Tomorrow is today

Contributed by GLEN R. JOHNSON, JR.

The author reviews the progress of materials handling techniques over the past quarter century and projects today's concepts against the requirements of the future, concluding with his evaluations of the changes that will take place in the years ahead.

The Decades of Progress

As I look back over a quarter of a century experience in material handling and a close association with food manufacturers and distributors and their problems, I can see definite milestones of progress.

The decade of the 1940's was definitely one of "*Mechanization*" within the food industry, and if I may dwell on that period for just a moment, it is basic to the main topic of the discussion. Just preceding the 1940's, a few major food processors were experimenting with unit load handling and storage concepts, and some distributors – you could count them on your fingers – were using the unit load technique in their warehouses. The material handling logistics lessons learned during World War II were rapidly applied by the wholesale grocers during the late 40's. Seven significant events of that era continue to exert their influence on food distribution.

1. Adoption of the fork truck-pallet unit load method of handling.
2. Standardization in 1949 on two pallet sizes as industry standards – 32″ x 40″ and 40″ x 48″ – the first dustry to do so.
3. Development of common measuring tools to gauge material handling efficiency; such as: tons per man hour (TPMH), pieces per man hour (PPMH).
4. Design and construction of distribution rather than being a storage medium.
5. Acceptance of a "fast mover – slow mover" philosophy of item location in relation to warehouse facilities.
6. Development of a "slot system" for stock location in a warehouse.
7. The adoption of mechanical bookkeeping machines – punch card – for ordering, invoicing, record keeping and data retrieval functions.

The food industry is indebted to the foresight of those innovators of that decade.

The decade of the 1950's was one of "*Equipment Specialization*"–under the floor towveyors, narrow aisle fork trucks, remote control and custom designed order picking towing tractors, adjustable pallet racks, flow through conveyors, automatic palletizers, adjustable and power actuated dock boards, free lift masts on fork trucks – to name a few of the innovations of that period. The decade of the 1960's has become one of "*Unit Load Distribution*" within the food industry. The implementation of this concept long practiced within automotive circles was an inevitable step for the grocery manufacturers and food distributors.

The principle of shipping in unit load modules had been a dormant potential for many years. A shipment of flour on customer supplied pallets by rail car across town from Pillsbury Mills to Super Valu Stores, Minneapolis, Minnesota in 1945 was the first I have knowledge of employing a common carrier. While it was a humble beginning which continued as a standard practice, it foretold of things to come. Consider these things also. The pulpac slip sheet method of handling was invented in 1947 when we were trying to solve a unit load shipping problem for Kellogg Company. It was employed by some food processors by 1949, but its potential as a palletless distribution method was not exploited until recent years. The same holds true for palletless carton clamps which came on the scene in 1952 following initial squeeze clamp development efforts in 1941 and 1945. Their potential as a distribution tool was not tapped until the early 60's. Thus, while great strides have been made in the last several years – over 70 manufacturers shipping their major product lines in unit load form – progress has not been without problems.

A major stumbling block has been non-standardization of methods among manufacturers. Each has been employing the method he deems for *his* operation and one he

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has promoted to his customers. The food distributor, thus, has had to equip himself with all the handling tools to take advantage of *all* these benefits offered by the shippers – carton clamp trucks, pul-pac push-pull slip sheet attachments, chisel plates, chisel forks, multi-tine grocery forks, pallet forks and side shifters. It has required a sizable money investment for equipment to handle the multiplicity of unit load forms, or else the distributor has had to use manual unloading and reunitizing methods to interface the product into his system. The equipment manufacturers have not kept pace with the requirements, although progress had been made from permanently mounted attachments and devices on their lift trucks to a "quick change", version, requiring some 20 or 30 minutes to remove and another 20 to 30 minutes to put on another, using hand tools. However, the equipment suppliers' definition of quick change was different from that of the user, and the situation may have remained status quo for several more years if one grocery manufacturer had not defined "quick change" attachments as ones which could be exchanged *in less than two minutes – without hand tools.* In future years we probably will refer to 1967-68 as the turning point for unit load distribution.

We now are able to supply hydraulic attachments for fork lift trucks which can be exchanged with each other using hand tools and do it in less than two minutes – and it does not require an exceptionally skilled lift truck operator. This means that a fork side shifter attachment can be taken off and replaced with a carton clamp or pul-pac push-pull slip sheet or rotating clamp or multi fork pul-pac – any device with either a single or dual hydraulic motion. It is also possible – using a kit – to modify existing late model trucks and attachments for the two minutes or less quick change feature. These new and very significant developments were introduced to the trade at the material handling show in Cincinnati, Ohio, October 17 - 19, 1967 installations since then have been changing devices in less than one minute. Food manufacturers (and most important for all food distributors) can now ship, load and unload any unit load form, whether it be on pallets, on slip sheets, palletless clamp loads, special unit load packs, etc. One lift truck – with several devices – can now meet many loading or unloading situations. I believe this will become one of the most significant events for the food industry. These attachments – fork side shifter, carton clamps – have been operating in General Foods Corporation, Youngstown, Ohio distribution center for almost a year and have met all operating requirements. Using high performance, 36 volt, SCR controlled electric trucks and quick change attachments they have increased storage capacity and handling efficiency over their previous LPG powered trucks and pallets.

Material Handling for Tomorrow

Although none of us can foretell precisely what will happen tomorrow or the coming 70's, we will continue to have two things that contribute immensely to our destiny . . . *People* and *Time. People* will continue to create and also to solve problems: people will operate correctly as well as mal-treat equipment; people will think as well as taking thoughtless action; *people* will not lose the intelligence race to computers but will continue to tell these electronic marvels what to do. How well we use human resources will be our barometer of progress.

