volatile impurities. It is important to maintain a history of the process activity related to product identification to assure that the proper precautions have been observed to prevent exposure to oxygen. This type of quality control record can be obtained automatically by "process monitoring" with a computer. All deviations from normal practice can be recorded and questioned if desired.

Utility Control. Logging of power-house instruments can be done by computer scanning of existing instrumentation. By using the concept of operator-guide control, the power-house operator can be alerted to forthcoming unusual plant power demands or be guided to the most economical boiler steam-flow assignments according to operating conditions or fuel availability. Sometimes "dump gas" is available at a least-cost price, and its use will represent a substantial savings over oil fuel if adjustments can be made fast enough.

The favorable utilization of electric power to take advantage of pricing structures is another possible source of savings if the plant operation can be adjusted fast enough without sacrificing process standards.

Net-Weight Monitoring. The most promising application concerns the many filling operations in putting the final products (peanut butter, lard, vegetable shortening, salad oil, oleomargarine, etc.) into containers. The obvious benefit is being able to adjust the stroke of the filling mechanism to counteract the changes of product density or container weights. Each filling machine has a fill adjustment designed for operator control. It is now feasible to sense container weights as they progress in the filling line and scan this signal with a Process Control Computer.

Once sensed by the computer, the analog weight signals can be converted to digital form and combined mathematically to detect an early trend toward high- or low-fill condition. This real-time information can be reported to the operator (via electric typewriter), or the computer can produce a corrective signal to drive an output device, such as a stepping motor, attached to the filling device adjustment mechanism. Individual net weights can be obtained by sensing container net weight and subtracting this amount from the filled weight of the proper unit. With the tremendous scanning capability of the 1800 control system, one would expect to pick up both tare and gross weights on several filling lines for each unit of product.

The savings in product, although intangible before a computer installation, can easily be determined once the system is installed and operating. The potential savings on this one application alone could more than justify the computer rental and perhaps only occupy 30% of the computer time which is available.

Management Information System. By the gradual implementation of these topics, a body of knowledge is built up within the computer which is the most timely source of plant-operating information. Production planning and inventory-control functions can be conducted with a high degree of sophistication when it is done with up-to-date plant information from the computer, coupled with order information as to what products to make and in what amounts.

When two production runs of the same product can be combined, the unit manufacturing cost is reduced substantially. Real-time cost accounting, which is now within reach via computer, can provide the break-away from the restrictions of traditional methods and provide a new measure of plant efficiency.

• *Obituaries*

B. Preston Harper, president of Southwestern Laboratories at Dallas, Texas, died July 18 at his home.

Leo D. Jones, of the Sharples Corporation, Philadelphia, died July 21, 1968.