

July - Dec
1970

G E O R G I A P A C I F I C

G Y P S U M R E S E A R C H

JUNE TO JANUARY

1971

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SUMMARY

This report covers activities in gypsum research for the past six months ending December 31, 1970. The breakdown of the money invested in research during 1970 is shown on page 4. As a measure of the value of research we list sales and profits from new products. The figures for the past six months are shown on page 5. The full year's results show a contribution of $5,284,634 to list sales and $820,724 to gross profits from products developed through research during the past 10 years. Other benefits from research are cost savings and sales assists, but these are often difficult to assess. A good portion of our budget each year goes for fire and sound testing. Our 1970 sales of 5/8" and 1/2" Firestop were up 49% and 28% respectively over 1969, so this is strong evidence of the value of that work.

Our primary concern, however, is with current projects which are directed to the sales and profits of the future. The complete list of investigations are contained in the body of this report, but some of the more important developments in the last half of 1970 were:

1. Manufacture of Mastic Adhesives

The branches are currently selling an adhesive for installing plywood paneling. Similar adhesive is used to apply gypsum wallboard, and both types are growing because of the increase in factory built units. We already have much of the equipment to manufacture these adhesives in our joint system plants. The combination of having available manufacturing facilities and distribution outlets prompted us to formulate an adhesive. The experimental work was completed and it was decided to purchase a mixer and tube filling equipment. The first production of the adhesive is scheduled for January at the Akron, New York, plant. We expect this to be a profitable business and one which will fit in well with our present manufacturing and marketing programs.

2. Progress Towards a Gypsum Firedoor

It has been over 15 years since the gypsum firedoor development first began. The project has been marked with a series of failures and frustrations. The potentially favorable economics have kept the project on a high priority in spite of the setbacks. In the past year the investigation has progressed to the point where we have been able to recommend a fire test at Underwriters' Laboratories. Wood framed cores filled with a special foamed gypsum were produced on the wallboard machine at Blue Rapids. These gypsum cores were subsequently processed into flush wood firedoors at the Curtis plant in New London, Wisconsin. The important Underwriters fire test will take place in February. A successful test will not guarantee to put us in the firedoor business, but it will provide justification for a full scale investigation at our gypsum and door manufacturing plants.

SGP 0015199

3. Development of an Elevator Shaft Wall

United States Gypsum Company found a market for gypsum wallboard shaft enclosures in high rise buildings. These walls were formerly constructed with masonry block, but the gypsum walls are much lighter in weight. In response to a request from our sales, a similar wall was devised that is lighter in weight and easier to install than USG's system. The two hour fire rating and wind load tests were successfully completed. We will sell a 1 5/8" thick x 2' wide shaft liner panel and metal components in addition to the layers of regular gypsum board for the finish side. Our first job will be the First National Bank Building in Portland.

4. Conversion to Gypsum Filler for Joint System at Acme

This transition has been slower than anticipated because of the lack of acceptance of some of the products made with the gypsum filler, We have been making a gypsum Ready Mix for well over a year, but we have encountered resistance in attempting to substitute gypsum/vinyl formulas for the old limestone/casein products. The rising prices of casein and limestone plus increases in freight rates have simply made it uneconomical to ship these old formulas. All reasonable efforts are being made to make the gypsum products acceptable.

5. Using Gypsum as a Filler for Plywood Putty

Through our marketing people, we learned that the Eugene Division uses over 100 tons of limestone each month to produce a putty for filling imperfections in plywood. The preliminary tests indicate that gypsum is an acceptable substitute for the limestone. Some large scale trials are planned. We expect to be able to furnish the gypsum at a competitive price with the limestone the Eugene Division is buying outside the company.

6. Fast Joint Finishing Methods for Factory Home Builders

Normal taping and finishing of gypsum wallboard is too slow for factory built homes. We developed a tapeless joint compound which had merit but was not practical, so it was abandoned. The current investigation is directed to the overall problem of using gypsum wallboard in mass produced homes. We may not find a dramatic solution, but we do expect to learn enough about the problems to make specific recommendations concerning the use of our products.

7. A New Line of Joint System Textures

The wall and ceiling textures we have been marketing are not profitable. We are trying to change this situation by 1) improving the quality of the products 2) economizing on the formula and 3) increasing the manufacturing efficiency. Less expensive formulas have been developed and field testing is in progress. The first trials have been encouraging. In the meantime, the Engineering Department is working on a better plant design and additional facilities to use expanded polystyrene as an aggregate. The polystyrene aggregate is essential if we are to have a complete texture line.

SGP 0015200

8. A Flamespread Rating was Obtained for Pre-Dec

In an Underwriters fire hazard test a flamespread rating of 20 was achieved for the Pre-Dec board we are selling for mobile homes. This means Pre-Dec can be used anywhere non-combustible construction is specified. Pre-Dec was introduced in February of 1970, and during the past six months 5 million square feet were sold. The purpose of the flamespread rating is to help increase the sales.

9. Sound Tests of Floor Constructions

Two floor-ceiling assemblies with Densrock gypsum floor topping over a plywood subfloor were tested for airborne and impact sound. Excellent ratings were achieved that will let us compete favorably with similar constructions with lightweight Portland cement floor topping.

10. Patents to Issue Soon

Our investment in patent applications has been unusually high the past two years. The reason is that several of our innovations offer potential licensing opportunities. We have been advised that the claims for our patents on the improved Firestop formula and the radiant heat panel have been allowed. The patents will issue early in 1971. No action has been received on our round edge and gypsum joint system patent applications.

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There was one organization change the last half of 1970. Mr. A. Kelly Stalker transferred to the Curtis Door Division. We are glad that our people can receive opportunities in other parts of the company. Mr. Sanford M. Rome has been hired to replace Mr. Stalker.

We had hoped to add to our research equipment and facilities during 1970, but these investments were postponed because of the squeeze on cash outlays. The items requested are not crucial to our immediate needs, but they are important if we are to expand our ability to contribute to the future of the Division and the Corporation.