Time, on the other hand, is the raw material of everything. Let me repeat that . . . *Time is the Raw Material for Everything.* All activities, events, happenings are related to time; performance, efficiency, speed are measured by time. In the 70's there will continue to be earth time of 24 hours a day, 365 ¼ days per year. How well we employ *time* – the constant factor – will determine the effectiveness of our progress. Management of people and time will continue to be a challenge, as it has always been, to us. Material handling will be a major supporting function for the total distribution system. I predict that the decade of the 1970's will be one of total distribution in which we will see the fulfillment of the "Box Within a Box Within a Box"module concept brought to fruition in moving food products from grower to customer – yes and perhaps from "Grower to Skiller" may become a reality. This concept proposes initial packaging of the food product in a container which will be used for its preparation by the consumer – similar to the frozen TV dinners, pastries, etc. . . . but it will be done earlier in the distribution cycle.

Our present distribution cycle from grower to processor to manufacturer to wholesaler to distributor to retailer requires 16 separate material handling and 13 transportation functions. We have not done too badly from processor to manufacturers to wholesaler (and within those facilities), but our material handling efforts at the grower and retailer levels are most costly processes. It is in these areas that we must seek cost saving opportunities by more efficient handling techniques, but their methods must interface with the rest in the distribution chain to be effective.

The food industry presently accounts for 17% to 18% of total unit sales of mobile variable path material handing equipment. We expect this pattern will remain and possibly increase. Overall, we believe there will be a 50% increase in demand for all material handling equipment in the next ten years – from $1.6 billion to $2.4 billion. The fork truck will become more sophisticated and will be complemented by new types of handling equipment and load positioning devices presently being designed or edeveloped. It is evident from the decades of progress we have mentioned here today that there is a technological lag of 10 to 15 years from the time a concept or product is initiated until it becomes accepted practice. Hence, I believe we can say, that what has not been conceived now will have little change for effective use in the 70's. Based on what we know at present, material handling will tend to be more highly automated – with the emphasis on fixed path systems, such as automated storage and retriveal systems presently applied to in-process storage and general material handling, and more advanced versions of the driverless tractor which will be self loading and unloading. These tools will be applied to order picking, assembly operations and be activated by EDP machines. Previous failures in these automated order picking efforts will become experience for the successful applications in the 1970's. Prior efforts have always been restricted to picking the unit size – a case or carton – loaded into the system; future systems will allow loading with unit loads, but discharging in case lot units, and, most important, assembling into order or truckload lots.

The "box within a box" concept will be an accepted material handling practice in the 70's – containers will be a way of life; and I mean all sizes of containers from the tray, pallet, cargo, van sizes. The smaller ones will be stuffed with product as early as possible in the distribution cycle and be retained in that form to the latest possible point in the cycle. We expect this will become common practice with perishable products. Van size shipping containers, but more likely their module sizes, will be taken directly to the end of production lines in the manufacturer's operation or to the "stacks" in the distributors warehouse and be stuffed with product and by-pass the order assembly staging areas on shipping docks. We have the tools today in an embryonic stage to accomplish this job.

Van containers will be used to broaden present markets

and to penetrate new markets in a larger scale and format than the initial efforts today. It is entirely feasible to supply eastern and western markets from a midwestern distribution center. Retail stores will be serviced overnight from a large master distribution center complex, rather than building several distribution warehouses to serve several trade areas. Distributors will use containers and their attendant handling tools to serve new markets and penetrate these markets with less risk capital tied up in brick and mortar. Distributors in the Continental United States will move into European and Latin American markets and supply the retail outlets from Stateside distribution centers through the medium of containers – dry groceries, perishables and frozen foods – and we will learn from the experiences of the military forces today who are delivering foodstuffs from the West Coast to bases in South-East Asia using 20, 24 and 35 ft. van containers – a total of 2,427 in March 1967. Patterns are also being established by shipment of fresh meats from West Coast and Midwest suppliers to markets in Hawaii and even into the Yukon Territory of Canada. Recent experimental shipments of meat, produce and citrus fruits initiated by the U.S. Department of Agriculture to European markets are the beginnings of greater things to come. Unitization on pallets and slip sheets of product and citrus fruits in 1967-68 foretold dramatic changes in these distribution practices.

Material handling at the retail outlet today leaves much to be desired and it is in this area we believe much will be done in the coming years. Initial efforts will be concentrated on perishables and frozen foods and later will be applied to dry groceries, principally convenience foods.

Conclusion

In summary, material handling in the 70's will be . . .

1. A major function of the total distribution cycle.
2. Greater emphasis on fixed path automated equipment.
3. More sophisticated and efficient fork truck equipment.
4. Great utilization of containers in all phases.
5. Reduction in handling and manual restocking of sales displays at the retail market.
6. Unitization of product into unit load form as early as possible in the distribution cycle.
7. Trend toward elimination of order assembly staging areas on loading docks.
8. Stuffing of containers or trailers at time order is picked by means of module material handling "sleds" permitting envelope loading of truck trailers.
9. Selective order picking by mechanical means from unit loads of product.

. . . and to support these developments there must continue to be the development of better paperwork, record keeping, and communications systems to permit proper functioning. We must assume from past history that unless it is on the drawing board or under development it is not likely that any product or system will have a great impact on material handling in the 70's.