and the co-operation of owners and workers have resulted in this industry being classified in Quebec as a "light industry".

Mill and mine posters tell of millions of hours of accident-free labor.

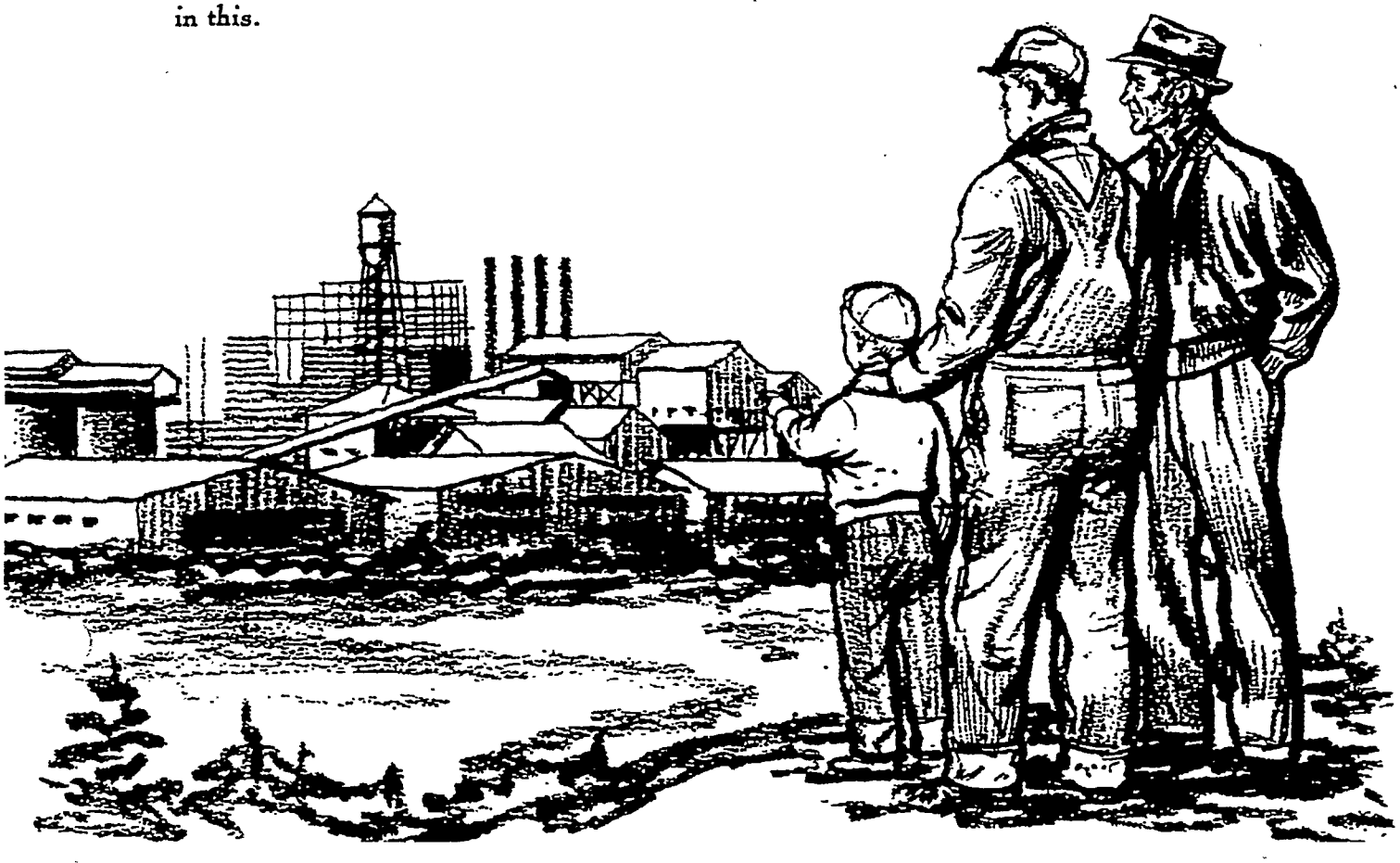


asbestos mining in the 21st century

Asbestos mining in Quebec has a longer future than it has a past.
Not yet 100 years old, it will still be here more than half-way through the twenty-first century. Expenditures being made by the industry now ensure that future.

Investors whose money is being used to provide this future for the asbestos industry and its workers are making possible the opening of new pits, the development of new and larger underground mines, and the erection of new mills where industrial processes are improved, resulting in more efficient production and better working conditions.