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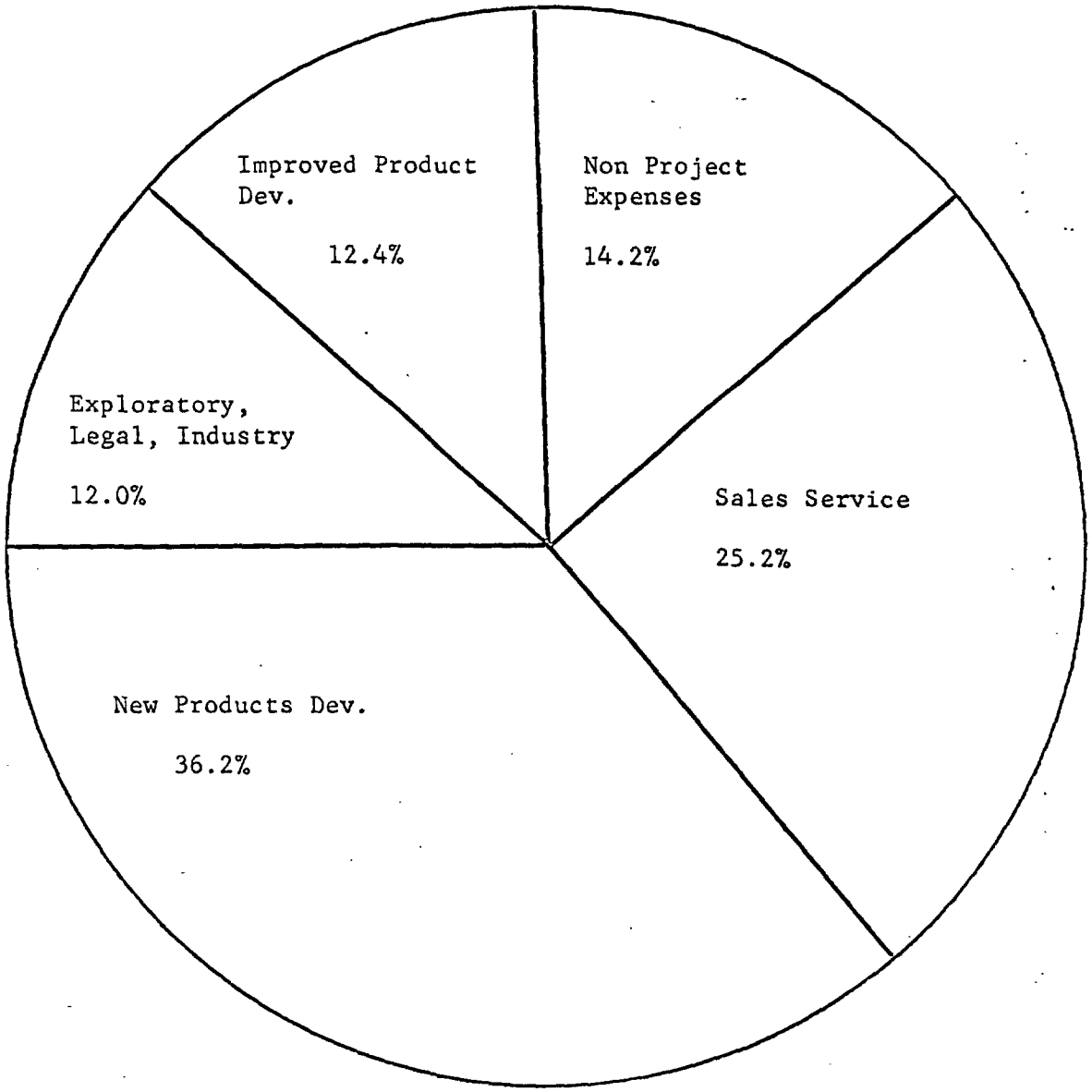
DISTRIBUTION OF 1971 RESEARCH BUDGET

TOTAL RESEARCH BUDGET - $222,559



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ANALYSIS OF SALES & PROFITS FROM NEW PRODUCTS

June 28-Dec. 24, 1970

Unit	Product	Sales Volume	List Sales Amount	Gross Profit Amount
MSF	Denscote Base (all)	8,639.4	$294,670.03	$ 21,130.33
MSF	Tile Backer Board	5,932.0	372,000.34	126,086.17
MSF	1/4" Sound Deadening Board	3,410.0	102,454.82	19,006.30
MSF	Radiant Heat Panels	141.8	53,833.70	(1,779.52)
MSF	Pre-Dec Wallboard	5,001.4	287,998.28	59,956.85
MSF	Pre-Dec Ceiling Tile	8.6	742.10	265.56
Pails	Ready Mix	344,983.0	979,335.58	127,968.67
Cartons	Ready Mix	2,297.0	5,670.85	(594.89)
Tons	Triple Duty	2,224.1	279,231.90	30,902.31
Tons	Denscote Plaster (all)	1,696.7	93,386.66	18,709.49
Each	Thermostats	318.0	1,905.28	512.36
Lbs.	Insulated Nails	224.0	1,724.80	319.37
Tons	Bestex A	667.6	87,084.21	5,086.87
Tons	Bestex B	36.4	5,741.68	555.45
Tons	Bestex C	178.4	28,918.28	230.93
Tons	Bestex D	168.0	26,250.14	(432.67)
Tons	Speedset	162.9	24,291.50	4,502.34
TOTAL			$2,645,240.15	$412,425.92

SGP 0015203

NEW PRODUCT SECTION

Mastic Adhesives

In the last report the Research Department had recommended that Georgia-Pacific manufacture mastic adhesives in conjunction with our joint system products. It was decided to invest in the additional facilities needed at the Akron, New York, plant to manufacture adhesives for attaching plywood paneling and gypsum wallboard to wood and metal framing. The first adhesive will be produced at Akron early in 1971. Further development proceeded as follows:

