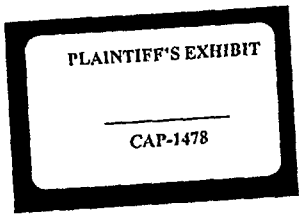

A S B E S T O S B U L L E T I N

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PART 1. ASBESTOS MINING.

CANADA.

236. ASBESTOS. H. M. Woodroofe. Canadian Mining Journal, Feb. 1966, p. 148-9.

In 1965 output from the Canadian industry declined almost 3 percent to 1,380,210 tons. Asbestos Corporation Limited is proceeding with the development of a large asbestos deposit at Asbestos Hill, 40 miles south of Deception Bay in Ungava. It is expected that this property will be brought into production in 1970 with a capacity of 100,000 tons of fibre per annum.

Yukon Territory may soon join the ranks of asbestos producers. Cassiar Asbestos Corporation is preparing the Clinton Creek deposit for operation in 1968. It is located 40 miles northwest of Dawson City and is expected to produce 40,000 tons of fibre per annum. Bell Asbestos Mines Ltd., James Hardie Asbestos Ltd. of Australia and Raybestos Manhattan Inc. are assisting in the financing of the development. Fibre from this deposit has characteristics desired by the asbestos cement industry. Ore reserves are estimated in excess of 12 million tons.

The Munro Mine near Matheson, Ontario, operated for several years by Canadian Johns-Manville Company Ltd. closed down in mid-1964. A new deposit in Reeves township, 40 miles southwest of Timmins is under development. CJM has in hand an underground exploration programme to prove up this interesting deposit. The only production of asbestos recorded in Ontario in 1965 was from Hedman Mines Limited east of Matheson.

Over the past few years there has been considerable interest in the addition of short fibre-asbestos to asphalt road-paving mixtures. It has been reported that such additions reduce cracking of the road surface and lengthen the pavement life. Almost 3,000 tons of asbestos were used in this way.

Recent research has indicated that asbestos has interesting possibilities in the paper industry. A project at the University of Florida has indicated temperature resistant paper can be made from a mixture of asbestos and other inorganic fibres. Union Carbide Corporation has developed a special grade of asbestos from its California operation that is reported to be an effective addition to cellulose sulphite pulp in conventional paper making. Because of its electropositive surface change retention of asbestos in the

paper furnish is higher than with other additives. The high surface area and ability to absorb organic compounds improved the dye absorption and printability of the finished paper.

237 PAPERS TO BE PRESENTED AT THE 68TH A.G.M. OF THE CANADIAN INSTITUTE OF MINING & METALLURGY - CHATEAU FRONTENAC HOTEL, QUEBEC CITY, APRIL 25-27, 1966. The Canadian Mining & Metallurgy Bulletin of March 1966,Montreal,p.273, 274.

Industrial Minerals Division- The Evolution of Open-Pit Drilling and Blasting Practices at the Normandie Mine of Asbestos Corporation Ltd. by J.E.McMenamin - Asbestos Corporation Ltd.

238 A New Approach to Overburden Stripping, by R. E. Evans, Henry J. Kaisey Company (Canada) Ltd.

239 Chrysotile Asbestos. Relationship of the Surface and Thermal Properties to the Crystal Structure, by Edward Martinez, American Smelting & Refining Co.

Due to its unique properties, chrysotile asbestos is used in many diversified applications. The relationship of some of the surface and thermal properties to the chrysotile crystal structure is discussed. In recent years methods have been developed for modifying the surface properties to improve the performance of asbestos in some applications. Examples taken from the literature are cited,including the effect of pH on the positive zeta potential and the addition of sodiumsilicate to improve the filtration characteristics of asbestos. The dehydroxylation and formation of fosterite as chrysotile is heated are also discussed.

240 Dirt Stripping operations at Canadian Johns-Manville by J. N. Gauthier, Canadian Johns-Manville Co.Ltd.

241 Metal Mining Division - Aerial Survey of Open Pits at Lake Asbestos of Quebec Ltd. by M. Lauzon,Lake Asbestos of Quebec Ltd. - Aerial surveys of the open pits have been conducted regularly at Lake Asbestos of Quebec Ltd.,since 1958. Ground controls are supplied by Lake Asbestos and a topographic map of the pits at a scale of 1 in. to 50 ft. with 2-foot contour intervals, is obtained by aerial photography. The information from the topographic map is then transferred by the Lake Asbestos engineering staff to sections from which the volumes removed are calculated. Considering the size and complexity of the operation this system had proved to be the cheapest, fastest and most accurate way of determining the quantities of rock and overburden removed.

AFRICA.

242 GRIQUALAND. NEW ASBESTOS INTERESTS. Mining Journal April 22, 1966, p.296.

The South African Asbestos mining company, Griqualand Exploration, is proposing to increase its capital by an additional 50,000 shares which are to be issued to the Hans Merensky Investment and Trust at R11 each. The object is to enable Griqualand to take over the controlling interest in Elcor Investments, now held by Hans Merensky and thus obtain control of further substantial blue asbestos interests in the Kuruman district of the Northern Cape Province. The present Elcar milling plant is producing about 700 tons of blue asbestos - crocidolite - monthly, and this will add substantially to Griqualand Exploration's output of this mineral.

243 PROGRESS IN SPECIFYING SOUTH AFRICAN ASBESTOS STANDARD GRADES. H. A. B. Engelmohr. South African Standards Bull./Suid-Afrikaanse Standaardebulletin, Nov.1964, 18, No.3, 69-71.

The history of the work on the standardisation of South African asbestos grades, done mainly by the South African Bureau of Standards, is briefly described. The work is still not completed, and especially testing methods have not been established as yet, since more consultations are needed. It is also proposed to establish a laboratory for testing asbestos fibres.

AUSTRALIA.

244 NEW SOUTH WALES. ASBESTOS. Mining Journal, March 4 1966, p.152.

Preliminary examination of deposits near Barraba is believed to have shown a potential for more than 18 million tons of white asbestos. The deposit is being explored by a wholly-owned subsidiary of Merit Oil Ltd. of U.S.A.,the Woodsreef Asbestos Co.Ltd.,Woodsreef, and Ampol Petroleum,each hold 50 percent of White Asbestos(Mining)Pty.Ltd. formed to develop the leases in the Barraba area.

YUGOSLAVIA.