Great-grandsons, and great-great-grandsons of the men employed in the mines today will be asbestos miners a century from now. And from the earnings of these generations of miners, dentists and decorators, teachers and editors, a multitude of people in many industries will benefit in the next century as they are doing in this.



asbestos – a national asset

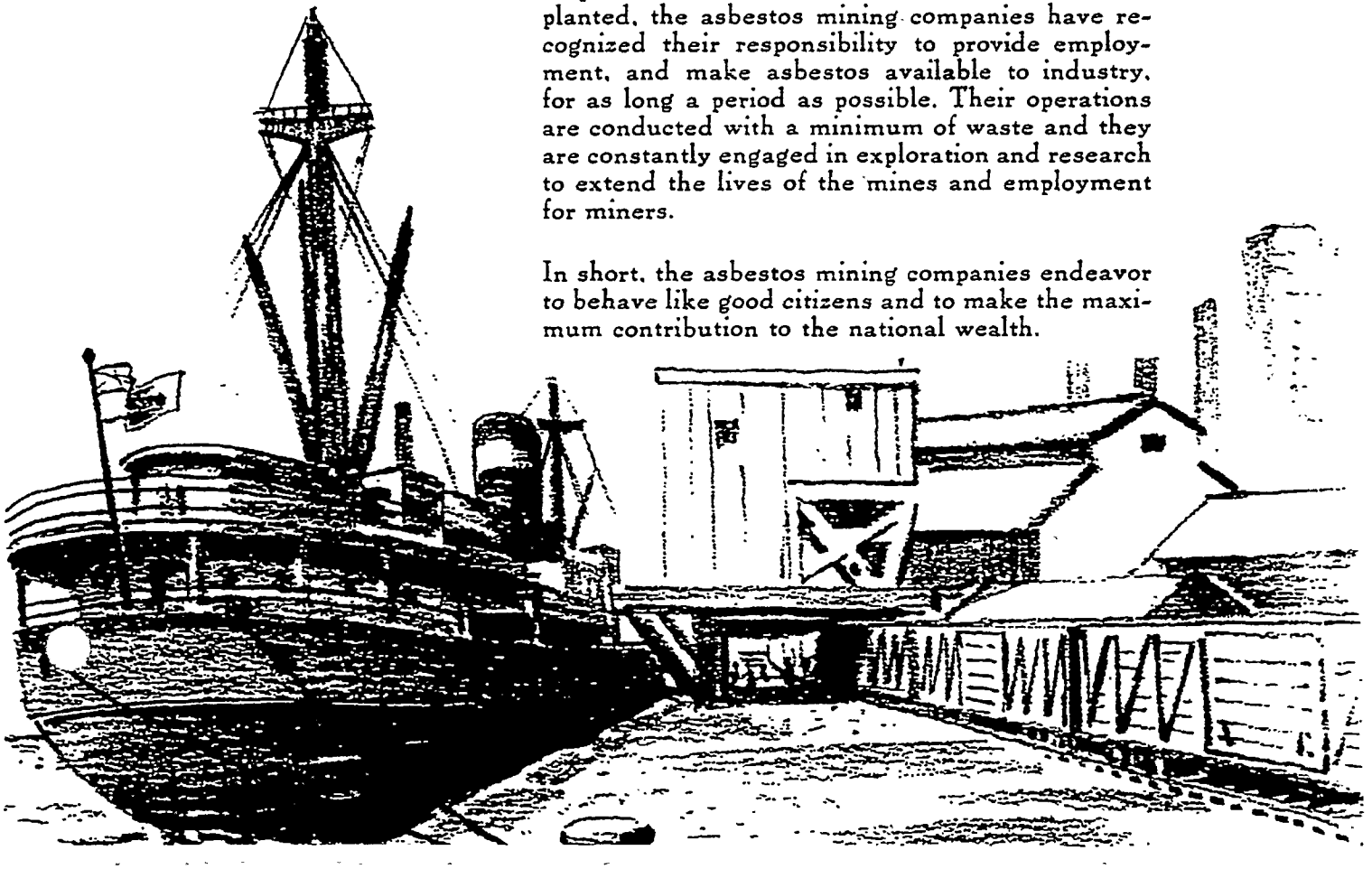
Quebec's asbestos mines are assets of national as well as provincial importance. Each year, they provide direct employment for more than 7,000 workers and indirect employment for many thousands more.

Each year, they bring more than $100,000,000 in foreign currencies into Canada to help this country pay for essential imports from other lands.

Operated by eight major companies and using money invested by Canadian, British and United States investors, Quebec's asbestos deposits are efficiently mined. Miners and mill workers are the highest paid hourly wage-workers in the province and the companies are generous and active participants in community affairs.

Although the commodity they deal with is not a crop which may be harvested each year and replanted, the asbestos mining companies have recognized their responsibility to provide employment, and make asbestos available to industry, for as long a period as possible. Their operations are conducted with a minimum of waste and they are constantly engaged in exploration and research to extend the lives of the mines and employment for miners.

In short, the asbestos mining companies endeavor to behave like good citizens and to make the maximum contribution to the national wealth.



