LARGE APPARATUS DIVISION

# STREAMLINER

SHIPPING · PALLETIZING · PACKAGING

PACKAGE DESIGN & SHIPPING SECTION

SCHENECTADY, N. Y.
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## *Let's Put 16 Ounces of Function in Every Pound of Packaging!*

*by*
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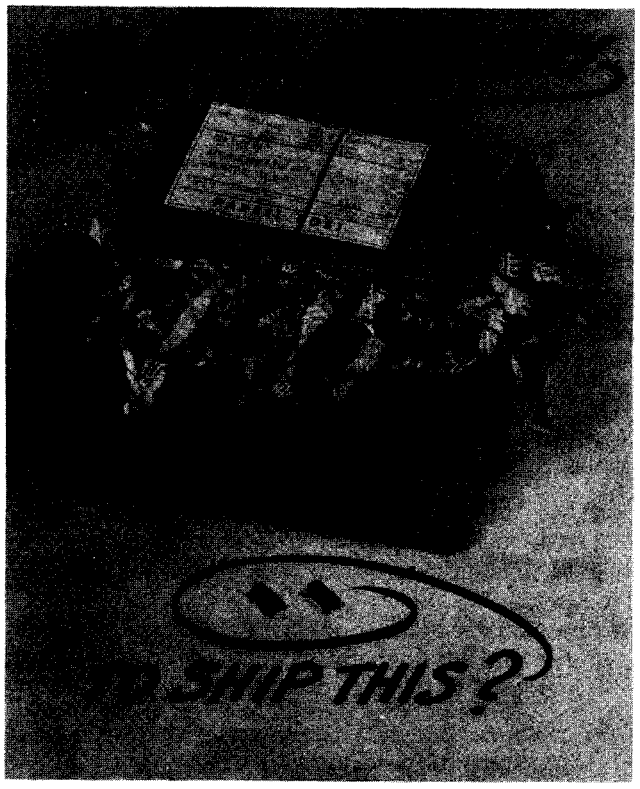
Last week we received this imposing looking box from one of our General Electric factories. We pulled out handful after handful of excelsior, finally 1--2--3--4 corrugated squares and then found the contents--four small steel stampings about the size of pencil erasers. Shipped from a regular shipping section on a regular order, this told a dangerous story--the story of "Routine Execution" without thought of Value. All advanced study of packaging materials, all design of economical containers, all research into ways for eliminating "unnecessary costs" are focused on the one simple act--the act of actually packaging the product--yet in this instance, this was being done without consideration of Value.

In another instance, a short time ago, a Value Analysis survey of all of the costs of the product resulted among other things in the development of a package costing 20 cents instead of 34 cents. The package was proven by test and approved; still, an order came through for 9000 more of the 34 cent packages ($1200 extra cost!) Ordering personnel said, "Yes, I knew the new one was approved but it takes a while for all of the approvals to clear and I thought we would use this lot, then change on the next." $1200 cash brushed aside! Again routine execution without thought of Value.

Value in packaging, as in materials and parts of our products is determined by the rule of function. What does the material do? What does it add? What useful service does it perform? How does it function?

Every element of material )
Every nail )
Every operation ) . . . adds cost!
Every bend or cut )

Does every one of these elements actually function?




The principal functions of materials used in packaging fall in three general areas (next page) with a list of some of the most common functional materials.

Value in packaging means choosing the right amount of the right functional material to adequately but not excessively protect the product; for example, wood is an excellent functional material for general mass support but a very costly one for surface protection, and useless for mechanical shock protection. Sponge rubber is good value for mechanical shock protection within one vibration range, celotex within another, etc. The reason that corrugated boxes have

| Functional Material | General Mass Support | Surface Protection | Mechanical Shock Protection |
|---|---|---|---|
| Wood | Wood | | |
| Paper | | Paper | |
| Excelsior | | | Excelsior |
| Shredded Paper | | | Shredded Paper |
| Corrugated | Corrugated | Corrugated | Corrugated |
| Chipboard | | Chipboard | |
| Fiberboard | Fiberboard | Fiberboard | Fiberboard |
| Cellulose Wadding | | Cellulose Wadding | Cellulose Wadding |
| Molded Pulp | | Molded Pulp | Molded Pulp |
| Sponge Rubber | | | Sponge Rubber |
| Celotex | | | Celotex |

been so widely used is because they possess a fair degree of functional properties in all three categories. At the same time, for special products, following the basic laws of function and Value, corrugated materials reinforced with wood would be expected to excel in Value, and often do.

### They are very close!

Value and function go hand in hand. Accordingly, the more all of us who touch a package, or design it, or think about it are governed by the rule of function, the better Value we will provide.

For example, Value in nails means that every part of every nail used must be functioning.

#8 plain box nails cost about 4 1/2¢/C and have about 20 lb holding power as ordinarily used.

#6 nails use less steel but have less holding power.

However, #6 rosin coated nails cost only 2 1/2¢/C, use half as much steel and have twice the holding power of the #8 plain. Steel is conserved because its functioning power is increased by rosin.