245 NEW ASBESTOS DEPOSITS FOUND IN YUGOSLAVIA. Gummi-Asbest-Kunststoffe,1966,19,No.2,178.

Deposits of high-quality asbestos have been discovered at Picely at Kosovska Mitroivca(Yugoslavia).The reserve is estimated to amount to about 4.5 mill.tons.The firm Kosmetasbest has developed large investment programme including several plants for processing the asbestos.

AMERICA.

246 ASBESTOS DEPOSITS IN MEXICO. Ingenierie Quim.(Mexico). 1965, 10, No.106, 10-17.

Serpentine dike characterised by asbestos mineralization occurs at El Novilo in Sierra Madre. The asbestos-bearing zone, about 10 km. in length and 1 km. in width, lies 18 km. from Victoria Township (Tamaulipas State). It contains chrysotile asbestos of high quality. Small deposits of actinolite asbestos occur at two other locations, viz., in Sierra Madre and at Camacho; they contain inclusions of chrysotile and amphibole asbestos. Tremolite-actinolite and chrysotile asbestos have been formed in the Gerrero State, but they have not been fully investigated as yet.

247 MINERALOGICAL INVESTIGATION OF ASBESTOS OF BOLIVIA. P. Ljunggren et al. Bol.Inst.Boliv.Petrol.,1965, 5, No.1-2, 35-38.

Crocidolite deposits occur 50 km. north of Cochabama(Bolivia). The length of crocidolite fibres vary from microscopical sizes to 1 m. They are very strong; their tensile strength ranges from 70 to 225 kg/mm^2. Their resistance to attack by acids is very high. Density is 3.00; compared with South African crocidolite, the Bolivian variety contains more Mg and less FeO_4.

JAPAN.

248 ASBESTOS. Mineral Trade Notes, Vol.62, No.4, April 1966,p.7.

	1963	1964
Production(Hokkaido Mine)	16,520 metric tons	16,310 metric tons

249 IMPORTS INTO JAPAN.

Country of Origin	1963 Metric Tons	1963 Value C.I.F. 1,000 U.S.$	1964 Metric tons	1964 Value C.I.F. 1,000 U.S.$
Canada	69,113	10,195	84,067	11,954
Rep.of S.Africa	24,160	2,989	29,005	4,760
U.S.S.R.	11,901	1,228	13,641	1,173
United States	3,978	560	8,128	1,119
Other countries	6,340	1,075	9,128	1,547
Total	115,492	16,047	143,969	20,553

Source: Foreign Service Despatch A-560, Nov.26, 1965 - Tokyo.

PART 2. ASBESTOS CEMENT.

250 PRODUCTION OF ASBESTOS CEMENT PIPES BY THE AUTOCLAVE METHOD. I. Z. Volchek et al. Stroit Mat., 1966, 12, No.3, 19-20.

Autoclave process for the production of asbestos cement pipes at Akmyanskii Zavod is described in detail. The process comprises a preliminary hardening on the conveyor, storing for 16-20 hours before machining and then autoclaving for 10 hours in total(the maximum pressure being 8 atm. gage). The loading and unloading is done automatically. The density of the products is up to 1.75 g/cm^3. The tensile strength of the pipes of diameter of up to 100 mm. is 142-190 kg/cm^3, with diameters larger than 200 mm. the tensile strength reached 216 - 275 kg/cm^3.
(Full translation will appear in the next issue of the Asbestos Bulletin).

251 RUSSIAN PATENT 178,718. PRODUCTION OF ASBESTOS CEMENT ARTICLES. I. Z. Volchek et al.

In order to increase the strength and density of asbestos cement products a semi-dry mixture is laid on the conveyor in several thin layers; each of the layers is densified with perforated rollers, reinforcing members with layers of cement adhesives are laid between the layers and then the whole assembly is passed through a calender.

252 FRENCH PATENT 1,414,192. MOULDED, FIBRE-REINFORCED RESIN ARTICLES. Johns-Manville Corp.

Shaped articles, such as pipe joints, and plastic articles of large dimensions are produced by the transfer-moulding process using a fibrous sheet impregnated with a heat-hardenable resin, such as epoxy, phenolic, epoxy-novolac or polyester resins. The impregnated sheet is formed into a tubular cylinder which is heated at 66-177°C and introduced into a transfer-moulding apparatus. Suitable fibrous materials include asbestos paper and glass fibre mats. The asbestos paper can contain other fibres (e.g. nylon), fillers, organic materials etc.

253 FRENCH PATENT 1,430,834. ASBESTOS CEMENT PRODUCTS. Philip Carey Mfg.Co.

Asbestos cement products comprise a mixture of mineral fibres containing a major proportion of asbestos fibres,mainly of soft chrysotile asbestos variety and a minor proportion (2-25 wt.%)of hard glass fibres having a diameter of 5-25 microns.

260 INTENSIFICATION OF THE HYDRATION PROCESS FOR HARDENING ASBESTOS-CEMENT PRODUCTS. M.I. Strelkov and B.F.Fedoryakin.

Translation from Russian

This article describes the technical aspects of making asbestos-cement using pre-hydrated portland cement.

It has been proved that it is possible to speed up the hardening process of the binder by using deeply pre-hydrated cement, that is cement with specific surface area of 5500 - 6500 $cm^2/gr.$ and containing 15 to 10% of new formations.

Prehydration of the binder permits intensification of the hardening process, reduces the period in which the ultimate strength is reached, lowers consumption of the binder and makes it possible to eliminate steaming, while improving the quality of the product. By using deeply pre-hydrated portland cement a binding strength of up to 400 kg/cm^2 can be achieved, which is by 100 kg/cm^2 more than using ordinary portland cement. Also the speed of the asbestos-cement hardening process is considerably increased; for example in 15 to 20 minutes after the product being made, it results in a strength of 60 - 80 kg/cm^2, but after a day when kept under air humid conditions it reaches 250 - 280 kg/cm^2.

Under the normal conditions, when cement is combined with water, around each particle of the binder a film is formed of new formations, which seals the reactive surface of the particle and restricts further interaction of the water with the cement. The speed of the hydration is determined not by intensity of the chemical reaction, but by the amount of the water percolating the film of the new formations. For this reason the speed of the chemical reaction, while being very high, is slowed down and so, accordingly, the hardening process.

The pre-hydration of cement by additional wet grinding considerably lowers the film's negative role during the hydration's stages and by this accelerates the chemical reactions of the hardening process. This is confirmed by the kinetic heat evolved during the hardening process of asbestos-cement made with pre-hydrated portland cement.

The thermal effect while being a function of the exothermic reaction of cement with water, permits the determination of the cement's hydration process. Fig.1 shows temperature changes during cement hardening.