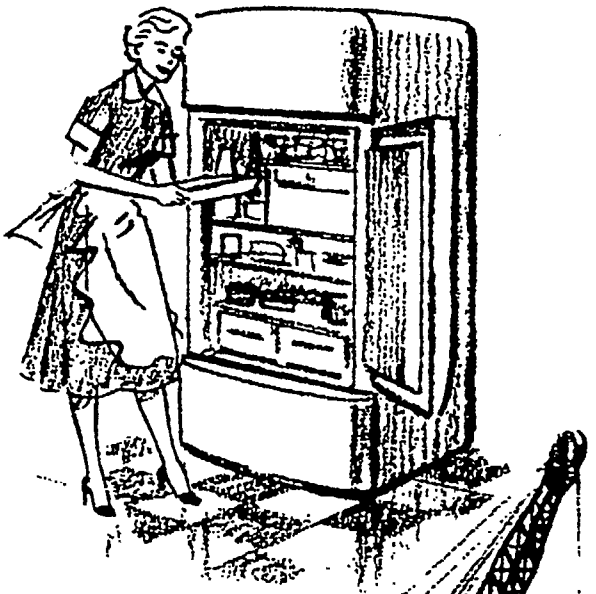
a mineral of 3,000 uses

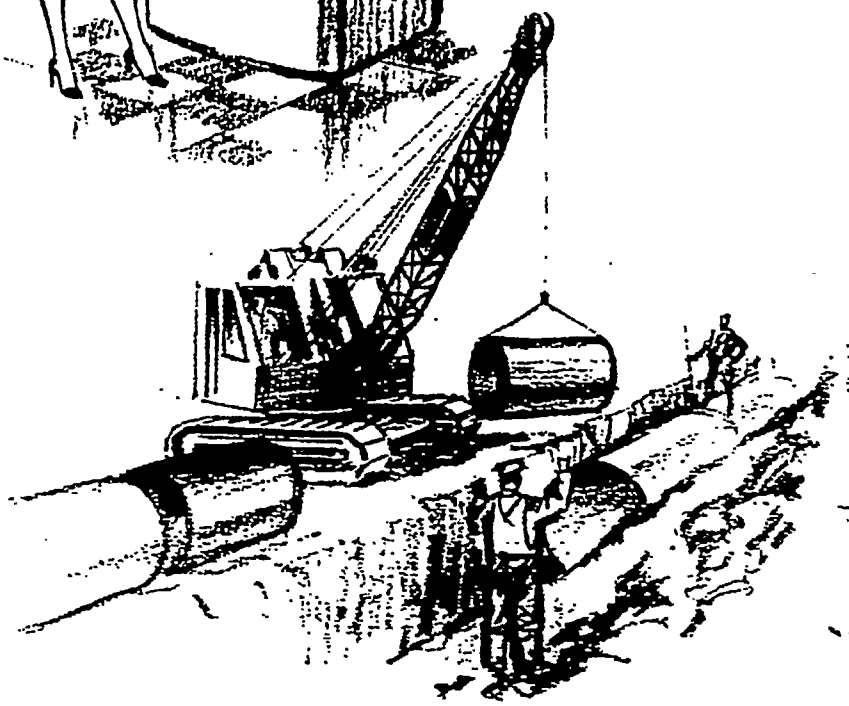
Most people, in one way or another, use asbestos, or products and services produced with the aid of asbestos, every day of their lives.

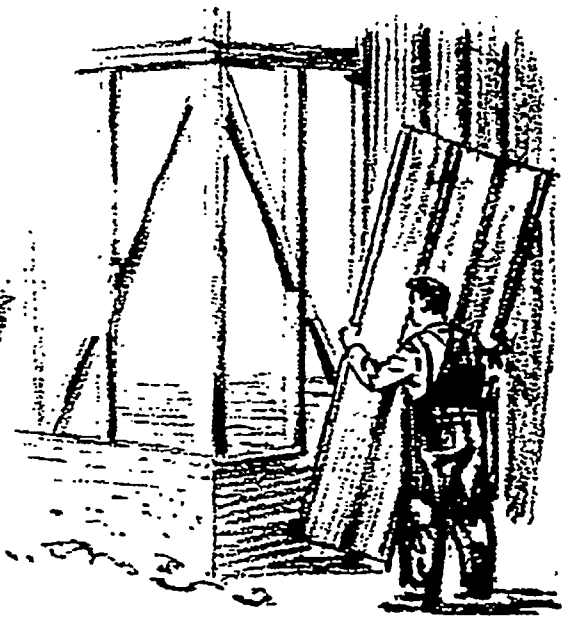
Asbestos is adapted to more than 3,000 uses and it is likely that even more will be found for it in the future.