Also, any portion of the nail which extends entirely through is not functional and represents waste.

Furthermore, the variation in holding power, within the various pines and spruces which we receive and use as packaging, is more than 100%. How, but by "function consciousness" all through our organization can we hope to meet varying conditions--receive differing woods for example--still avoid using twice too many or half enough nails?

By alerting our personnel at every level to the extreme importance of the rule of function, we will constantly gain better Value.

The Value of a crate or a package or a carton is not determined by the cost of the materials and the labor which go to make it up, but rather by the minimum cost of other functional materials which could be used to serve the same purpose and do the same job.

Applying our "Ten Tests For Value" to packaging, we are surprised that they are very pertinent. Think them through. As we read each, keep in mind the elements that make up the cost of our packaging--pieces of wood, corrugated board, tape, nails, excelsior. Does every item of cost--material or labor--in our package meet these tests?

## THE TESTS FOR VALUE

(1) Does its use contribute value?

Does that nail contribute needed strength?
Does that corrugated spacer actually protect something?

(2) Is its cost proportionate to its usefulness?

Is a folding operation using half of the packing cycle?
Does protecting one minor product feature double the cost of the packaging?

(3) Does it need all of its features?

Does the 3-in. tape protect its product any better than 1 in. would?
Does every reinforcing cleat function to protect its product?

(4) Is there anything better for the intended use?

Are we using each functional material in its most effective area?
Would 10¢-worth of fiberboard function instead of 25¢-worth of celotex wadding?
Won't filament tape do the job better for less than steel tape on your particular job?
Won't celotex protect from mechanical shock as well as sponge rubber at lower cost on another job?

(5) Can a usable part be made by a lower cost method?

Instead of three corrugated spacers, won't one ingeniously designed and folded do the job?
Instead of a panel of wood, will a corrugated and cleated panel protect as well?

(6) Can a standard product be found which will be usable?

Can we by a small addition adopt a standard container?

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# PETERBOROUGH IS SCENE OF RECENT BPS GROUP SESSION

Peterborough Works of the Canadian General Electric Company were hosts to members of the Large Apparatus Box, Pack, and Ship Committee at the June meeting of the group. This was the first time that such a meeting had been held at the Canadian plant, and since their products parallel, to a very large extent, those of the Large Apparatus Department, it proved a valuable session to all who attended.

M. J. Collins and S. O. Shields of the Peterborough Works were the hosts for that organization, and W. J. Kinsey, Schenectady, coordinator of the group, was in charge of the meeting. In addition to the regular committee members, guests included K. M. Smith, Davenport Office, B. A. Weber, G-E X-Ray Corporation, and R. L. Brandes, superintendent of the Atlanta Warehouse. Highlights of the session were:

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Can we by ingenious designs use readily available functional materials even for special jobs?

(7) Is it made on proper tooling considering quantities used?

Staple for staple, divider for divider, box for box, crate for crate, have we the proper equipment for most economical use?

Have quantities increased or diminished unexpectedly destroying "Value" in some of our operations?

(8) Do material, reasonable labor, overhead and profit total its cost?

Considering raw material and reasonable operation labor, does every cleat, every support, every divider, every molded container and every assembly of these parts represent good Value?

Do the people working with each of these parts know their approximate cost so they are in a position to judge Value from their use?

(9) Will another dependable supplier provide it for less?

Have we found the best suppliers and scheduled every item of material at best prices from them?

(10) Is anyone buying it for less?

Have our competitors found a way to eliminate non-functional costs to a greater degree than we have?

Through geographic location, personal initiative or otherwise, have our competitors established better suppliers for usable materials?

Every week, new functional materials are evolved and ingenious applications for the usual functional materials developed. Every one probably reduces the Value ceiling on some of our packaging. It is a challenging job to convert these opportunities into balance sheet dollars.

**Mr. Brandes:**

Proper routing and employing stopoff and trailer cars can reduce our large annual freight bill. Proper loading at the factories of warehouse cars and interworks cars can afford unloading savings at the destination, and proper loading and segregation of the material can also reduce handling expense and can prevent damage to material that cannot be attributed to the railroads. Close cooperation with Shipping and Traffic Sections of the Divisions will pay big dividends.

Large Apparatus Division, BPS Committee Meeting at Peterborough Works. Reading left to right: Back row, B. A. Weber, G-E X-Ray, Milwaukee; C. D. Uncapher, Lg. Mtr. & Gen., Fort Wayne; M. J. Collins, Peterborough Works, Canadian G.E.; S. O. Shields, Peterborough Works, Canadian G.E.; R. C. Richards, Lg. Mtr. & Gen., Schenectady; D. C. Clapsaddle, Lg. Mtr. & Gen., Schenectady; W. J. Kinsey, Lg. App. Div., Schenectady. Center row, J. F. Bresnahan, T&AP, Pittsfield; W. E. Becker, L&CE, Erie; K. M. Smith, Davenport Works, Canadian G.E.; E. J. Murray, A&OS, Schenectady; L. W. Batchelder, Turbine, Fitchburg; R. L. Brandes, Atlanta Warehouse; C. Steele, Switchgear, Philadelphia. Front row, J. Cullen, T&AP, Pittsfield; I. F. Link, A&OS, Schenectady; C. A. Marshall, Turbine, Lynn; L. H. Williams, Turbine, Schenectady.