The curve of ordinary portland cement is similar to the curve

as determined by A. A. Baikov. It has a horizontal section during the setting period in contrast with the deeply pre-hydrated cement or asbestos-cement where the horizontal section is absent. A rapid rise of the temperature, the maximum of which is reached in five hours instead of 13 ones for the ordinary portland cement, proves the lessening of the film's negative role.

The amount of the chemically bound water in the original cement as shown is 0.32%, but after regrinding it increases to 3.47%. The samples made with these two cements were hardened under normal humid air conditions. The samples made with the pre-hydrated portland cement at all stages of the hardening period contained approx. 5% more combined water.

Many investigators pay attention to the particle size distribution as to one of the main factors determining the hydration process. It has been proved that the particles of up 30 microns are the basic carriers of the cement's strength qualities. The fraction under 3 microns contributes only to the cement's initial strength, but the fraction over 60 microns does not take any part during the hardening process. A characteristic peculiarity of the pre-hydrated cement is the absence of inactive particles from 30 to 60 microns. Thus the inactive fraction of the ordinary portland cement is converted into an active binder. The second characteristic difference of the pre-hydrated cement is the considerable content(approx.45%) of particles under 3 microns, 15% - 2 to 3 microns and 30% - 1 micron or under.

The specific features of fractional composition of the pre-hydrated cement as investigated by Anderegga and Hebella,Roka,Lopitala and James and the data of Butta proved that, at an average hydration speed equal to 1 micron in a day, the majority of the particles will be hydrated in 20 days. It has been observed that approx.97% of the pre-hydrated cement has reacted with water.

The intensification of the hardening process of the pre-hydrated portland cement is also confirmed by the thermal analysis(fig.2). On the left are curves showing the loss of weight and thermographs of the hardened portland cement at 3 days for ordinary portland cement and the pre-hydrated one. The first low temperature endothermic effects observed up to 200°C are due to the presence of the calcium hydrosulphoaluminates (50 - 120°C) and calcium hydroaluminates (140 - 150°C). For the pre-hydrated cement these effects are more pronounced as confirmed by the curves of the weight loss. The latter between 50 and 120°C is twice as high and equals 15%. Such a feature must be explained by the higher reaction speed of the pre-hydrated cement with water. The second endothermic effect which points to the decomposition of the hydrated calcium aluminate and hydrated calcium silicate (curve B) is also higher. The increase of this effect means the

intensification of hydration not only on the account of the aluminates present(low temperature effects)but also of the calcium silicate. The loss of weight for the original portland cement is 2 - 3%,but for the pre-hydrated - 3.5%. The third endothermic effect is characterised by the dehydration and decarbonisation processes of the calcium hydro silicates. This effect of the pre-hydrated portland cement starts somewhat before 610°C and reaches its maximum at 700°C. The loss of weight increases approx. 1.5 times. The values of the observed effects for cements at 28 days age are increased. The loss of weight for the original cement is 125%,but for the pre-hydrated 20%. Loss of weight on the account of the 2nd and 3rd endothermic effects for the pre-hydrated cement is approximately 2% higher.

In tables 1 and 2 are given the strengths and frost resistance figures of laboratory asbestos-cement samples. Intensification of the hydration process of cement by the suggested methods speeds up the hardening of asbestos-cement and results in higher ultimate strengths. Frost resistance tests of the asbestos-cement samples made with pre-hydrated portland cement were carried out according to the national standard 378-60. As can be seen from table 2 these samples only after 150 cycles of freezing and thawing are slightly loosing their strength. High frost resistance of asbestos-cement is most important,because it contributes to its durability. On condition that the pre-hydration proceeded up to 15 to 12% of new formations specific pressure of 150 kg/cm^2,temperature of the pressing surfaces 90°C and asbestos content of 13-15%, the water absorption of the asbestos-cement is 17% at sp.gravities of 1.68 to 1.72 gr/cm^3.

It must be noted that the microstructure of the asbestos-cement samples made with a pre-hydrated portland cement are characterised by negligible amount(2 - 5% at 28 days age)of small size(7 microns) grains of clinker minerals,and by their uniformity and high density.

Thus the pre-hydration of the portland cement for making asbestos-cement products intensifies the physico-chemical processes taking place during the hardening and this in turn helps to obtain higher strength products. Pre-hydrated portland cement was used at the Kharkov electro-mechanical factory for making compressed asbestos-cement articles,the strength of which proved to be over 400 kg/cm^2 and the impact resistance 5 - 6 cm/cm^2. Before the factory was using a hardening process which included 16 hours of air hardening,18 hours of steaming and 15 hours of drying. When using pre-hydrated portland cement it was sufficient to submerge the articles in water for 2 - 3 hours and this secured their high strength. Pre-hydrated portland cement is also used for making frameless asbestos-cement wall panels. For this asbestos-cement mixture of plastic consistency was prepared, but the hardening was carried out under air conditions. The period of keeping them in moulds was reduced from 5 - 7 days to 20 - 24 hours with simultaneous improvement in the quality of the panels.

TABLE 1.

The degree of prehydration of Portland cement in %	Temp. of the mould °C	Ultimate bending strength in kg/cm² after					
		20 min.	4 hrs.	1 day	7 days	28 days	9 mths.
0.65(original cem.)	18-20	0	0	120	199	302	335
ditto.	90	0	0	200	250	289	362
19.1(prehydrated cem.)	18-20	20	60	231	305	379	421
ditto.	90	70	100	250	320	413	463

TABLE 2.

The number of freezing and thawing cycles	Ultimate bending strength in kg/cm²	
	Control samples	After the test
25	334	361
50	365	400
75	410	429
100	423	430
125	430	430
150	432	428

261 BELGIAN PATENT 665,619. WATER PAINTS. Wacker Chemic,GmbH.

Paints suitable for protecting plaster, asbestos cement and concrete against moisture consist preferably of 0-60% water, 40-90% of a mixture of pigments and alkaline organosilicones(e.g. potassium methylsilicone), and 0-2% of other binders and/or additives normally used in paints.

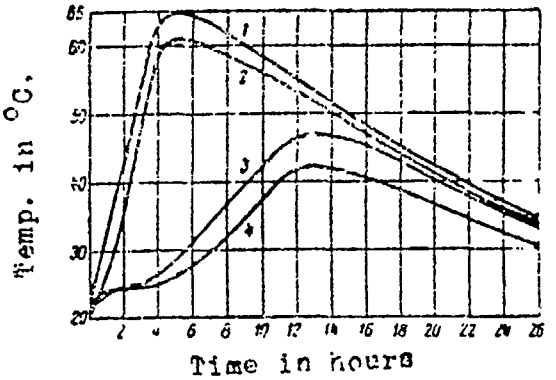

Fig. 1 Kinetics of the heat evolved during the hardening of the products.