A few of the manufactured asbestos products in current use in industry are: yarns, threads, cord, wicks, tapes, cloths, packings, rovings, tubing, webbing, clothing, jointing, textiles, theater curtains, brake linings, clutch facings, clutch linings, boiler, pipe and tube coverings, gaskets, dryer felts, shingles, millboard, roofing, floor tiles, filters, cement, paints, and acoustic insulation.

Asbestos is also used extensively in making fire blankets, oven and dryer felts, ironer rollers, electrolytic cells, filter cloths, clothing, and flameproof draperies. It is used in high and low pressure insulation and in refrigeration and is one of the most widely used materials in the building industry.







the strangest mineral ever known

Was written and produced by the Quebec Asbestos Information Service, Suite 220, Shell Tower Building, Montreal, where up-to-date information about Quebec's asbestos mines may be obtained at any time.

Text by Ralph Marven; illustrations by Edward Small; the type faces are Venus Bold 18 point; and Pabst 12 point.

ASBESTOS CORPORATION LTD.,
THETFORD MINES, QUE.

BELL ASBESTOS MINES LTD.,
THETFORD MINES, QUE.

CANADIAN JOHNS-MANVILLE COMPANY,
ASBESTOS, QUE.

FLINTKOTE COMPANY OF CANADA LTD.,
THETFORD MINES, QUE.

JOHNSON'S COMPANY LTD.,
THETFORD MINES, QUE.

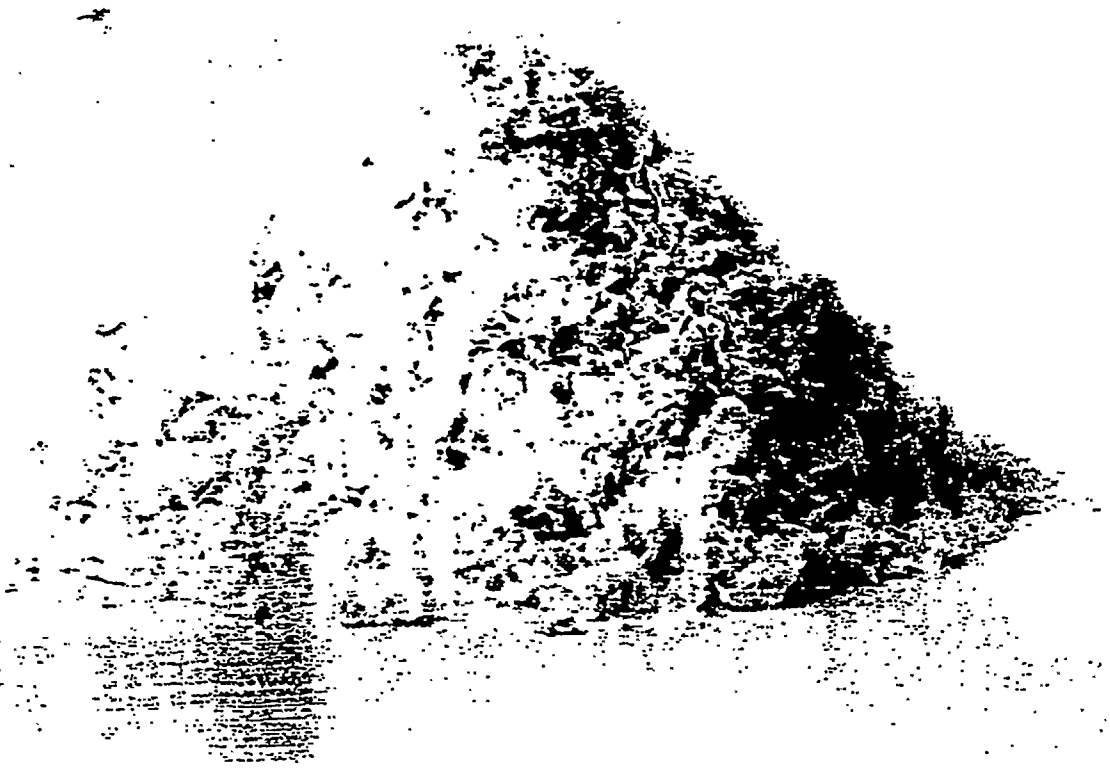
NATIONAL ASBESTOS MINES, LTD.,
THETFORD MINES, QUE.