**Mr. Kinsey:**

A 5 percent cost reduction is considered good. Current BPS rate is 8 percent. Some divisions may help obtain their reductions by noting how others obtain theirs.

**E. J. Murray, Schenectady A and OS:**

Savings are being obtained through the use of reuseable containers from vendors to customers. Tote boxes are a problem; about 15,000 are needed. Mr. Rupp, Philadelphia, can supply details of a fiber box.

**J. B. Bresnahan, Pittsfield T and AP:**

A new bin-pack container comes in three sizes and costs .21 instead of the $3 for the usual bin container. They afford many ways for unit shipment, and as a shipping container for customer shipments. Vendor is Preston Associates. Also, honeycomb liners are in very short supply since vendor has only one machine available to make them.

**C. D. Uncapher, Ft. Wayne LM and G:**

Interplant transportation was biggest source of savings last year. Savings last year were $32,000, compared with $52,000 at 1952 rate.

**C. Steele, Philadelphia, Switchgear:**

$7,000 savings has been realized by reducing the thickness of skid floors from 1 1/4 in. to 1 in., affording savings in shipping weight and of three carloads of lumber. Replacing wirebound with wooden crates for breakers, with the crates made in the cabinet shop, is saving $2500. They are having difficulty obtaining spruce to replace pine.

**Mr. Collins:**

Peterborough has made blueprints for basic boxes and skids, specifying number and size of nails to be used, and their spacing. Motion time study people made the survey. Copies of the blueprints are available.

**I. F. Link, Schenectady A and OS:**

Returnable and reusable aluminum plugs are producing a savings.

**J. Cullen, Pittsfield:**

Since moving to a smaller building with less width and heighth than the former, a Lyon Raymond 2,000 lb fork lift truck with a 130-in. lift and requires only a 64-in. turning radius is being used to great advantage.

**L. W. Batchelder: Fitchburg:**

Requested that factories shipping to Fitchburg mark their shipments better. They have saved $4,000 by receiving wooden instead of wirebound boxes from vendors. A survey of turbine skidding is being made. Conformance with government specifications makes reductions difficult.

**W. E. Becker, L and CE, Erie:**

Since most of Erie's output goes to Alco at Schenectady, there have been many opportunities to reduce shipping costs. Special cars have been designed for traction motors, special skids developed for controls, and NYC cars with perforated steel inside has eliminated dunnage. Alco is now returning containers for reuse. A savings of $15,000-$18,000 is being realized in the reduction of shipping weights.

**C. A. Marshall, Lynn River Works Service:**

By substituting a 6 in. x 10 in. spruce timber for a 12 in. x 12 in. oak one, a substantial savings is being realized.

**L. H. Williams, Schenectady Turbine:**

Skid specifications are being reviewed, and by using PROTEKWOOD and inventory reduction is being realized, as well as $38,000 in material and $10,000 in freight charges. Weldcars have been employed and have produced savings because roadbeds and bridges have not had to be replaced. Furthermore, more direct routes can now be used.

The meeting concluded with a luncheon and tour of the Peterborough works.

## CUSHIONING LARGE UNITS PAYS, SCHENECTADY TURBINE FINDS

Providing good cushioning for large pieces of steel equipment during shipment is time and money well spent, the Schenectady Turbine Division found recently.

The frame of a special flatcar, on which the Turbine Division was shipping a huge generator rotor, broke under the strain. Because the stator was adequately cushioned with timbers no damage to the load resulted, the unit merely settling a little and coming to rest completely on the cushioning. Although one of the cushioning pieces broke completely under the strain and the other one was badly bruised, they supported the stator until it could be removed, undamaged, to another car.

According to L. H. Williams of the Division, such a fracture of a flatcar frame is almost unknown, and the mechanical superintendent of the railroad which owns 13 similar special cars and supplies them as required said he had never known of such an occurrence. The break occurred near a large clearance hole. The broken car has been withdrawn from service and the others are being checked to prevent the recurrence of such an event.

The car concerned was loaded at Schenectady with the 173,000 lb rotor, the load being distributed over the length of the car. The stator frame itself

was loaded on a skid of longitudinal and crosswise timbers containing the two cushioning pieces, 8 in. x 12 in., one pine and one fir. The frame was fastened to the car by bars extending to the car bottom, the tie rods being 7/8 in. steel. After the break, the side dropped 6 in., and left practically no road clearance. The cushioning timbers, however, placed under the tie bolts on the stator frame flange to prevent the head of the bolt from coming into contact with the steel flange of the rotor. If it was not for the cushioning effect of this timber, and the heavy skid, the stator frame might readily have twisted and broken when the frame slipped from position.