1 - asb.-cem. on the basis of prehydrated Portland cement
2 - prehydrated Portland cement
3 - asb.-cem. on the basis of ordinary Portland cement
4 - ordinary Portland cement.

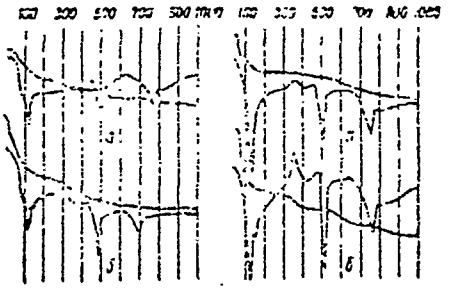

Fig.2 Thermograms and curves of weight losses of ordinary (a) and prehydrated (b) cements after 3 days (on the left) and 28 days hardening.

262 MODERNIZATION OF MACHINES FOR THE PRODUCTION OF TILES. S. V. Khmyrov, Stroit.Mat.,1966, 12, No.2, 8-9.

A number of improvements in machines for the production of asbestos cement tiles are described. Applications of pre-heating rollers improves the effectiveness of the compressing process. A special tubular device has been introduced to promote the removal of water by means of an air stream and thus to prevent metro-absorption of moisture by the formed tiles. Rubber-lined large diameter rollers are used for squeezing water from the asbestos cement mass. Suction system has been improved by introducing two suction boxes working at different pressure gradients. Driving system has been modified. Improvements have been introduced in the equipment and procedure for cleaning the cloth and the screen cylinders. A semi-automatic line for metering, feeding and processing asbestos fibres has been developed. A continuously working mechanical device for cleaning the recuperators and removing foam has considerably enhanced their production capacity.

263 GERMAN PATENT 1,204,032. ASBESTOS CEMENT PACKING RINGS FOR MUFF PIPE JOINTS. Toschi G.m.b.H.

Asbestos cement rings for muff pipe joints are provided with saw-tooth-profiled ribs, which are located on the inner side of this part of the ring which is directed towards the muff mouth, and on the outer side of the other part of the ring.

264 FRENCH PATENT 1,417,893. IMPROVING FIRE RESISTANCE OF STRUCTURAL PANELS. Badische Anilin- & Soda-Fabrik.

Fire resistance of structural panels, e.g. asbestos cement panels, is improved by coating the surfaces of the panels with a layer of silicate fibres, e.g. glass fibres, in an aqueous suspension of an alkali silicate, and then heating the panels at temperatures of from 50 to 150°C. Metallic reinforcements can be embedded in the coating and, to protect the panels against moisture, an external covering of a plastic material, e.g. a polyamide may be applied.

265 RUSSIAN PATENT 163,939. PASTES. A. M. Karasynuk.

An improved paste, based on dried wastes from washing waters of the asbestos cement industry and suitable for the production of structural materials and the like, contains up to 60 vol.% of the above mentioned waste material (dried to 40-60% moisture) and up to 40% of "black binder". The paste imparts to structural materials impermeability to water and gases, and also anticorrosive properties.

266 FRENCH PATENT 1,416,041. TREATMENT OF ASBESTOS FIBRES WITH A HYDROMODIFIER. Johns-Manville Corp.

In British Patent 922,427, compositions comprising asbestos fibres with a hydromodifier are described. This invention relates to a method for applying the hydromodifier onto asbestos fibres. According to the invention, asbestos fibres are suspended in air together with a finely comminuted hydromodifier(2% based on the weight of asbestos) and a spray of fine water droplets is applied, so that the moistened hydromodifier adheres to the asbestos fibres. The fibres are then dried. In an example, chrysotile asbestos fibres are coated(not necessarily in a continuous manner) with hydroxy-propoxyl-methylcellulose as a hydromodifier. Other varieties of asbestos may be treated in the same way.

267 SOUTH AFRICAN PATENT 65/0570. OPENING ASBESTOS BUNDLES INTO ELEMENTARY FIBRES. G. Pasquale.

Asbestos fibre agglomerates are suspended in a liquid, and the suspension is conveyed through conduits gradually and repeatedly varying in cross-sectional at a high frequency.

PART 3. ASBESTOS TEXTILES.

268 BRITISH PATENT 1,008,105. IMPROVEMENTS IN AND RELATING TO FIRE RESISTING CABINETS. Stratford Equipment Co.Ltd.

A fire resisting cabinet according to claim 1 or 2 wherein asbestos tape or other thermal insulating material in strip form is also provided between abutting surfaces of the cabinet body and the door.

269 FRENCH PATENT 1,411,473. TRANSPORT CONTAINERS FOR RADIO-ACTIVE PRODUCTS. Lemer & Cie.

Heat- and shock-resistant containers for radioactive materials consists of two layers of biologically screening materials, the internal one being more dense than the external, and comprise fire-proof materials including envelopes of asbestos cloth, and powdered asbestos, vermiculite or plaster used as fillers.

270 BRITISH PATENT 1,010,361. ELECTRICAL INSULATION. English Electric Co.

This patent is covering insulating material comprising of asbestos fabric impregnated with a cement consisting of a micaceous powder mixed with a solution of phosphoric acid.

271 SOUTH AFRICAN PATENT 65/3156. COMPOSITE YARNS. British Belting & Asbestos Ltd.

Composite yarns comprise asbestos combined with staple glass fibres. Preferably the staple glass fibres are spun or doubled with the asbestos.

272 BRITISH PATENT 1,023,972. IMPROVEMENT RELATING TO YARNS COMPRISING STAPLE ASBESTOS YARN. Turner Bros.Asbestos Co.Ltd.

Yarns are composed of slivers of staple fibre asbestos and a smooth glass continuous multifilament.

PART 4. ASBESTOS FRICTION MATERIALS.

273 BRITISH PATENT 1,017,181. CORROSION RESISTANT BEARINGS. Railko Ltd.

The porous bearing matrix is made of asbestos cloth, yarn or cord soaked in a solution of a nitrite and or benzoate of an alkali metal or alkaline earth metal which after evaporation of solvent leaves a fine deposit of crystalline nitrite within the porous bearing structure.