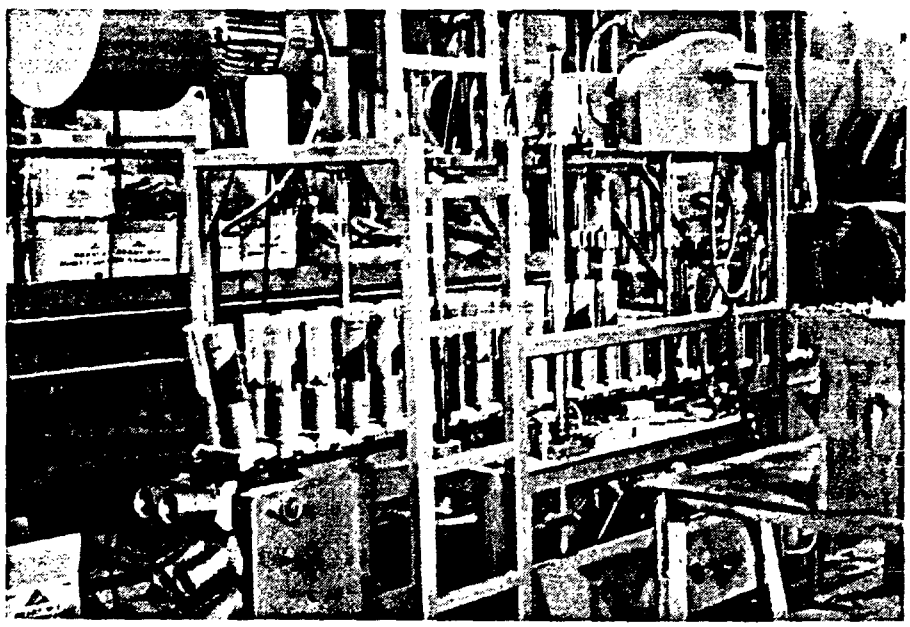
1. Formulation and Testing

Quite a lot of re-formulating and testing was done to reduce the flow of adhesive from the tube when the pressure was released. It was found that the addition of solvent would restrict the flow, but this introduced other problems such as reducing the freeze-thaw stability and the hazards of handling an organic such as toluene or xylene. Trichloroethylene, which is not flammable or explosive, was found to do the job. It was necessary to use ethylene glycol in conjunction with the trichlor in order to have sufficient freeze-thaw stability. The addition of the ethylene glycol also provided longer open time, which is desirable.

The economics have been basically unchanged by these formula revisions. The adhesive passes all of the ASTM standards and the APA requirements for construction adhesive as well.

2. Manufacturing

We have supplied information to Engineering to help in the planning and layout of equipment to produce the adhesive. The basic equipment needs were a high shear mixer, an automatic tube filler, and a storage tank for emulsion. Recommendations for initial orders of raw materials have been made and raw material and finished product specifications have been prepared.



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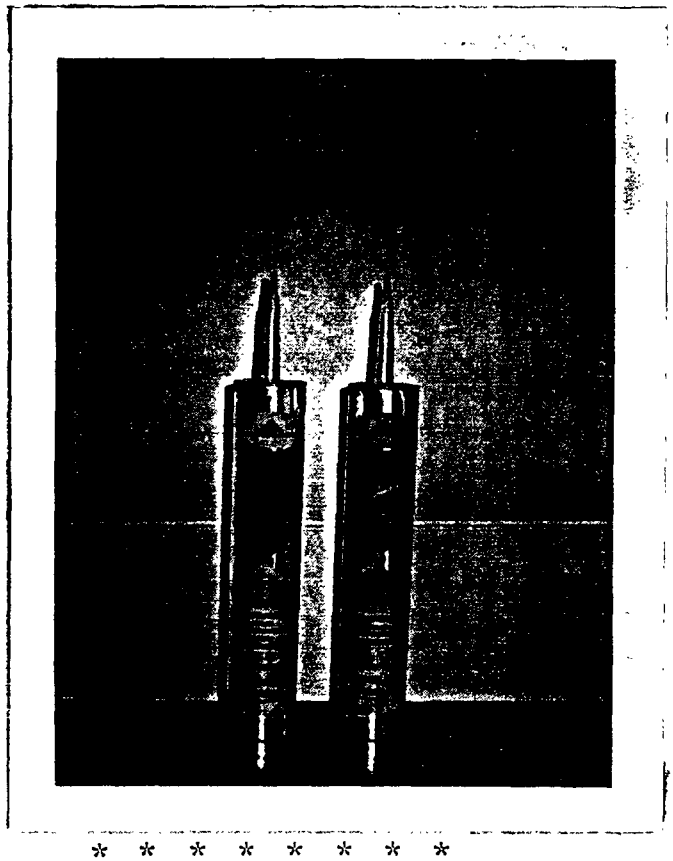
3. Sales

Directions and specifications for the labels on the tubes and product literature have been prepared. Field trials on the latest formula indicate that the product should be well accepted by the trade.