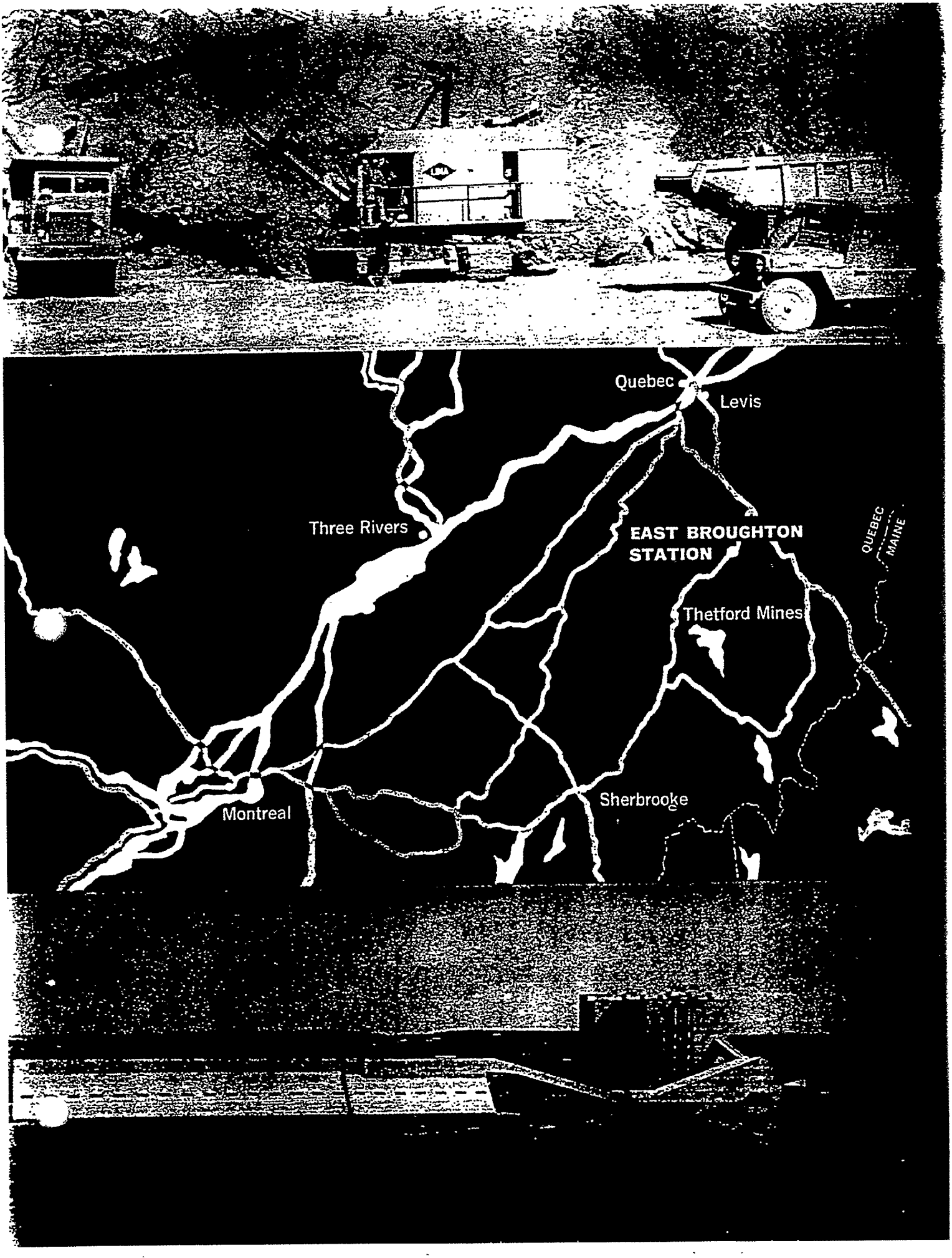
NICOLET ASBESTOS MINES LTD.,
NORBESTOS, QUE.

QUEBEC ASBESTOS CORPORATION,
EAST BROUGHTON, QUE.

R.P. STEVENS
(1960)

Carey-Canadian Asbestos




Quebec
Levis
Three Rivers
EAST BROUGHTON
STATION
QUEBEC
MAINE
Thetford Mines
Montreal
Sherbrooke



Self-Propelled Pneumatic Drill

fibre of many uses

Canadian Chrysotile Asbestos

Asbestos! One of the most fascinating developments of Nature, it serves man through its unique combination of properties. Found in serpentine rock, Chrysotile Asbestos is a fibrous mineral which can be made into such products as textiles and papers, and, at the same time, maintain the qualities of an indestructible mineral.

Many varieties of asbestos, found throughout the world, have commercial value. But of these, one—Chrysotile Asbestos—is so superior that it accounts for ninety percent of the world's industrial consumption. Of the world's total requirements for Chrysotile Asbestos, about sixty-five percent is produced in Canada. Soft, white, silky and yet as strong as steel, Chrysotile inorganic fibres serves mankind in many ways. Canadian Chrysotile Asbestos has increased the world's standard of living in traditional fire and heat resistant products and in numerous exciting new developments in this Age of Science.

CAREY-CANADIAN MINES, LTD.