274 BRITISH PATENT 1,017,462. FRICTION DISCS. Ferodo Ltd.

Clutch facing produced by a novel method was made from solids consisting of:

powdered phenol formaldehyde resin	20	parts	by	weight
asbestos fibre	50	"	"	"
powdered, cured resin of cashew nut shell liquid	17	"	"	"
barytes	13	"	"	"

275 CANADIAN PATENT 713,479. FRICTION ELEMENT. Chrysler Corp.

Friction elements having good friction stability and fade resistance are produced by forming into a predetermined shape a dry composition consisting of grade 5K asbestos fibre, particulate "cardolite NC-111" resin, zinc oxide and an uncured synthetic rubber copolymer, e.g. a butadiene-styrene or butadiene-acrylonitrile copolymer, and curing the shapes in the presence of an oxygen-containing gas at a temperature of about 290°F.

276 EFFECT OF TEMPERATURE OR FRICTION AND WEAR OF FILLED FLUORINATED PLASTIC MATERIALS. N65-29121 Air Force Systems Command, Wright-Patterson AFB Ohio. Foreign Technology Div.
V. D. Parkhomenko and S. N. Gants, 19 Apr. 1965 6p. refs. Transl. into English from Izv. Vysshikh Uchebn. Zavedenii, Mashinostro(Moscow), No.9, 1963, p.130-133 (FTD-TT-64-1176) 1+2; AD-614957.

An examination was made of the effect of temperature and the nature of the filler (molybdenum disulfide, boron nitride, barium sulphate, ground coke, talc, soot or colloidal graphite) on the coefficient of friction and wear of "fluoroplast" (poly-(chlorotrifluoro ethylene)) while undergoing a water lubricated friction process. In general: 1) wear decreases with increasing filler content (up to a limit); 2) wear increases by increasing water temperature; 3) the coefficient of friction (mu) increases as temperature increases; 4) mu decreases with increasing specific pressure; and 5) mu decreases with increasing speed of sliding. Under the test conditions MoS_2, BN, $BaSo_4$ and coke improved the wear resistance to a greater extent than the other fillers.

PART 5. ASBESTOS REINFORCED PLASTICS.

277 ASBESTOS-REINFORCED PLASTICS. G. L. Wicker. Gummi-Asbest-Kunststoffe, 1966, 19, No.3, 293-297.

"Duraform" products manufactured by Turner Brothers Co. are thermoplastic polymeric materials reinforced with asbestos fibres and produced in the form of plates. Four kinds of "Duraform" products marketed at present are described, and their properties are compared with those of thermosetting or thermoplastic polymeric materials reinforced with other inorganic fibres, particularly glass fibres. The "Duraform" products compare favourably with other materials, in particular their modulus of elasticity is two or three times that of similar products, their tensile bending and impact strength is high, they possess a good resistivity to chemicals and to weathering, they are non-inflammable and relatively cheap. Their possible applications, especially as structural materials are wide.

278 BRITISH PATENT 1,010,043. IMPROVED ORGANIC THERMOPLASTIC MATERIAL AND PROCESS FOR ITS MANUFACTURE. Societe Organico.

The object of the present invention is to provide an organic thermoplastic material which is improved by the addition of discontinuous mineral fibres, in which the said fibres are distributed in an intimate and uniform manner throughout the mass of the thermoplastic material. The material contains asbestos fibre.

279 GERMAN PATENT 1,187,013. MOULDING PREPARATIONS CONTAINING UNSATURATED POLYESTERS DERIVED FROM CERTAIN DIHYDRIC ALCOHOLS. Farbenfabriken Bayer.

Heat-hardening compositions are prepared from unsaturated polyesters. derived from dicarbocyclic acids, or their derivations, and specified dihydric alcohols, with the addition of inorganic or organic fillers, organic peroxides, dyestuffs, lubricants and other adjurants. In an example, to 750 parts of a polyester obtained from bis-(3-methyl-4-3-hydroxyethoxy-5-chlorophenyl) methane and fumaric acid, with addition of a small amount of hydroginine-quinone mixture, are added 200 parts of diallyl phythalate, 100 parts styrene, and a mixture of 800 parts mica flour, 250 parts asbestos flour, 20 parts Sb_2O_3 and 30 parts of zinc stearate, followed by 30 parts of 50% tert.-butyl perbenzoate paste. From this non-tacky hardenable mixture, products having a high flame-and heat-resistance and outstanding mechanical properties can be manufactured. Fillers suitable for these compositions also include asbestos fibres.

280 ELASTOMERIC INSULATION FOR SOLID PROPELLANT ROCKET MOTORS. D. H. Sale. 27 Oct.1964, 23p. refs. (Rept.-64-3158; AD-452948) CTS: $3C.75.
N65-15977 Rock Island Arsenal Lab.

The development of flexible. elastomeric-based solid propellant rocket motor case insulation is discussed. The effects on insulation properties of the type of asbestos, of liquid versus solid elastomers, and of the methods of dispersing fibrous compounding ingredients, are reported. Oxyacetylene torch and static motor firing test data for some of the better insulation materials developed, as well as for some commercial materials, are presented. A material with 40% elongation, 1.34 gm/cc density, performance index of 95 cm^2sec/gm and erosion rate of 2.0 mils/sec was the most promising insulation developed. The material is a 55/45 butadiene-acrylonitrile compound containing phenol furfural resin, asbestos and oxyazoline wetting agent. It was satisfactorily bonded to aluminium and to steel by conventional bonding agent. The thermal properties of this vulcanizate are not affected by oven ageing for one week at 70^oC.

281 BELGIAN PATENT 670,743. ACCUMULATOR PLATES. M.A.L.Ronsmans.

Accumulator plates are described containing graphite as an electrical conductor, a plastic material as a substrate, fillers, such as clay, and reinforcing agents, such as glass fibres or asbestos.

282 EAST GERMAN PATENT 43,480. FREE-FLOWING POLYESTER MOULDING PREPARATIONS. C. M. Hiller and G. Schubert.

Polyester resins are homogenised with fibrous or non-fibrous fillers and then milled to give a free-flowing powder aggregate. In an example, a moulding preparation was produced from 420 parts of a polyester (obtained by reacting maleic or phthalic anhydride with propylene or ethylene glycol with addition of 1% glycerol), 120 pts. of diallylisocyanate, 615 pts. of kaolin, 85 pts. of asbestos fibres, 20 pts. of zinc stearate and 12 pts. of dicumylperoxide.

283 BRITISH PATENT 1,005,164. AMINOPLASTIC MOULDING COMPOSITIONS. British Industrial Plastics Ltd.

Asbestos mentioned as a filler.