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Gypsum Firedoor Filler

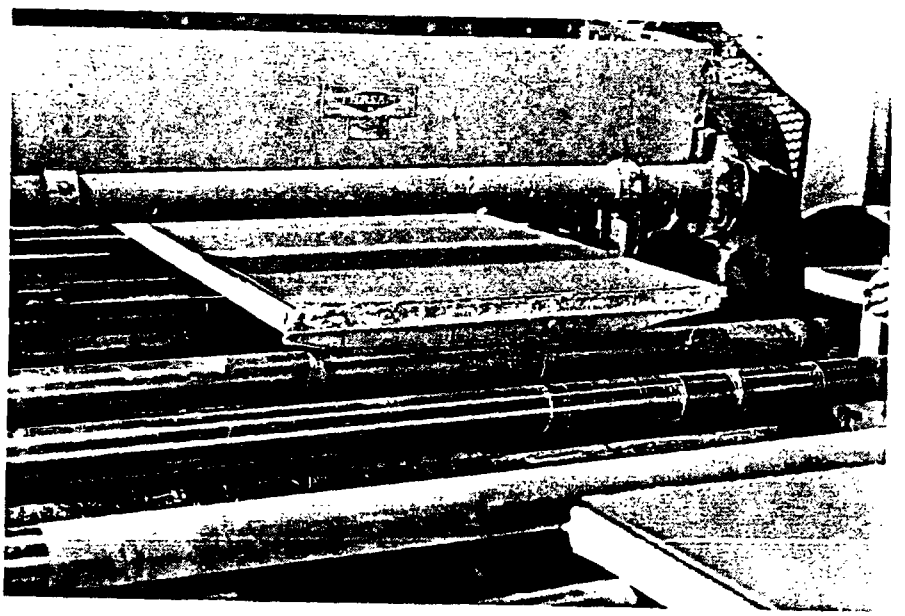
All out effort was launched to determine whether it is feasible to make a wood flush firedoor with a gypsum core. The pilot wallboard machine in Tigard was used to do much of the experimentation. This was vital in planning a plant run.

1. Laboratory Investigation

We had established the fact that a gypsum slab of the weight required would be too weak to be handled. We discovered how to impart flexibility and strength to the gypsum composition, but not to the degree needed. Two methods were tried in an effort to get more strength. The first was to cast the lightweight gypsum slurry in a paper covering like wallboard. We were able to form the product, (see photo) but in the kiln the paper separated from the gypsum. Even when we were able to get the paper to stay on in a fashion, the slabs of full 3' x 7' door size could not be handled without damaging

SGP 0015205

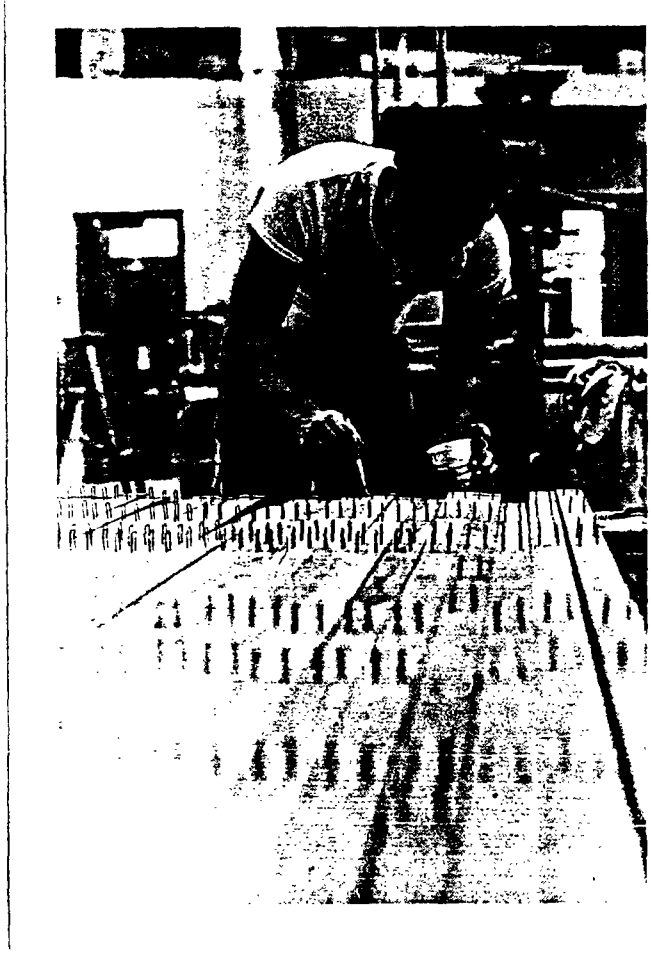
them. A few smaller size 3' x 4' slabs were processed through the sander, but even they were difficult to handle without breaking in assembling the door core.



The second method was to cast the slurry into prefabricated wood frames. (see photo) In this case the frame would be full door size 3 x 7, 4 x 8 or whatever. This worked better and resulted in cores that could be shipped and handled without excessive damage.

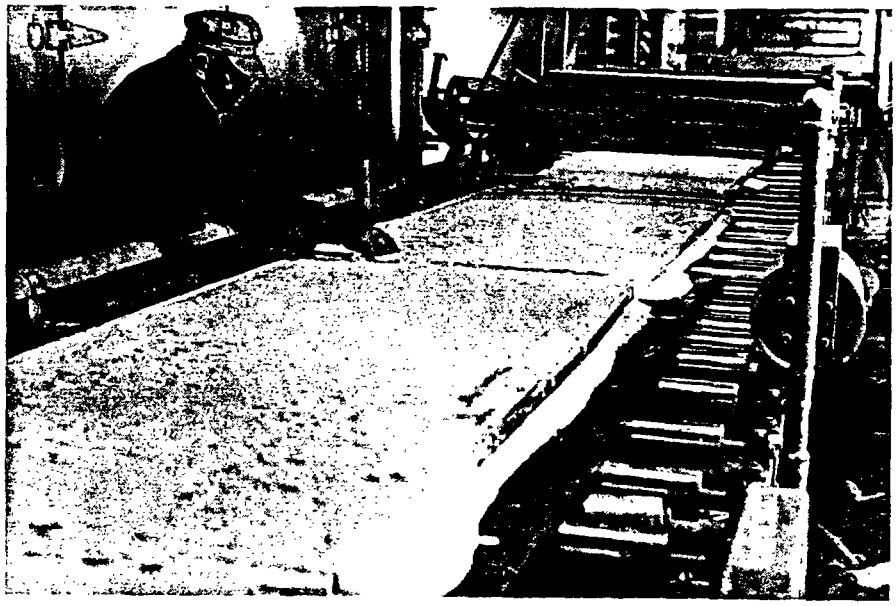
SGP 0015206

Even so, it was necessary to modify the frames so they would do the job. Some way had to be found to key the lightweight gypsum core to the wood frame. The best method found was to drive staples around the perimeter of the frame. This kept the core from separating from the frame in the shipping and handling up to the time the door is made.



