In hope of doing each other some good

Anti-matter and industry

This is the back of the head of Joe Merrigan, candidate for the degree Master of Business Administration.

In another room where Dr. Merrigan hits the books toward his academic goal, a doctoral diploma in physical chemistry already adorns the wall. It is where he gazes at the shape of a distribution output from a multichannel analyzer that the link can be found between his seemingly divergent academic interests. Fortunately for us, this room we own. In all the domain of the world’s manufacturing industries, few other rooms are known to be devoted to the connection between anti-matter and industrial prosperity.

Anti-matter has taken 40 years to penetrate this far into what most men consider reality. First it appeared as a fantastically brilliant deduction knit from a skein of the thought of Einstein and Planck: that if negative energy states can have meaning, so can vacancies in these states. Vacancies are holes, but “holes” seem a shade realer. Soon their reality hardened from the merely conceptual to an actual discovery in cosmic ray showers, where they were called positrons.

After 16 more years, it was found that sometimes before a positron and electron cancel each other in a gamma ray flash they form a configuration that lasts a short time before annihilation. Actually, 140 nsec, the average lifetime in free space of one such configuration, is hardly very short today with the electronic black boxes now on the market. It’s plenty of time for the positronium atom, as the configuration can be considered after its formation from positrons emitted by Na$^{22}$, to diffuse around before blowing up against another electron.

Therefore the scintillation-detector-fed multichannel analyzer, by holding a statistical stopwatch on the positronium between its beginning and its end, supplements and will perhaps surpass x-ray diffraction as an indicator of the degree of order in polymers or other solids. By indicating whether the electrons are tightly constrained or not, it can also be indicating progress when a lot of people are being paid to find polymers and crystals of commercial significance.

Though we sell no anti-matter, the Kodak Research Laboratories have assembled a bibliography on positrons and positronium. For a copy, write V. L. Simonetti, Mail Code 55, Eastman Kodak Company, Rochester, N.Y. 14650. Test question to warn those who cannot answer it against wasting postage: why is the reduced mass of positronium half the mass of the electron?

Nuclear structure and labor

This is a view through a microscope of deuteron tracks in the emulsion of a KODAK Nuclear Track Plate, Type NTB. Though the plate was purchased from a Kodak dealer for only $4.15, the customer’s $3,000,000 accelerator worked 2 hours to put those tracks on it. They resulted from the reaction $^2H^1(n,)^5$He$^4$. Apparently a large financial commitment and a strong interest in the structure of the atomic nucleus had to precede that $4.15$ sale. One wonders of what use advertising this product can be. Here is an attempt to find a role for advertising in such a case.

You don’t have to know much about what holds the rhenium nucleus together to look through that microscope in a useful way. All you need is for somebody to tell you what he wants to know about what you see there. You might not be terribly useful to him on the first plate or two, but by the time you have completed your third hour on your 200th plate, your eyes will be much better at it than his, even if your legs or some other parts of you happen to be absent or non-functional. Useful work brings home bacon, whether or not worker can walk out of house. Noting that our neighbors at the University of Rochester Nuclear Structure Research Laboratory send some of their plate-reading work out to the Rochester Rehabilitation Center for the handicapped, we have found an advertising idea to try:

Planning a scientific project that will generate a large volume of images to be measured or screened? Wondering where to find patient labor? Stop wondering and have a talk with the vocational director of your nearest rehabilitation center or your state rehabilitation agency.

If you can’t find them or the talk gets nowhere, seek further guidance from the Rehabilitation Services Administration, Department of Health, Education, and Welfare, Washington, D.C. 20201.

Magic (for the practical-minded)

Obviously, cattle on the open range can be sexed by infrared photography. Many additional accomplishments in many other fields of endeavor, some more practical and some less, are mentioned and illustrated in “Applied IR Photography” (M-28, $2) and “UV & Fluorescence Photography” (M-27, $1). Lots of detail on how to do it. Reader already knows what he wants to do.

Send check with order to Eastman Kodak Company, Department 454, Rochester, N.Y. 14650.

Prices subject to change without notice.
sion will continue but its rate will be reduced. Too often, groins are brought into use more-or-less by trial and error when a beach is in a state of erosion and starved of its sand supply." It was generally concluded that groins promise more than they can produce.

Among the new and unconventional structures described was a flexible, porous, floating breakwater consisting of pulpwod logs. Because the "log-jam breakwater" acts near the surface where most wave energy exists, it caused significant attenuation over a wide range of conditions. In another design, a tubular breakwater was developed to disperse energy by friction and turbulent jets and thus reduce wave height. The action of air bubblers, often used as barriers for spreading oil, salt water intrusion, and ice formation, was analyzed to provide a means of correlating the vertical velocity field of an air jet-water mixture in model tests with field observations. Because "bubble curtains" require large quantities of air to suppress wave action, use of bubblers as a breakwater was deemed too costly. By successive experiments in a model with a stable beach profile, W. Price and K. Tomlinson demonstrated the effect of artificial seaweed planted on an offshore bed in promoting greater net continental transport. Field tests on an unstable eroding beach at Bournemouth, South England, showed that artificial seaweed can build beaches. Use of seaweed is one of the few methods known to bring material onshore but its use is still in an early stage of development.

The methodology papers presented information on new equipment, field methods, and analytical techniques, key parts of coast engineering research. Introduced were: methods for measuring nearshore currents; a system of daily coast-wide observations at numerous points on the California coast; a computerized linear multi-regression analysis for longshore current velocity; a field program of synoptic sediment and dynamic parameters; a sterewave meter for characterizing surf waves; a systems approach to selecting petroleum port sites; and "stabil," a new armor block for beach defense. Discussion pointed to a need for more routine and reliable measurements of wave direction in addition to concurrent measurements of waves at sea and in the surf zone.

A series of "case histories" showed how experiments and theory could be used, as well as expedients on hand, to solve practical problems in different parts of the world. Whether or not these cases were successful, they allowed many to learn from the experience of others. Among the cases presented were: the design of jetties for lagoon entrances and river mouths, development of artificial beaches, recession of terraces, shoaling of harbor entrances, and protection of dunes by stone mounds on a sandy beach. Although numerous case histories were reported for different parts of the world, few recorded the failure of structures and their life history in relation to forces of the environment. With passage of time coastal engineering problems will become more complex and solutions more difficult.

Papers will be published as proceedings by the American Society of Civil Engineers, 345 East 47 Street, New York 10017. They will be available in May 1969 at a cost of $12. As for future conferences, the Council recommended Washington, D.C., for fall 1970 and Canada for 1972.

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