PART 6. BUILDING MATERIALS AND PLASTIC PIPES.

284 FRENCH PATENT 1,414,301. BUILDING MATERIAL PANELS. A. A. M. C. Rambourg.

Structural panels are produced by soaking vegetable fibres, such as resinous fibres from pine, in a solution containing sodium silicate, denatured alcohol and powdered silica gel, at a temperature of 40°C, for 4 hours. The impregnated fibres are then mixed with cement, powdered asbestos and water, and the mixture is subjected to a pressure of 2,500 kg/cm^2 at a temperature of 80°C.

285 BELGIAN PATENT 669,440. ASBESTOS BOARD. Philip Carey Mfg.Co.

Asbestos board is produced from asbestos fibres and a minor amount of a heat-resistant inorganic binder. The fibres comprise at least 30 wt.% of amphibolic asbestos which is tenacious and flexible and is particularly suitable for the production of paper. The binder is a mixture of a hydraulic cement and a montmorillonite clay. The board shows a very low shrinkage on heating. The product has a considerable elasticity and can be used at 650°C for long periods without substantial structure deterioration.

286 CANADIAN PATENT 647,631. ASBESTOS CUSHIONS IN METAL-CLAD BASIC REFRACTORIES. General Refractories Co.

Basic refractory bricks for furnace roofs comprise a chromite or magnesite refractory section, an oxidisable metallic section, and an asbestos cushion disposed between the metal and the refractory material at the hot end of the bricks.

287 BRITISH PATENT 1,020,917. BUILDING PANEL. Boron Insulation Limited.

Manufacture of building panel include step of casting on one or both sides of a core layer (expanded synthetic resin) a surfacing layer of asbestos cement, the surface of core being grooved to provide good mechanical bond.

288 POLYMER MATERIALS FOR COVERING FLOORS IN PREMISES OF THE DAIRY INDUSTRY. G. S. Kogan et al. Stroit Mat., 1966, 12, No.2, 25-27.

Working conditions for floorings in the daily industry and technical characteristics of various materials used for floor coverings are discussed. The materials described include polyvinylchloride tiles containing asbestos as a reinforcing agent.

289 CANADIAN PATENT 647,790. RADIATION-RESISTANT SLABS, BRICKS ETC. P. Jolly.

Structural or shielding units having high resistance to heat and radioactive radiation are produced from anhydrite powder, asbestos fibres, a metal sulphate and sodium silicate, with addition of a minor amount of hydrochloric acids.

290 CZECH PATENT 114,331. WATER-ABSORBING PLATES. F.Sembera.

Water-absorbing plates having improved thermal and mechanical stability are produced from a mixture of 5 - 60 wt.% cement, 1 - 30 wt.% slaked lime, 2 - 70 wt.% asbestos and 1 - 40 wt.% charcoal.

291 PVC PIPES USED FOR RIVER CROSSING. Pipes & Pipeline International, April, 1966, p.59.

Laying of twin 12 in. diameter sewage pumping mains across the 100 ft. wide River Wearer was carried out by lowering of complete assembly into a trench dredged in the river bed.

292 NEW PVC PIPE JOINT. Pipes & Pipelines International, April, 1966, p.64.

A rubber ring push-fit joint for PVC pipes, has been introduced in the United Kingdom by Yorkshire Imperial Plastic.

PART 7. ASBESTOS PACKING, COATING AND SEALING COMPOSITIONS.

293 STRUCTURAL-MECHANICAL PROPERTIES OF HERMETIC MASTICS. G. B. Ivyanskii and A. T. Gureev. Stroit.Mat.1965,11, No.12, 17-18.

Rheological properties have been determined for a number of mastics including "Izol", which is produced from rubber wastes, bitumen, coumarin resin, colophony, asbestos fibres and antiseptic agents ("Izol" is used for sealing, "Poroizol", and also shows very good adherence to concrete). It has been found that the viscosity of all the mastics tested depended on some internal structure of the material, when this structure was destroyed the viscosity dropped sharply.

294 CANADIAN PATENT 710,228. BITUMINOUS SEALING COMPOSITION. Gulf States Asphalt Co.

A bituminous adhesive and sealing composition, which is permanently non-hardening and non-drying comprises 45-95 wt.% of a petroleum derived bitumen and 2.5 - 27.5 wt.% each of bentonite and asbestos fibres or wollastonite. The composition adheres to glass, metals, concrete, ceramics, cloth etc. It is especially useful for sealing joints of concrete, ceramic or metal pipes.

295 EAST GERMAN PATENT 44,097. SEALING COATS FOR SPRAYED ASBESTOS INSULATIONS. R. Hancke and J. Mann.

The sealing coat for asbestos insulations is made from cement and asbestos fibres bound with a butadiene - styrene copolymer latex or polyvinyl acetate latex.

296 TAR-EPOXY RESIN COMPOSITIONS. A. Ritter. Plaste und Kautschuk, Dec. 1965, 12, 731-734.

Tar-epoxy resin compositions have proved to be very useful in chemical plants, marine engineering, mining and pipeline constructions, due to their good weathering resistance and low cost. The epoxy resins are cold-cured to various degrees of polymerisation. The best curing agents are aliphatic triamines. Low-boiling solvents should be used. Asbestos and slate powder, used as extenders, improve the resistance of the product to concentrated acids and solvents.

297 BELGIAN PATENT 659,006. IMPROVED COATINGS. Siemens-Schuckert-werke.

Coatings for protecting building materials and metals comprise a dispersion of a filler such as talc, mica, graphite or asbestos, in an aqueous medium with addition of an emulsified varnish such as alkyd resin lacquer.

298 CANADIAN PATENT 644,911. MASTIC COMPOSITIONS. Benjamin Forster Co.

A mastic composition for application to exposed surfaces of metals, insulation blocks, slabs or pipe coverings, is prepared from 28 wt.% of petroleum asphalt, 24% of pulverised slate, 10% each of chlorinated phenyl and petroleum distillate, 6% each of asbestos fibres, 1,1,1-trichloroethane and perchloroethane, 4% of pulverised mica and about 2% each of gilsonite, antimony oxide and calcium carbonate.

PART 8. ASBESTOS PAPER AND INSULATING MATERIALS.

299 FRENCH PATENT 1,414,226. DRYING PAPER. Mead Corp.

Paper having high moisture absorption capacity is produced from 33-67% of inorganic fibres, such as glass fibres (preferably), quartz fibres, asbestos and the like, the remainder being an inorganic drying powder, such as an inorganic molecular sieve silica gel, activated alumina or powdered porous silica-base glass.