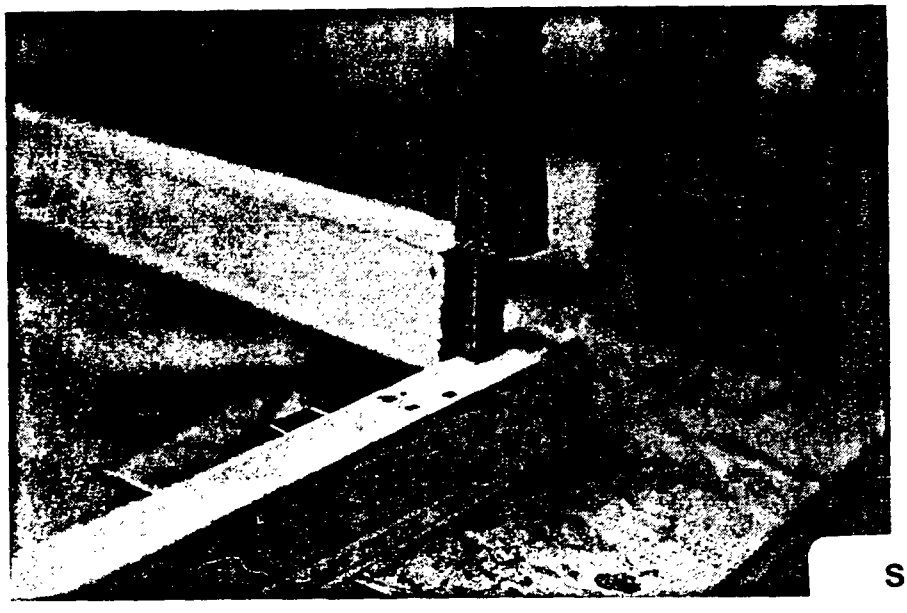
There was also difficulty in making a corner joint in the wood frame that would hold together. A glued dovetail joint proved to be superior to any others we tried.

SGP 0015207



2. Plant Investigation

Two plant trials were made at Blue Rapids. Through these trials, it was established that the firedoor core material could be cast in wood frames and dried on the gypsum wallboard machine. No major modifications to the equipment are necessary, but some revisions are required. The top and bottom surfaces of the cores are formed with wallboard paper which is removed before the kiln. The belt speed is slowed to about 15 feet/minute and the drier temperature is lowered to about 200-250°F in both sections with about four hours dwell time. It is desirable to have a pre-forming roll ahead of the master roll and an air vibrator to distribute the slurry uniformly in the frames.



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During the last run at Blue Rapids we had an Underwriters inspector witness the manufacture of 15 gypsum cores with fire retardant wood frames. These were shipped to the Curtis Door plant in New London, Wisconsin, to be made into doors.

3. Making of Doors for U. L. Fire Test

The gypsum cores arrived at New London in good condition. There were still some defects such as bowing of the frames and layering of the gypsum in a few of the cores, but we feel that these can be overcome. The sanding produced even surfaces. The skins were laminated to six cores using phenol-resorcinol glue in a cold press, and the bond was quite satisfactory. Four of these doors will be fitted in U. L. labeled door frames and shipped to Chicago for the fire test.

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Fast Method of Joint Finishing

The need for a faster method of reinforcing and concealing joints has come about through the growth of the factory built housing industry. One of our competitors, National Gypsum Co., has developed a system consisting of an iron-on tape in conjunction with a setting type joint compound. In our judgment, their system doesn't have much merit, but the mere fact that they have something to offer puts us at a sales disadvantage.

SGP 0015209

Our first approach was a tapeless polyester base joint compound. A product was developed which provided greater joint strength than regular tape and set hard within a few hours. It was a two component system and required acetone for clean up. The set was influenced by the temperature and was difficult to control. The clean up was time consuming and distasteful because of the acetone fumes. These disadvantages outweigh the advantages, and in any event it would be difficult, if not impossible, to re-educate the trade. On this basis, the tapeless joint compound was abandoned.

The current investigation covers all phases of factory-built structures including studs, stud spacing, facing materials, methods of attachment, joint reinforcings, joint compound, and anything else that seems pertinent. We are considering testing a complete unit in Tigard to simulate the conditions in a mobile or modular house plant. The object is to come up with a set of recommendations for factory home builders so they will give preference to Georgia-Pacific products.

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Gypsum Filler for Plywood Putty

Through a conversation between Gene Burch and someone from the Eugene Division, it was learned that the Eugene Division was using over 100 tons of limestone per month for putty used to fill knotholes and imperfections in plywood. Gene passed the information along to us with the suggestion that our fine gypsum filler might be used in lieu of the limestone. This gypsum filler would have to come from Sigurd to be economical, but a trial quantity was obtained from Acme where it is being used in joint system. Seven hundred pounds was used in a plant trial at Eugene, and they said it performed as well or better than the regular limestone filled putty. The limestone costs them $30 per ton. The freight on a carload of gypsum from Sigurd is $15 per ton so the $15 difference makes it look interesting. A new product Eugene plans to produce will take another 100 tons of filler so this makes it even more attractive. If we could realize $5 per ton profit, it would amount to $1000-$2000 per month.

In order to provide fine gypsum from Sigurd, it will be necessary to install the air separation equipment we already have. Before installing any equipment, we are shipping 6000 lbs. of gypsum to Eugene for a full day's run. If this run is successful, we'll recommend that Sigurd install the air separator.

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Pre-Mixed Laminating Adhesive

According to our industrial sales people, there is a substantial market for laminating adhesives in the area serviced by Acme. It is their opinion that we can service this market if we have a competitive product. A preliminary formula was developed, and some trials were made. We did not receive any

SGP 0015210

conclusive reports, but the material did separate somewhat. Sales contends that there are several hundred thousand gallons that we could sell if we could formulate an acceptable product and furnish some technical help. Our R & D Advisory Committee has decided that we should review this with our industrial sales people before we decide whether to devote a great deal of time developing and testing adhesives of this kind.

