terminated). They will circulate your qualifications in their publication *(The Academic Register)*, which is claimed to have a wide circulation among academic institutions. There are several editions (College, Junior College, New England Public Schools, and so on), and the charge is $20 for each edition. They have also recently begun to publish *The Academic Journal* ($16 per year), which reports positions found by their search, lists other employment services, reports on trends in the job market and in the future will list appropriate positions for educators in business and industry.

- Educational Career Service, 12 Nassau St., Princeton, N. J. 08540, will, for $36 per year, match your qualifications to those submitted to them by search committees and inform you of positions for which you appear to be qualified.
- The "News of the Week in Review" section of the Sunday *New York Times* has a section of advertisements for academic openings. Many of the commercial services, such as those limited above, also advertise there.
- PHYSICS TODAY also has a section of advertisements for academic openings. Since everybody knows this, competition for any reasonable position listed here is even more fierce than usual.
- The American Institute of Physics operates a Placement Service Register that will list your qualifications and arrange for interviews at APS-AAPT meetings. They publish the very helpful *Survey of Academic Openings* (this however is published infrequently enough so that some of the jobs are filled by the time the survey is received). They also operate a year-round Employment Referral Service in which qualifications and interests of registrants are maintained on file. The file is interrogated for registrants with qualifications meeting employers' criteria, and copies of resumes are supplied to employers. The service is free to all physicists and related scientists irrespective of their society affiliation. About half of the inquiries are for academic institutions.
- Your own college or university probably operates its alumni placement bureau, which is open to you if you are a graduate of the institution, and perhaps if you are a faculty member, especially with a terminal position.
- Larger or more prestigious institutions in your area may operate better placement services or openings listings than your own institution. Generally you would have to make use of such services indirectly, since they are not knowingly provided to persons from other institutions. For instance, in the Boston area, the MIT Physics Placement service maintains a very good listing which includes some of the more informal contacts often not available to members of other institutions.

None of these services take you on as a client and find you a job like an employment agency. For the services that provide listings of open positions, you contact the institution on your own. Services that circulate qualifications or provide matching supply this information to employers who initiate negotiations.

In hunting for jobs you should also consider the American Institute of Physics and the US Government. The AIP and its journals hire physicists in editorial and other capacities. Many agencies of the US Government hire physicists in a variety of capacities. You can write directly to an agency or section that interests you, or apply to the Civil Service Commission. In either case you will eventually have to go through Civil Service. To apply through Civil Service, write to your local US Civil Service Commission area office (see telephone directory for its address) and ask for Civil Service Standard Form 171 and the booklet *Federal Jobs in Engineering, Physical Sciences and Related Professions—GS-5 Through GS-15*. The booklet is quite helpful and would be of interest even to people applying directly to an agency.

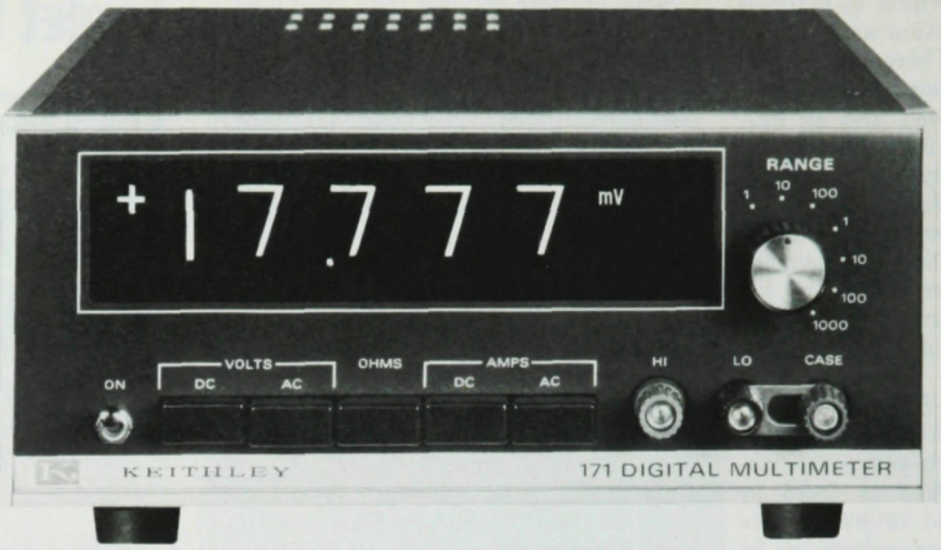
Once again, the best piece of job-hunting advice that you can get is to start early—two years early—and to plan your teaching activities to make an interesting curriculum vitae.

