integrates any group (0-399) in one step

This new all-electronic Model 522 Spectrum Resolver/Integrator may be used directly with TMC "400 Series" pulse analyzers to perform resolving and integration functions without the necessity of intermediate tape recording equipment.

As a Resolver the Model 522 takes information directly from any selected quarter or half of the analyzer memory and either adds it to or subtracts it from the data stored in an adjacent quarter or half of the memory. It is possible to remove individual components of a spectrum and leave only the desired elements by adding or subtracting 100%, 10%, 1% or 0.1% increments of reference spectra. The operator has precise control of the resolving process, and has an accurate visual record of the exact percentage removed.

As an Integrator, the Model 522 integrates memory-stored information within any band of channels from 0 to 399 in one operation. Two modes of integration are available:

- **NORMAL** mode sums the counts in the preselected band and stores the total in the last channel.
- **SUBTOTAL** mode adds each channel count to the previous one to provide a running subtotal.

With every operation, results are displayed on the analyzer scope and may be printed, recorded or punched out by the readout method of your choice.

Case design of the Model 522 Resolver/Integrator is identical to that of the compatible "400 Series" fully-portable, 400-channel Pulse Height Analyzers.

### SPECIFICATIONS

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<table>
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<tbody>
<tr>
<td><strong>Resolving Rate</strong></td>
<td>0.5 sec. for one add or subtract operation per 100 channels</td>
</tr>
<tr>
<td>% Resolved</td>
<td>100%, 10%, 1% or 0.1%</td>
</tr>
<tr>
<td><strong>Integration Rate</strong></td>
<td>0.5% sec. per quarter memory</td>
</tr>
<tr>
<td><strong>Channel Band</strong></td>
<td>Continuous 1 — 400 channels</td>
</tr>
<tr>
<td><strong>Integrating Modes</strong></td>
<td>Normal, Subtotal</td>
</tr>
<tr>
<td><strong>Blanking</strong></td>
<td>Only channels to be integrated are visible on Analyzers CRT display</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>8½&quot; w. x 10½&quot; h. x 21&quot; d., 28 lbs. (approx.)</td>
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TMC is the original designer/producer of transistorized multi-channel analyzers. Today, TMC instrumentation is delivered to every nation in the free world for use in the most advanced laboratories known to man. For full specifications, information, consultation, please write or phone your nearest Sales Office or factory direct... North Haven CE 9-2501.
Physical Chemistry

In Calculations in Physical Chemistry (Wiley, New York, 1962. 217 pp. $4.50), the authors, B. W. V. Hawes and N. H. Davies, present approximately 400 problems that require numerical solutions. The topics covered, which range from nuclear chemistry, kinetic theory, phase rule, and thermodynamics to chemical kinetics and molecular structure, represent the material in a rigorous 1-year course in physical chemistry. Many of the problems appear to have been written for this book or for classes taught by the authors, others have been taken from the examination papers of students at a number of British universities, and a number have been taken from work published in the chemical literature, though in some areas—for example, the solid state—all, or almost all, have been designed specifically for class use.

The subject matter covered is well within the scope of the typical undergraduate course taught in this country, though most of the problems require independent thinking, not the mere mechanical substitution of numbers in equations. The book is reasonably self-contained: for many of the problems the authors provide notes and hints on how to proceed with the numerical solutions, and in most cases any needed equations are provided. Logarithm tables and answers for all of the problems are provided. It is perhaps unfortunate that a number of solutions are not worked out in detail in each chapter, since such examples would provide the small amount of encouragement needed to persuade many students to take the plunge on their own. This is, however, a small fault.

This is a useful addition to the well-known books by Wolfenden and by Guggenheim and Prue and should be helpful in teaching undergraduate classes in physical chemistry. The book is well printed and reasonably priced.

ERIC HUTCHINSON
Department of Chemistry,
Stanford University

High School Mathematics

Geometric Transformations by I. M. Yaglom, translated from the Russian by Allen Shields (Random House, New York, 1962. 140 pp. Paper, $1.95), is a delightful book that can be read by a bright high school student with a background in geometry. It is one of the volumes in the School Mathematics Study Group series, which are intended “to make some important mathematical ideas interesting and understandable to a large audience of high school students and laymen.”

Although Euclidean geometry is characterized as the study of those properties of figures that are left unchanged by distance-preserving transformations (that is, isometries), one does not usually learn about these transformations until he studies coordinate geometry. Yaglom shows how much the isometries can contribute to the study of geometry without the aid of coordinates. Coordinates are mentioned only in a footnote as a means of clarifying the meaning of distance.

The book contains a substantial list of problems that can be solved with the aid of geometric transformations. The problems are challenging, and many of them contain results that are unexpected. (Solutions are given at the end of the book.) If the reader is dissatisfied with the standard of rigor at certain points, he should be able to furnish the additional details of proof himself. The author has omitted these details in order to avoid a ponderous style. The reader is given a new perspective of the meaning of geometry and the meaning of congruence. The translation is sufficiently smooth so that one is unaware that the volume is a translation.

ARTHUR H. COPENLAND
Department of Mathematics,
University of Michigan
What G-100 Is  
SEPHADEX G-100, like its well-known predecessors in the SEPHADEX series of dextran gels,* is produced by cross-linking dextran chains with random ether bonds between glucose residues in the polysaccharide chains. Highly stable mechanically and chemically, G-100 upon swelling produces three-dimensional networks devoid of ionic groups. Prepared in bead form, G-100 offers very low flow resistance, thus permitting the use of fine particles for good resolution of separation.

What G-100 Does  
This new SEPHADEX type is an important extension of the gel filtration method into the field of macromolecular fractionation, making possible the separation of substances with molecular weights smaller than about 100,000. Like the other SEPHADEX types,* G-100 acts as a molecular sieve, and molecules of larger dimension do not penetrate the matrices of the swollen gel.

The accompanying chart shows a separation of pancreatic enzymes. Powdered swine pancreas was extracted with a 0.05 M acetate buffer pH 5.3 containing 0.005 M calcium acetate. A 3 ml. sample was introduced in a 2 x 37 cm. (117 ml.) column packed with SEPHADEX G-100.

What G-100 Promises  
Clearly, the SEPHADEX G-100 field is one of enormous interest, especially for biochemical and medical research. G-100 now makes possible the fractionation and purification of enzymes, polysaccharides, nucleic acids, peptide hormones, and proteins on preparative scale. And it supersedes the earlier, more complicated, and time-consuming methods that were previously required.

*Also available: SEPHADEX G-25, G-50, and G-75.