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SGP 0015211

IMPROVED PRODUCTS SECTION

Lower Cost Ready Mix

We have been shipping Ready Mix made with gypsum for over a year now from Acme. Sales contended that our costs were still too high in relation to the prices, so another reformulation was made. The basic change was the substitution of a small amount of the RS6219 polyvinyl alcohol for a large part of the polyvinyl acetate emulsion. This served to cut the raw material costs by 15¢ per five gallon pail. The field trials were all satisfactory, in fact, the new formula seemed to have even better acceptance than the old. We have been shipping the new material about five months now.

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Gypsum Filler in Dry Joint System

Unlike the Ready Mix, the change to gypsum met with considerable opposition. In addition to the substitution of gypsum for limestone, we were also substituting vinyl for casein. After several revisions we were able to gain acceptance in several markets. However, there are still problems of workability with some of the products. We are attempting to overcome these objections. We were able to change the Triple Duty and Ready Mix to gypsum probably because they have always been vinyl base products. The All Purpose, Bedding, and Topping which were casein/limestone formulas are where we have encountered problems of acceptance. Acme is continuing to furnish the casein/limestone formulas where we have not gained acceptance for the gypsum/vinyl formulas. Ironically, the All Purpose is the lowest price product and also the one where we have encountered the most opposition. The latest cost figures show that we lose money on every bag of casein All Purpose sold. The profit on the other casein products is also marginal.

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New Texture Line

We have been losing money on our aggregated textures for some time. The chief reason is the labor that goes into the product because of the inefficient operation at Acme. The basic filler is prepared at the joint system plant and transferred to the white mill where the bags are emptied. The aggregate is added, the material is rebagged and sent back to the joint system plant for shipment. With the proper equipment in the right location, this operation could be streamlined so that each operation would be in sequence without any movement from one location to another. In addition to manufacturing inefficiencies, the products have suffered from relatively high raw material costs and average to poor acceptance depending on the market. On the West Coast, which is the largest texture market, we have been unable to compete because we do not have a polystyrene aggregate texture. This texture sprays much easier than texture with the perlite or vermiculite aggregate that we are using.

SGP 0015212

The current investigation has several objectives.

1. To reduce the raw materials costs of our texture products by using gypsum as the basic filler.

2. To improve the hiding, coverage, and spraying properties of our textures.

3. To eliminate asbestos from the textures since asbestos constitutes a health hazard when spray mists are breathed by the applicator.

4. To formulate a polystyrene aggregate texture and convince manufacturing to purchase the equipment necessary to expand and shred this polystyrene.

5. To have Engineering and Manufacturing redesign the texture operation.

Some field trials of the new aggregated textures have been conducted, and the results are promising. Advantages reported are better coverage, better hiding and less bounce back. The amount and size of raw vermiculite is varied to produce a light, medium, or heavy texture. The raw material cost of the new texture is 28¢ per 40 lb. bag less than the old formula. Asbestos is eliminated which should be a sales aid. Instead of asbestos, we are using Cellu-Floc which is a G-P product.

We will follow up the field tests in Memphis with a market test. One contractor has ordered 1000 bags. In the meantime, we have been field testing a non-aggregated texture. This texture had good application properties, but tends to be lumpy when mixed and sensitive to addition of other materials such as paint. Reformulation is underway. We hope to have an entire new family of textures (gypsum base at Acme and limestone at the other plants). The limestone formulas will be similar to the gypsum, i.e. no asbestos, color matched, and be able to be intermixed without creating problems. Sales plans to have new bags (yellow) and identify the products differently to get rid of the stigma of the Bestex name.

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Hard End Wallboard

The idea of end spraying gypsum board with a resin emulsion was tried again at Sigurd. Some modifications were made to the spray apparatus to restrict the spray pattern and a set of pinch rolls were installed to hold the books of boards together as they were being sprayed. These changes overcame the objections to the boards sticking together and the spray pattern being too wide. Sigurd was not clear on the operation of the equipment so this was explained. The purpose of the end spraying is to reduce end split and make a board with a harder end. It is now up to the Sigurd plant to use the equipment and see if the advantages of the end spraying are significant.