Nowhere did Nature produce a finer Chrysotile Asbestos than in one small rectangle in the eastern section of Quebec. The deposits are located in the Serpentine Belt running northeasterly through the Eastern Townships of the Province. To this small rectangle, The Philip Carey Manufacturing Company came in 1918, acquiring an interest in two operating companies at East Broughton Station. In 1924, Carey took over complete control of the two properties and formed the Quebec Asbestos Corporation, Ltd., as a Canadian subsidiary. For thirty-four years Carey mined, milled and supplied high quality Chrysotile Asbestos from its Quebec Asbestos Corporation property.

In 1948 it became apparent that ore reserves were becoming exhausted and company geologists began a search for new deposits. A magnetic survey in 1949 indicated the possibility of an exciting discovery, a large anomaly four miles northeast of East Broughton Station on the northeast end of the Pennington Serpentine Dike. After extensive title searches, options were obtained and, later, drilling and sampling were started.

It soon became evident that not one but several large ore bodies had been discovered. The overburden of clay and gravel was removed from one of these ore bodies and a modern asbestos mill was erected on the property. The new mill went into operation on September 1, 1958, under the newly organized subsidiary, Carey-Canadian Mines, Limited.

CAREY-CANADIAN MINING OPERATION

Highest quality Carey-Canadian asbestos ore is mined by the efficient open pit method. A track-mounted, self-propelled pneumatic drill bores 4" holes for blasting. After blasting, power shovels load the ore into diesel trucks which haul the ore a short distance to the mill.

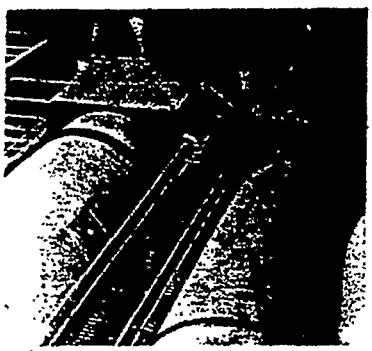
1. Unloading ore at primary crusher building



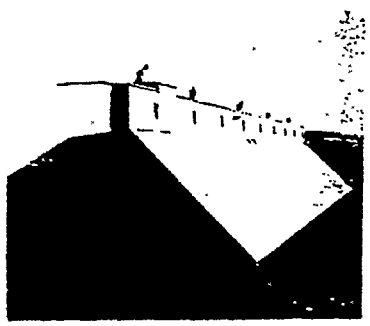
2. Secondary and tertiary crushers



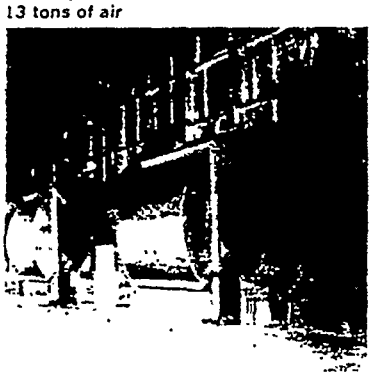
3. Oil-fired rotary dryers



4. 24,000-ton ore storage bin. Push buttons control feed to mill



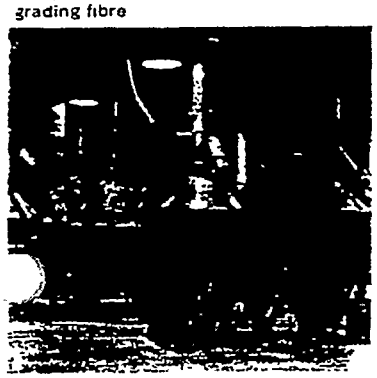
5. Every ton of ore processed requires 13 tons of air



6. Cyclones collect fibres from the air stream



7. Gyrating screens for cleaning and grading fibre



8. Specific gravity separators remove unwanted grit



Quality Control

To assure asbestos of the highest quality and uniformity, two laboratories operate continuously in Carey-Canadian's asbestos mill. The Production Control Laboratory runs quick tests at frequent intervals to check uniformity and grading. Samples are obtained by pushing buttons. The buttons actuate solenoid valves in the finished fibre flow lines, and the samples drop through piping into small bins installed in the wall of the laboratory.

The Shipping Test Laboratory performs specific tests for individual customers to check the fibre before shipment. Samples are taken from every tenth bag throughout each lot and composited for testing.

MILLED GRADES OF CANADIAN CHRYSOTILE ASBESTOS

Standard Canadian Chrysotile Asbestos Grades were set up by the Committee on Uniform Classification and Grading of Asbestos Mines Products, by authority of the Minister of Mines of the Province of Quebec.