300 GERMAN PATENT 1,184,200. PROCESS FOR IMPREGNATING CELLULOSIC MATERIALS OR THE LIKE IN A PAPER-MAKING MACHINE. H. Kohlmann.

A process for impregnating paper-,cardboard-or asbestos-pulp, or the like, with size, kaolin, starch or resins, or solutions or suspensions thereof, in a paper-making machine is characterised in that the drying of the material is interrupted when the water-content is 5-15% and, before the impregnation, an air-current is directed against the surface of the material to remove moisture and dust, and to cool the material. In this way the conditions of the impregnation process are considerably improved.

301 CANADIAN PATENT 647,342. RESIN-ASBESTOS COMPOSITIONS. C. L. Blake.

A composition suitable for pipes, sheets etc., having good fire resistivity, good strength and controllable insulation characteristics comprises about 15 wt.% of asbestos fibres, 20 - 30% of a resinous plastic binder, 1 - 20% of a plasticiser, and 50 - 60% of an inert filler.

302 THE USE OF ASBESTOS BOARD IN DRYING CHAMBERS FOR PVC TILES. D. Dejan et al. Meter. de Constructie/Inovatii (Bucharest), 1964, No.31, 30-32.

An apparatus for heat treating pvc flooring tiles comprises steel sheet chambers lined with asbestos board and heated to 180°C with methane.

303 RUSSIAN PATENT 179,214. PRODUCTION OF HEAT-INSULATING MATERIALS. R. I. Arav et al.

Heat-insulating materials are produced by mixing asbestos with magnesium carbonate trihydrate, heating the mixture at 120 - 150°C, and then additionally firing the mixture at 550 - 600°C for 4 - 6 hours, in order to improve its refractoriness and to reduce its density.

304 GERMAN PATENT 1,197,370. PREPARATION OF LIGHT POROUS STONE INSULATING MATERIAL BY CHEMICAL BINDING. Chamotte-Industrie Hagenburger-Schwalb A.G.

Light porous stone, and also insulating materials, are prepared from a mixture of expanded polystyrene, as a porous medium, a binder and a filler. In an example, polystyrene powder, expanded in boiling water, was mixed with cement, chamotte powder and water; after moulding and setting, the articles are dried and the polystyrene is volatolised at 250°C. Other suitable binding materials include kieselguhr, asbestos, vermiculite etc.

305 HIGH TEMPERATURE HEAT-INSULATING MATERIALS. Stroit Mat.1966, 12, No.2, 34-35.

Various heat-insulating materials suitable for use at high temperatures are briefly characterised. Calcium hydrosilicate-base materials, which can be used at 300 - 1000°C, are produced from lime, siliceous materials and asbestos, subjected to autoclave treatment; a factory at Kremgese will produce this year 100,000 $m.^3$ of this material. A novel heat-and sound-insulating material is based on kaolin fibres. "Kaolin Wool" is a white fluffy material consisting of 1 - 3 micron fibres; it can be used at temperatures of up to 1100°C and, for a short time, even up to 1250°C. Kaolin wool can be used for filtering hot or corrosive, liquid or gaseous media. Paper or cardboard can be produced from kaolin fibres for use as high temperature electric insulations.

306 FRENCH PATENT 1,416,243. MOULDED HEAT-INSULATING PRODUCTS. Philip Carey Manufacturing Co.

Heat-insulating materials are produced from 40-80% of expanded perlite, 5-20% of montmorillonite as a mineral binder, 4-10% of a low viscosity starch derivative capable of forming flexible films, 1-4% of a phenolic resin as an organic thermo-hardening binder, 5-25% of short asbestos fibres (grade 7) and 0.2-3% of long glass fibres as mechanical reinforcing agents.

307 CANADIAN PATENT 666,436. LAMINATED THERMAL INSULATION. Johns-Manville Corp.

Laminated materials having an exceptionally low thermal conductivity and high resistance to shock and erosion consist of a cellular organic thermosetting resin laminate honeycomb structure heavily reinforced with asbestos fibre. The cells are filled with a low-density particulate material, such as an aerogel and an opacifying material.

308 GERMAN PATENT 1,193,667. PRODUCTION OF COLD-PRESSED ELECTRIC INSULATORS WITH IMPROVED CREEPING-CURRENT RESISTANCE CONTAINING PHENO RESINS AS BINDERS AND POLYISOCYANATES. Suddeutsche Isolatorenwerke.

Electric insulators are produced from phenol resins, such as phenol-resol resins, polyisocyanates, fillers and lubricants. The composition is first heated at 150°C until water is completely expelled, and then hardened at 165-200°C. As fillers, asbestos, limestone or marble flour is used. In an example, 15 parts of phenol-resol are mixed with 5 parts of a polyfunctional isocyanate in acetone as a solvent, and 80 parts of a 1:4 mixture of asbestos and marble flour is added. The mixture is dried as above, and cold-pressed at a pressure of 150 kg/cm^2.

309 BELGIAN PATENT 655,583. PROTECTION OF THE BOTTOM OF OPEN INGOT MOULDS. Acieries et Minieres de la Sambre, S.A.

Bottoms of ingot moulds are protected during teeming by placing inside the mould, before casting, compact sheets, produced by rolling or compressing a cellulose fibre-or asbestos-base paste. The material may be of the type known as "Unalit".

PART 9. REFRACTORY FIBRES.

310 PLASTICS WITH MAGNESIUM-FIBRE REINFORCEMENT. Gummi-Asbest-Kunststoffe, 1966, 19, No.2, 180.

In the U.S.A. a new material has been developed which comprises phenol resins and magnesium fibres as a reinforcement. The material is highly heat-resistant and will be used for aerospace purposes. The heat resistivity arises from a 28% water content of magnesium fibres - on heating, the water evaporates exerting a cooling effect.

311 WHY DEVELOP NEW COMPOSITES NOW? D.L.Grimes (Whittaker Corp.) Res./Devel., 1965, 16, No.9, 28-31.

Tables are given of properties of different composite materials and of fibre and wire reinforcement. Boron fibres are included.

312 GERMAN PATENT 1,193,927. PRODUCTION OF ALUMINA FIBRES. General Electric Co.

A mixture of a volatile aluminium compounds (such as $AlCl_3$ or aluminium isopropoxide or methoxide), carbon dioxide and hydrogen is preheated and passed through a reaction tube heated at the inlet to at least 1100°C and at the outlet to about 1500°C, the pressure in the reaction tube being below 100 mm.Hg. A copious formation of alumina fibres takes place inside the tube. The length of the fibres is up to 2.5 mm., and the diameter is 0.03 - 0.05 mm.