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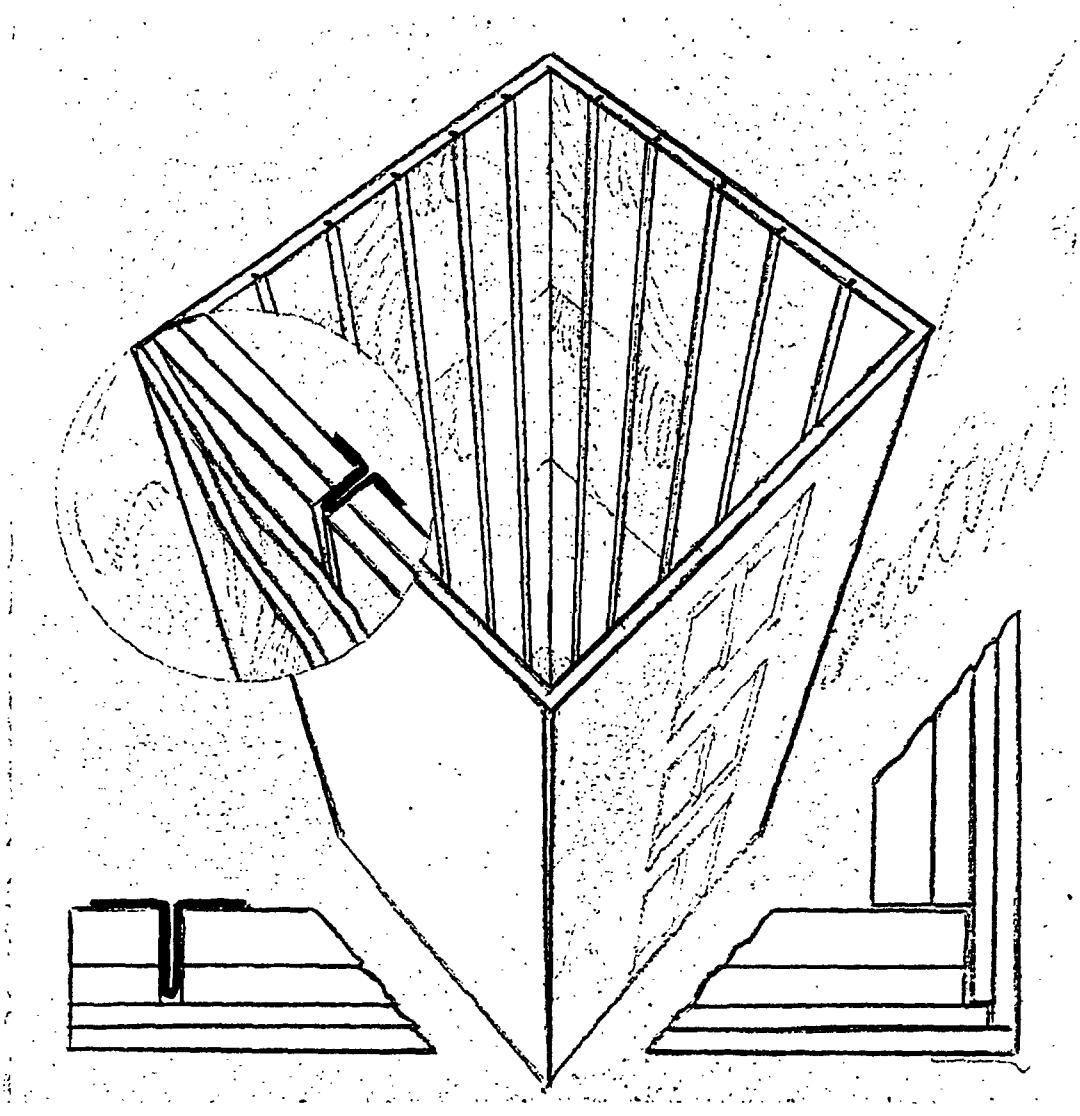
SGP 0015213

Shaft Wall System



A new gypsum shaft liner that goes up faster.

Georgia-Pacific's new Shaft Liner System. It weighs only 10.5 lbs. p.s.f. compared to 34 lbs. p.s.f. or more for masonry shaft walls.

This weight reduction means you use less structural steel. And since it installs from the shaft exterior, construction is speeded up. Temporary shaft enclosures are eliminated.

What's more, it meets fire requirements. Sound control requirements. And it's designed to resist uniform wind loads.

In addition, the core panel is prelaminated.

All in all, you won't find a better shaft enclosure. Anywhere!

SGP 0015214

After a thorough comparison of the shaft wall system designed by Ray Hinkel and Jim Groat and USG's system, it was decided to devote our efforts to our own shaft wall. Our system is less expensive, lighter in weight, and easier to install. USG's system had only one advantage, that being that they had already gotten acceptance for it. A different system would require more sales effort. This probably means getting architectural specifications changed from USG's system to ours. This isn't an easy task, but it was felt that there were sufficient advantages in the G-P system to warrant the additional sales effort that would be required.

The first thing we had to do was get the two hour fire rating. The pilot tests indicated we would have no trouble, and we didn't. The test went for two hours and 35 minutes. The next step was the wind load tests. These tests showed that the panels could be erected at least 12 feet in height. For higher partitions either heavier gauge metal components or narrower panels (16") will be specified.

We no sooner completed the tests on the basic wall when it was found that we would need a thinner wall (less expensive for lower heights) and a chase wall version to accomodate electrical and plumbing facilities. The fire tests of these alternate constructions are scheduled for early next year. If both fire tests are passed, some additional wind load tests will be needed, but other than that, the system will be complete.

Manufacturing specifications, installation instructions and architectural specifications have been prepared. There has been some urgency in pulling everything together because our system will be installed in the First National Bank Bldg. in Portland, which is just about ready for the elevator enclosure. The metal J, L, and T components have all been ordered from Dale Industries. It was necessary to have special dies made for the J and T shapes. The 50,000 special screws were also ordered. Everything appears to be ready for the shaft system to be erected in the bank building starting early next year.

Advertising has begun to promote the shaft wall system and other jobs should begin to materialize shortly. We will also be looking at the possibility of licensing others to use the shaft system we have developed.

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Demountable Partition

We ordered and received a quantity of aluminum extrusions and plastic caps so that a small job could be installed with this system of laminated vinyl faced panels and flush matching battens. Based on the first test, a large number of laminated panels were sold with matching, but protruding battens. These have apparently been satisfactory, but there is supposed to be an even larger market for a system with a flush batten. As soon as we get the field trial under our belt, we can decide whether to market the panels and components in other parts of the country.

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SGP 0015215

Flamespread for Pre-Dec

Almost as quickly as we began marketing Pre-Dec, Sales requested a flamespread rating. Our competitor, USG, had gotten a rating of 25 for their Blendtex board and building codes were beginning to require a flamespread not to exceed 200 for surfacing materials used in mobile homes. A run of Pre-Dec over 1/2" Firestop was made at Acme with Underwriters witnessing. U. L. required that a labeled board be used so that is the reason 1/2" Firestop was used. We had previously tested the Pre-Dec in our small lab tunnel in comparison with other products with known flamespread ratings. We estimated a rating of 20 on the basis of these tests. The U. L. test was held at their Santa Clara facility. The official result was flamespread rating -20, fuel contributed -5, and smoke developed -0. This rating not only exceeds the building code requirement, but will qualify for any non-combustible construction and is better than USG's rating of 25-15-0.

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Sound Testing

We assisted with the testing of a demountable partition faced with Eternawall for a large job in Albany, New York. The object was to satisfy the architect on the sound rating. It was necessary to seal some leaks in the partition and re-test, but the desired rating was achieved.

