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REVIEW OF RUBIN LEWON'S JOURNALS AND RECORDS

by Stephen L. Berger

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Rubin Lewon kept several journals, along with various correspondence and notes, during his employment as a research engineer for Plant Rubber & Asbestos Works (now Fibreboard). Some of the notebooks and portions of the journals deal with material, such as plastics and electronics, not related to insulation and will not be discussed in this report. The general impression of Rubin Lewon, through reading of the journals, is one of a competent, conscientious engineer concerned with both the daily operation of the plant and with research projects.

The first of the journals was presumably begun when Lewon first started to work for Plant Rubber & Asbestos. He meticulously went through Chemical Abstracts taking notes on various kinds of thermal insulations under the following headings: Insulation, Insulators, Magnesium Carbonate, Magnesite, Dolomite - Grabertite, Kieselguhr, Diatomaceous Earth, Vermiculite, Calcium Silicate, Ammonium Carbonate, and Ammonium Magnesium Carbonate. These notes were mainly on abstracted patents. The first journal covered from about 1907 to 1932 (the years refer to Chemical Abstracts). The following are brief descriptions of the entries in which insulations

that did not necessarily use asbestos are mentioned.

Page 3	U.S. Patent 1,000,295 1911 Insulation for boilers and steam pipes - 65% lime putty, 30% sawdust, and 5% plastering hair.
Page 4	British Patent 13,248 1912 Insulation - 75% diatomite, 12.5% lime, 12.5% asbestos, and water. Asbestos is optional or may be replaced by other fibers.
Page 11	U.S. Patent 1,228,609 1916 Insulation - magnesium carbonate precipitated upon asbestos or coconut fibers.
Page 13	U.S. Patent 1,279,975 1918 Insulation - magnesia, diatomaceous earth, and fibrous material.
Pages 28, 29	U.S. Patents 1,520,893, 1,544,196, and 1,544,215, all issued to Celite (later bought by Johns-Manville) and deal with calcium silicate insulation which can be reinforced with a variety of fibers.
Page 32	U.S. Patent 1,569,755 1926 Diatomaceous earth, lime, fiber, and

water.

U.S. Patent 1,590,132 1926
Diatomaceous earth, lime, fiber, and water.

Both patents issued to Celite.

Page 39 U.S. Patent 1,613,137 1927
Asbestos or other fibers, diatomaceous earth, bentonite, and boiling water.

Page 45 U.S. Patent 1,715,977 1929
Insulation of vermiculite, diatomaceous earth, and binder.

Page 59 U.S. Patent 1,811,516 1931
Diatomaceous earth, calcium carbonate, and basic magnesium carbonate.

Page 64 German Patent 535,244 1927
Basic magnesium carbonate, with or without fibers.

The second journal continued with these notes from Chemical Abstracts.

Page 1 British Patent 477,763 1/3/1938
An insulation that can contain asbestos, mineral or slag wool, cellulose, or wood fibers.

Page 5 U.S. Patent 2,130,091 1938
Issued to Eagle-Picher. An insulation

containing vermiculite, asbestos, and magnesium oxysulphate.

Page 13 U.S. Patent 2,168,288 1939
U.S. Patent 2,168,289 1939
Both issued to Philip Carey. Sheet insulation containing a bituminous and fibrous mixture.

Page 15 U.S. Patent 2,175,715 1940
Issued to F.E. Schundler (later bought by Johns-Manville). Vermiculite insulation.

The third journal was a log of the plant from January 1, 1939 to August 1941. There are two entries of interest.

Page 6 "Dust bad when new P/C - block machines running. Suction measured 4" but 5" P/C mill blew considerable dust to canvassing dept. which caused inconvenience." P/C presumably stands for pipe covering.

Page 9 Entry of February 9, 1939 mentioned discussion between Rubin and SAA (presumably S.A. Abrahams) about the validity of a patent which might be issued to Plant Rubber & Asbestos Works and would be directed to

circular molding. A previous German patent describes this circular molding idea and the setting of normal carbonate trihydrate.

Lewon kept a separate file on patent matters. Two letters, both written by Lewon, in this file dealt with the infringement of patents.

A letter to Dr. A.M. Erskine dated January 29, 1947 discussed the Johns-Manville process for making precision molded 85% magnesia blocks and whether there was a question of infringement of Plant's patents. He recommends that the question of infringement be put aside for awhile. Lewon indicated that Plant's patent position was extremely weak. Steps in Plant's patented process, such as the step of pre-heating, were previously described in German patents and articles. Therefore, some of Plant's patents might have been invalid and unenforceable.

A memorandum dated March 7, 1947 discussed U.S. Patent 2,413,958, issued to Johns-Manville on January 7, 1947. Lewon concluded that at least part of the process in this patent did infringe on Plant's patent 2,209,754. Lewon also commented that the insulation block made by Johns-Manville is superior to that made by Plant. Lewon further questions whether a pipe covering can be made by this method because it would have to be made in half-sections which might warp and distort.

The following are miscellaneous letters, proposals, and memorandums found in lewon's records:

A Proposed Research Program, dated August 27, 1942, mentioned on page 2 that there was a possibility of developing a high temperature heat insulation cement without the use of fiber.

A Research and Development Program for low pressure insulation was written by A.M. Dinkfeld to S.A. Abrahams and dated January 12 (year unknown, but probably 1944 or 1945). The object of this program was to produce a precision molded 85% magnesia pipe covering having a temperature limit of 300°F. A cheaper 85% magnesia pipe covering would be produced, but would not be substitutable for the regular 85% magnesia because of the temperature limitation. On page 2, the letter states "This might be done through the use of a vegetable fibre in place of asbestos or through a blend of vegetable fibre and asbestos in sufficient proportions to cause the destruction of the product at say 300°F. However, work done with vegetable fibres for this purpose does not look too promising since the fibre can be destroyed by heat without the total destruction of the insulation." It seems that it was surprising that vegetable fibers could be used at a higher than 300°F temperature. The explanation is that even if some of the vegetable fibers were destroyed in the space near the pipe, the integrity of the pipe insulation as a whole would be

preserved. It is suggested on page 3 that a blend of alpha cellulose and redwood bark fiber might work to produce the cheaper product.

A progress report entitled Asbestos Cement Products III, covering the period October 8, 1946 to December 10, 1946, and written by G.M. Nummy, investigated the use of fibers other than asbestos in products such as shingles. On page 3, it states organic fibers such as Asplund wood fibers might be used satisfactorily. Further research is recommended on various fibers and fiber substitutes.

A memorandum dated March 31, 1947 and written by Lewon, discussed a report by the British Army on the German Asbestos Industry. The German asbestos-cement manufacturers substituted cellulose (wood) fiber for asbestos in 1942. The "product was claimed to be satisfactory. However, all of the manufacturers stated that they prefer and would again use asbestos in their product when it becomes available again."

In conclusion, it can be said that Lewon and others at Plant Rubber & Asbestos Works knew thermal insulations could be made without asbestos and that 85% magnesia might have been made without asbestos. The reports taken as a whole suggest that economic considerations (inexpensive asbestos) were foremost in the minds of the research staff of Plant. Also, there was mention of the considerable dust created by the machinery.