DAVID BOWEN
Northeastern University
Boston

Gravity waves

In his interesting article on gravitational theories, Will mentions that in the Brans-Dicke theory the gravitational and inertial mass of the earth are not exactly equal (Nordvedt effect) but fails to mention that this breakdown of the principle of equivalence will also occur for elementary particles. In scalar-tensor theories the difference between the inertial and gravitational mass of a particle is of the order of the gravitational self-energy, and hence any scalar-tensor theory that *does not* supply a proof that the gravitational self-energy of electron, proton, and so on is zero, or small (or, at least, a universal fraction of the total mass), must be regarded as *incomplete* in that it fails to offer an explanation of the experimenally very well established fact that all these particles fall at the same rate. A strict application of Will's TEST-1 therefore excludes present-day scalar-tensor theories.

In Einstein's theory the gravitational



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letters

self-energy produces a universal (the same for all kinds of particles) renormalization of the gravitational mass. This universality of the renormalization factor is a consequence of the fact that the source of the field (energy momentum tensor) is *conserved*. It would appear that the interesting gravitational theories are those that have conserved quantities as their sources; besides the Einstein theory, vector–tensor theories, with baryon or lepton currents as sources, are a possibility.

HANS C. OHANIAN
Rensselaer Polytechnic Institute
Troy, New York

The "Thomson"

Before discarding old issues of PHYSICS TODAY, I usually check through them for any articles that I may have missed or that I may want to read again. "The Septuagenarian Electron" by Sir George Thomson (May, 1967, page 55) was one I recently reread with interest. Sir George recounts that the word "electron" was coined by Johnstone Stoney to designate the charge of the electron. Later in the article, Sir George laments that there is "no single word for Stoney's unit charge as a purely electrical quantity." I think it would be fitting that the unit charge of the electron be designated the "Thomson" in honor of J. J. Thomson.

ALFORD L. WARD
Harry Diamond Laboratories
Washington, D.C.

Loose-leaf journals

In his talk, at the New York Meeting, on the Communication Revolution in Physics, H. W. Koch mentioned the idea of producing journals on specialized topics such as superconductivity by pulling relevant articles from various existing journals as they are being produced. A more radical-sounding proposal is the production of individualized journals consisting of only those articles selected by each subscriber on the basis of abstracts distributed in advance. The reason I refer to this proposal as radical *sounding* is the fact that it is already in effect, although in a somewhat inefficient form.

Specifically, my suggestion is that the AIP should produce loose-leaf journals consisting of reprints of *Physical Review* articles, for example, which are at present already printed on a limited scale. Complete sets of all reprints comprising a particular journal would be intended mainly for libraries, while individual subscribers would receive, before the production of the reprints, order blanks on which to indicate which reprints they desired to receive. Providing abstracts with serial numbers and using hand-punched computer cards as order blanks would facilitate the handling of orders and help determine the number of reprints of each paper to be produced.

Under the present system, the "subscriber" to the individualized *Physical Reviews* experiences a cost per reprint equal to the cost of a reprint request post card plus the time required to fill it out. The author or his research contract bears the heavier cost of printing and distribution.

In addition to providing a more cost-effective way of handling the bulk of reprint requests, this proposal would make it possible for AIP society members to afford the money and shelf space for more sections of the Physical Review and other journals. This in turn should make the physics literature more effective as a means of disseminating information.

PETER D. DE CICCO
Cambridge, Massachusetts

Solar-sea power

Clarence Zener does not speak for me when he contends "That most people in the world would probably welcome a somewhat warmer ocean outside the tropics." The implication is that the climate in the temperature zones would be warmer and I, frankly, abhor hot weather. Other environmental changes may occur that can't be so flippantly dismissed. I doubt that climatologists are prepared to issue the last word on the subject. There have been too many theories offered explaining the ice ages. The latest I've heard attributes ice ages to fluctuations in the output of the sun. I think Zener would do well to be more thorough and circumspect in his justification of floating solar power stations.

CONRAD KOPALA
Washington, D. C.

Free bubble chamber films

Original films from the Alvarez 10-inch and 15-inch bubble chambers are available free upon request. Each 35mm reel from the 10-inch chamber contains 400 stereo pairs with stereo angle small enough for easy stereoscopic viewing. 15-inch chamber films are available as two 35mm reels, two views each reel.

All films are unsprocketed with dark tracks on a clear background, and may easily be presented in Recordak type viewers or film-strip projectors. 10-inch bubble-chamber images are about 3 cm in diameter on the film; 15-inch bubble images are about 3 cm.

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