Classification of milled asbestos grades is based on the Quebec Standard Testing Machine. This machine separates and classifies into its component fibre lengths a one pound sample of asbestos fibre on ½", 4 and 10 mesh screens and pan by shaking action. The screens are shaken exactly 600 times at a speed of 328 R.P.M. The weight, in ounces of fibre, retained on each screen and in the pan determines the grade. For example, Grade 5R tests 0-0-10-6. ½" mesh screen—0 oz. 4 mesh screen—0 oz. 10 mesh screen—10 oz. Pan—6 oz.

Canadian Chrysotile Asbestos Classification

Uses of Asbestos with Corresponding Recommended Camey Grades

Growing Importance of Asbestos Short Grades

The use of Canadian Chrysotile Asbestos Shorts has grown tremendously until today, use of the 7-group fibres exceeds the usage in tons of all other grades combined. Shorts are used in liquids, semi-solids, and solid compositions where strong, flexible, inorganic fibres are needed to form interlocked reinforcing webs which add durability and toughness for resistance to heat, wear, breakage and abrasion. Carey-Canadian is a large producer of uniform grades of asbestos shorts.

COMPOSITION OF CHRYSOTILE ASBESTOS

Chrysotile asbestos is a hydrous magnesium silicate represented by the chemical formula $3Mg\ 0,\ 2Si\ 0_2,\ 2H_20$. The fibre is finer than cotton, but, at the same time, the fibre is tough, flexible, infusible and resists time, fire, weather and many acids and alkalies. The fibre is as dense or heavy as the rock in which it occurs, yet these fibres when milled are light as thistledown.

Chrysotile asbestos was formed millions of years ago when a combination of high pressures, hot liquids and gases acting at great depths dissolved the serpentine. Later the mass cooled and the liquified material recrystallized in the form of fibrous asbestos in cracks and seams in the serpentine. The percentage of fibre to rock in the ore is relatively low. Therefore, tremendous quantities of ore must be treated to produce finished fibre.



Research laboratories at the mine and in Cincinnati are ready to assist you with asbestos problems.

Physical Properties of Carey-Canadian Asbestos Fibres

Carey-Canadian Chrysotile Asbestos is noted for very light color, uniformity of grading, relatively low iron content and freeness from rock particles and large fibre bundles.

Other physical properties are: Specific gravity—2.2 to 2.3. Hardness—3.5 on Moh's scale. ph value—9.4.

Carey-Canadian Research

Two complete research laboratories, one at East Broughton and one at Cincinnati, Ohio, constantly probe for better methods, to produce, test and use asbestos. Carey's extensive experience with asbestos and asbestos products is at your service to help solve problems relating to grade selection, blending and application of asbestos.

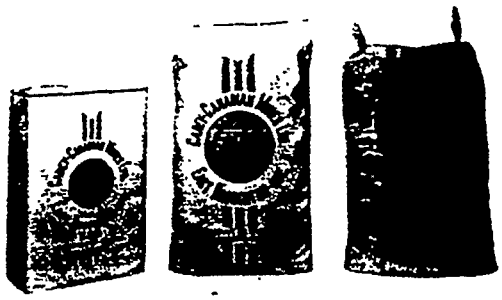
Packaging and Shipping

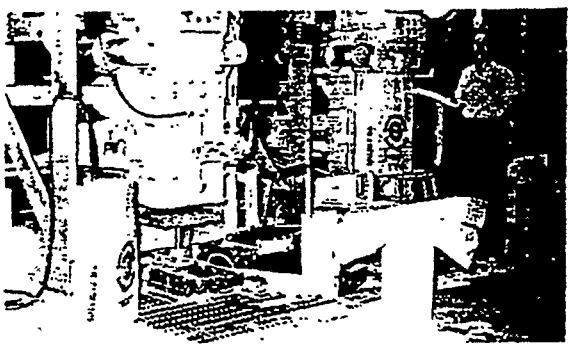
The following 100 lb. bags are available for particular grades as shown below:

Type of Bags	*Grades Available*
Loose filled jute	All grades
Pressure-packed jute	All grades except 3 group and floats
Pressure-packed 4 ply paper (Pressure-packed 5 ply paper for overseas shipments only.)	All grades except 3 group, floats and 7M-90.
Loose filled 4 ply paper (Loose filled 5 ply paper for overseas shipments only.)	Short grades only except 7D grades.

Asbestos short grades may be packaged in 50 lb. loose filled paper bags at an additional cost.

When packages other than standard bags listed above are required, quotations will be furnished on request.







Palletized with interlocked stacks for stability or unitized with bags glued together to prevent shifting.

PRESSURE-PACKED BAGS

This new type bag has many advantages: a. Suitable for palletizing for lower handling costs. b. Smaller, squared off package takes up less storage space and is easily stacked. c. Lower ocean rates on export shipments.

The 3 ply kraft paper pressure-packed bag has these additional advantages: a. Not only can this bag be palletized, but it can be unitized to allow mechanical handling. b. Paper is cleaner, and keeps fibre dryer. c. No contamination from loose jute fibres, bag ravelings and twine. d. Easier grade identification. e. Faster bag opening.