313 FRENCH PATENT 1,395,829. MOULDABLE POLYOLEFINE PREPARATIONS. National Lead Co.

A process is described for the polymerisation of olefine containing less than six carbon atoms on the surface of separate silicate fibres suspended in a liquid medium, whereby each fibre becomes enclosed in a polymer sheath. In an example, 10g. of dry asbestos fibres were suspended in 1800 ml. of dry toluene, the suspension was flushed with nitrogen to expel air, and 0.03 mole of $TiCl_4$, followed by 0.03 mole of $Al(C_2H_5)_3$ were added. Then gaseous ethylene was introduced into the suspension and the temperature was increased to 65°C. After three hours, 190g. of polyethylene has been formed, enveloping each fibre (there was no free polyethylene). The fibres thus created were further processed to form sheets.

314 JAPANESE PATENT 19563/65. PROCESS FOR RECOVERING METAL WHISKERS FROM A GROWING BASE. General Electric Co., N.Y.

Whiskers of chromium, gold nickel, copper, iron or cobalt are produced by the gaseous transfer process. Then the growing base with whiskers formed thereon is immersed in a mercury pool to which vibrational movements are applied, whereby the whiskers are separated from the base. A liquid which is inert to the whiskers and collect them preferentially, is added to the mercury pool under thorough mixing. Subsequently, the liquid with the whiskers gathered in it is separated from the mercury, and the whiskers are recovered by filtration.

315 HIGH TEMPERATURE MATERIALS. A. J. Kennedy, Sci.J., 1965, 1, No.6, 38-44.

The high strength of boron fibres is referred to, but there are considerable difficulties: the boundary between the fibre and the matrix is mechanically and chemically vulnerable and the engineering use of these highly anisotropic systems raises some serious difficulties.

PART 10. MISCELLANEOUS.

316 FRENCH PATENT 1,350,676. ARTICLES FROM FIBROUS MATERIALS. D. F. Ednell.

Articles from fibrous materials, especially troughs for conveying molten metals in foundries, are produced from a fibre pulp or suspension, by depositing the mixture onto a permeable mould, through which water or any other suspending liquid can be removed, the permeable mould being subjected to oscillating movements during the deposition of the fibres. The movements can be effected in a longitudinal or transverse direction, or in both directions simultaneously.

317 CANADIAN PATENT 648,133. SETTLING ASBESTOS FLOATS ETC., FROM AQUEOUS SUSPENSIONS. American Cyanamid Co.

The flocculation and settling of asbestos floats or short fibres is facilitated by treating the suspension under flocculating conditions with a small amount of water-soluble cationic polyacrylamide and a diallylquarternary ammonium compound.

318 FLOATING FILTRATION FOR VISCOSE SOLUTIONS. E. Riedel et al. Faserforschung und Textiltechnik, Dec. 1965, 16, 598-602.

Several materials were tested as filtering aids for viscose solutions having K - values of 200 - 300, including Dederon choppings, natural cellulose fibres, asbestos fibres, kieselguhr, wood flour and pvc powder. The best results have been obtained with pvc powder.

319 BELGIAN PATENT 667,965. METAL CASTING PROCESS. Union Carbide Corp.

A slurry containing finely divided chrysotile asbestos and a liquid vehicle is applied onto the inner surfaces of an ingot mould having a sufficiently high temperature to cause the evaporation of the vehicle and formation a continuous layer of asbestos adhering to the walls of the mould. The molten metal is then poured into the mould and the ingot obtained has a defect-free surface.

320 BRITISH PATENT 1,007,566. IMPROVEMENTS IN OR RELATING TO GRINDING, SANDING, BUFFING AND CUTTING MEDIA. Erwin Meyer.

The materials having a micro-foliate structure may comprise pre-treated asbestos.

321 BRITISH PATENT 1,010,699. FIREPROOF COVERINGS FOR COLUMNS, BEAMS AND OTHER FRAMEWORK MEMBERS. Cape Building Products Ltd.

PART 11. REVIEW OF JOURNALS.

"ASBESTOS", March 1966.
807 Western Saving Fund Bldg., Philadelphia, Penn. 19107.

322 FOR DISCUSSION: ASBESTOS FIBRE PREPARATION, J.L.Tucker, p.2.
323 J-M ASBESTOS-ASPHALT PAVING REPORT. Use of asbestos fibre in asphalt mixes has increased four-fold. Chief uses are in thin overlays, bridge deck surfacing and curbing., p.26
324 MARKET CONDITIONS, p.28.
325 PRODUCTION, p.30.
326 IMPORTS & EXPORTS, p.32.
327 INDUSTRY NEWS, p.38.
328 ASBESTOS PATENTS - Extract from six U.S.A.Patents, p.48.

ASBESTOS-CEMENT REVIEW, January 1966.
Kirchgasse 40, Zurich, Switzerland.
(This number is mainly devoted to use of asbestos-cement in schools)

329 SCHOOL IN LINDENBERG, SOUTHERN GERMANY, p.10.
330 SCHOOL AT WEGGIS, SWITZERLAND, p.13.
331 HOOVER SCHOOL AT WAYNE, MICHIGAN, U.S.A., p.17.
332 GRAMMAR SCHOOL AT BERNE, SWITZERLAND, p.20.
333 ARAGON HIGH SCHOOL, SAN MATEO, CALIFORNIA, p.24.
334 SCHOOL IN LORCH, nr. STUTTGART, GERMANY, p.29.
335 SCHOOL FOR FURTHER EDUCATION AT BORREMOSE, DENMARK, p.32.
336 NEW STEINER SCHOOL IN THE RUHR, GERMANY, p.36.
337 STUDIES AND LECTURE ROOMS FOR THE ARCHITECTURAL DEPARTMENT OF THE PARIS BEAUX-ARTS IN THE GRAND PALAIS, p.41.
338 SUN BAFFLES AT THE CO-OPERATIVE HOUSE, VASSAR COLLEGE, POUGHKEEPSIE, N.Y., p,42.
339 SUN BAFFLES AT THE LAGUNA INSTITUTE, CALAMBA, PHILIPPINES, p.44.
340 EXPERIMENTAL PRIMARY SCHOOLS IN ARARAQUARA, BRAZIL, p.44.
341 SUSPENDED CEILING IN A BOYS' SCHOOL IN PORTO, p.45.
342 PARTITION WALL CONSTRUCTION AT DARTFORD TECHNICAL COLLEGE, p.46.