Impact and airborne sound tests were conducted on two floor systems in which our Densrock floor underlayment was used over the plywood subfloor.

The assemblies tested and the results are:

Description:	1 1/4" thick Densrock floor Underlayment poured over 6" Flexicore hollow precast concrete slabs.	5/8" Densrock floor underlayment over plywood subfloor on wood joists. 1/2" Firestop on resilient channels with insulation in the joist cavity.
Conducted at:	Riverbanks Acoustical Laboratory	Geiger & Hamme Acoustical Laboratory
Airborne (STC)	52	58
Impact (INR) (with carpet & pad)	+29	+22

This is the sound data industrial sales needs to promote Densrock for floor underlayment. We have also gotten Underwriters approval to have the wood joisted system with Densrock listed as an alternate for our fire ratings in designs 1-1 hour, 33-1 hour, 46-1 hour and 217-2 hours. We will proceed to establish U. L. label service and listing for these designs, and this will be another selling point for the Densrock floor system.

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SGP 0015216

U. L. Re-Evaluation of Floor-Ceiling Fire Tests

ASTM Committee E-5 in cooperation with Underwriters Laboratories has established a new criteria for fire testing floor and ceiling assemblies. In the future they will test constructions as restrained or non-restrained. In conjunction with this change, U. L. is revising all of their current listings and will charge the expense to the listees, of which we are one. They had planned to do this in 1970 in time for the 1971 U. L. building materials list. Through the Gypsum Association, we questioned U. L. on this and were able to get a postponement of the re-evaluation until next year. This gives us more time and also puts off the expenditure of about $1000, which is the fee they would charge to revise our listings.

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SGP 0015217

INDUSTRY PROJECTS SECTION

Gypsum Association

The August technical committee meeting was held in Portland. This presented an opportunity to have a number of our people attend the meeting. Some of the major items considered were:

1. A letter of opposition to HUD'S unrealistic operation breakthrough criteria. HUD has since backed down.

2. An improved format was developed for the next issue of the Fire & Sound manual. This manual has gotten good acceptance and is fast becoming the most used source of fire and sound information. We have a special interest in promoting fire rated gypsum products in view of our Firestop licensing.

The next Gypsum Association Meeting will be held in conjunction with the ASTM C-11 meeting. We are preparing some data which will be included in the Fire & Sound manual, and we are also preparing a proposed method for distinguishing between regular and type X wallboard.

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ASTM

There have not been any crucial issues in committee C-11 lately. Recent specifications on nails, screws, and steel studs have passed the vote of the society and will be included in the next set of standards.

Fire resistance Committee E-5 has proposed the ASTM E-136 method for determining combustibility of materials such as gypsum wallboard. This test would render gypsum board combustible so the gypsum industry is vigorously opposing the method. At the upcoming C-11 meeting we will propose a reduction in the minimum weight of gypsum backing board to correspond to the weight minimums for face board.

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SGP 0015218

PATENTS SECTION

Firestop Improvement

Earlier in the year we had an action from the patent examiner rejecting all of our claims. Synnestvedt & Lechner's response convinced the examiner to allow the claims relating to clay, but not the ones relating to colloidal silica and alumina. We decided not to acquiesce but to conduct more tests and make another effort to gain acceptance of all the claims. This patent is potentially important, and we want it to be as strong as possible. After presentation of test data and two affidavits to the patent office, allowance of all claims was granted.

The patent should issue in March of 1971. Our patent counsel has suggested that we contact our licensees upon issuance of the new patent, advising them of its existence, and our intention to continue licensing under it.

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Radiant Heat Panel

All the claims were rejected, but our rebuttal to the examiners arguments and Synnestvedt & Lechners interview prompted him to reverse his position and allow all claims. This patent will issue early in 1971. We have no immediate licensing plans.

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Round Edge Wallboard

There has been no action from the patent office, and no one has taken a license from us although some interest has been expressed. If we can get the patent, we should have some licensing possibilities.

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Gypsum Filler for Joint System

The patent application has been filed. Since we are using gypsum filler in joint system, it already has some commercial significance.

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Shaft Wall

We have decided to file for a patent since we have an opportunity to license some other companies.

SGP 0015219

Two other patent possibilities are under consideration. One is the demountable wall system,and the other is the gypsum firedoor. We want to be sure that the products are marketable, and there is something to be gained before an application is filed.

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OTHER PROJECTS

Karnematt Process Paper Mill Waste

We were requested to evaluate a dewatered sludge from the Kalamazoo Division's Karnemaat process. This is a process for treating paper mill waste. We obtained samples from Kalamazoo and conducted an investigation to determine 1) whether the sludge could be used to manufacture a special lightweight wallboard or 2) whether it could be used as a substitute for the paper fiber in regular wallboard. Our exploratory testing indicated that there was nothing unique about the sludge that would make it possible to develop a special lightweight wallboard. The Karnemaat process material did appear to be a satisfactory substitute for paper fiber. In order to prove the value as a substitute for paper fiber, it would be necessary to make a plant run. The only plant where it would be feasible is Grand Rapids, and even there, it is questionable if it would be economical. We have left the project in the hands of Manufacturing and Kalamazoo to work out a trial. We have heard nothing from either party and assume it has dropped.

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FWR Systems

We were approached by the subject company to participate in the marketing of a paper honeycomb panel with gypsum board facings. There is nothing unusual about honeycomb panels, but FWR Systems have a mobile unit which produces these panels at the building site. The cost of the paper honeycomb is so high that the economics of the panel are unfavorable. A demonstration of the FWR mobile panel making unit was held in conjunction with the ICBO convention in Portland. We witnessed the demonstration and were not impressed with their ability to produce panels with the mobile unit. Even though this approach doesn't appear to be practical, it is obvious that there is much interest in better methods of construction. We should keep abreast of all the new ideas that are advanced so we can determine the effect on the products we are marketing.

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SGP 0015221