Palletized and Unitized Shipments

All pressure-packed bags can be palletized by interlocking during stocking to make a stable pallet load. Pressure-packed paper bags can be palletized and unitized on expendable fibreboard pallets at point of shipment to allow mechanical unloading at destination. Mechanical unloading with fork-lift trucks can effect big savings over manual labor.

Overseas Export Shipments

Overseas export shipments are made through the Port of Quebec. Freight rates are higher during the winter months than for the other months of the year. Information on inland and ocean freight rates, surcharges, insurance, etc., is available from the Sales Department upon request.

Service

Excellent facilities and trained personnel at Carey-Canadian Mines, Ltd., assure you of high quality asbestos and prompt service. A staff of qualified Sales Engineers is at your service for information and assistance. Strategically located Carey-Canadian Distributors stock popular grades for prompt service..

For further information please write Carey-Canadian Mines, Ltd., at either address: East Broughton Station, Province of Quebec, Canada or P. O. Box 95, Cincinnati 15, Ohio

LITHO IN U.S.A.

BRIKSET

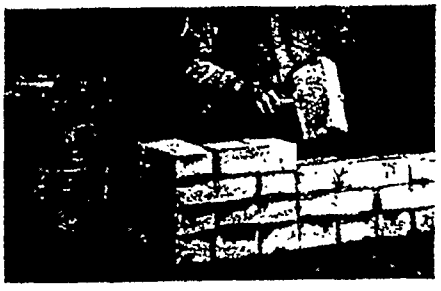
CHICAGO FIRE BRICK COMPANY

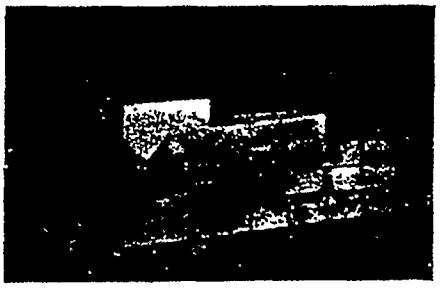


A HIGH TEMPERATURE CEMENT

for Bonding [illegible] all qualities of Fire [illegible] Fire Brick

- EASY WORKING
- COMES READY MIXED
- DOES NOT SETTLE OUT OF SUSPENSION
- VERY SMOOTH IN TEXTURE (WITHOUT SHORTNESS)
- RETAINS MOISTURE
- GIVES EXCELLENT COVERAGE—STOPS AIR LEAKAGE
- FORMS A MONOLITHIC SURFACE





Note its Strength



"Brikset" is an air-setting high temperature cement or mortar of high alumina base, primarily designed for bonding and surfacing both high heat duty and super duty fire brick. The fact that it is recommended for high temperature applications, makes it equally advantageous for use with lower heat duty refractories. "Brikset" provides excellent coverage also permits a thin brick-to-brick joint. It spreads far because of its smoothness and slip . . . 350 lbs. will lay up 1000 standard fire brick. For coating, 100 lbs. will surface an area of 100 sq. ft. with a coating of approximately $\frac{1}{16}$" thickness.

"Brikset" has a very low coefficient of expansion. It actually proves stronger than the brick it bonds. Its high alumina base, together with other carefully selected and prepared ingredients, make its thermal expansion practically nil from a service standpoint. Besides its resistance to thermal shock, it is also resistant to mechanical and abrasive attack. Mullite crystals, already in incipient formation in its base, are rapidly developed under high temperatures, hence the entire structure of the bond or coating is pervaded by a strong, dense interlocking network of mullite needles. It is for that reason that "Brikset" is so resistant to spalling, slag attack, structural strain, erosion or abrasion. In cone tests, coating tests, heat soak tests, as well as in actual service in high temperature furnaces, "Brikset" has proved its high fusion qualities with both high-heat and super-duty brick.

SAVE WITH "BRIKSET"

To preserve and lengthen the life of your refractories—to bond and seal lastingly—to strengthen the masonry and provide a gas tight setting—to lessen spalling, erosion and abrasion—to lower cost of refractory maintenance and increase operating efficiency—"Brikset" is the most logical high temperature cement to use. Available in 50, 100, 200 and 500 lb. steel drums. It keeps indefinitely. Unopened drums remain moist, ready-to-use, for as long as a year or two. When only a portion of a drum is used, preserve balance by a "water seal" and cover drum tight.

REPRESENTED BY

CHICAGO FIRE BRICK COMPANY

[illegible] EASTON AVENUE • CHICAGO [illegible]


KEEP DRY
CHICAGO FIRE BRICK COMPANY
KASTITE
CHICAGO, ILL.
100 LBS. NET WT.


BRIK SET