ment, and agricultural interests as well as by the resistance of the educators then in charge of the schools.

For a number of reasons, vocational education developed as an alternative to regular high school education. There was little academic content in most standard vocational courses, so the student could not normally go on to college, and "Voc-Ed" became, in effect, terminal education.

At the postsecondary level, clear alternatives to college have been slow to emerge. Some area vocational schools offer advanced technical or specialized training, but in most cases this is not regarded as being of "semiprofessional" standard.

Junior colleges have in most cases aimed first at providing the first two years of conventional college training. In respect to occupational education, with the notable exception of the junior colleges in California and a few other places, junior colleges have not, says Venn, "run with the ball." Four-year colleges, with a few exceptions, have been half-hearted about their subbaccalaureate programs.

Technical Programs

Technical institutes, many of the best of which are privately run or attached to engineering schools, offer a heavily technical course of study, generally 2 years long, which prepares graduates for immediate employment.

Semiprofessional engineering technicians with 2 years of training in a technical institute, or the graduates of hospital-based courses in medical technology or x-ray technology, are perhaps the most readily recognizable examples of middle-level manpower.

Venn offers, in addition, the following list of technical occupations requiring postsecondary training: data processor, construction estimator, marketing specialist, technical secretary, illustrator, structural draftsman, production control supervisor, dental assistant, flight engineer, radiation technician, cartographer, technical photographer, color television monitor, practical nurse, food service manager, and government safety inspector.

Venn puts the case for more participation of higher education in this kind of occupational training in these terms. "Inevitably in the same way that pupilage and apprenticeship gave way to professional education in law and medicine, on-the-job training and apprenticeship are giving way to occupational education within the education system. The time has come for schools and colleges to recognize that new occupations of technology must be taught where they are best able to be learned."

The report's recommendations predictably call for further research, creation of national and state planning bodies, and the holding of area conferences to discuss the appropriate role of higher education in vocational and technical education.

The key recommendation is the flat one that "higher education should assume a greater responsibility for the education of youth and adults for occupational competence in the technical and highly-skilled occupations at the less than baccalaureate level."

It is unlikely that all institutions will respond equally to the tocsin. The large private universities and well-known colleges with national constituencies will hardly react to the same degree as institutions directly supported by public funds and with closer ties and greater responsibilities to a particular area or state. But the old *cordon sanitaire* prejudice in higher education against occupational education seems to have been breached.

As the attitude toward technical education within higher education changed from indifference toward engagement, signs began to appear that there was competition ahead. The rivals were the well-organized forces of the vocational educators—administrators and teachers—who see postsecondary education in technical subjects as their natural domain.

Cost Is High

Technical education is a costly affair. Not only are buildings and equipment expensive, but the right kind of faculty is hard to find and commands substantial salaries. It is fairly widely agreed that major expansion of technical education depends on sizable flow of federal funds. And some money has already been provided, in last year's National Defense Education Act and Vocational Education Act. Skirmishes over who should exercise influence over funds for postsecondary vocational and technical education were indecisive, however. And while he tactfully does not put too fine a point on the rivalry, Venn is probably right in the analogy and conclusions of his summary section on technical education.

"Technical education finds itself today in a position similar to that of vocational education some fifty years ago. As already pointed out, the question of need for a concerted educational effort to meet the manpower needs of the technical occupations has now been resolved. The need can be met only within the educational system, and society will insist that the job be done there. Decisions are going to be made. But whether these decisions will be made by educators acting within a consensus that this is a legitimate and necessary form of education for our time or by legislators reacting to societal pressures to get a job done is still an open question. The history of vocational education should suggest to all educators, particularly those in higher education, the importance of a vigorous, imaginative approach to the educational needs of the technical occupations."—JOHN WALSH

Announcements

The Smithsonian Institution and T. F. H. Publications, Inc., have begun a project to reprint publications in **ichthyology** and related fields. The publishing house will reprint chosen books and donate them to the Smithsonian, which will in turn sell them at not less than cost. Proceeds from the sales will be used to establish the T. F. H. Fund "for research, collection or purchase of fish specimens, explorations, and publication of scientific reports related to aquarium fishes." Suggestions of out-of-print books to be reprinted may be sent to Leonard P. Schultz, Curator, Division of Fishes, Smithsonian Institution, Washington, D.C.

The first reprint in the project is *The Fishes of North and Middle America*, parts 1–4, 1896–1900, by David S. Jordan and Barton W. Evermann; it is available from the Smithsonian's Editorial and Publication Division, for $25.

The National Institute of Arthritis and Metabolic Diseases is seeking patients for a study of the effectiveness of corticosteroids in treating **lupus nephritis**. The main objective of the study is to compare the relative efficacy of high dosage (50 mg) with moderate dosage (20 mg) corticosteroid therapy. Physicians are asked to refer suitable patients; there must be a definite diagnosis of systemic lupus erythematosus, supported by a positive lupus erythematosus preparation. Laboratory evidence

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of renal involvement is essential, but the blood urea nitrogen must not exceed 30 mg/100 ml. Patients not suitable as subjects for the study include those with bleeding disorders, severe thrombocytopenia, psychotic episodes, advanced osteoporosis, and peptic ulcer, and patients receiving high doses of steroids. Physicians who wish to have their patients considered for admission to the study should contact J. J. Bunim, clinical director, NIAMD, Bethesda, Md. 20014.

Meeting Notes

Papers are invited for presentation at the mid-American **electronics** conference (MAECON), scheduled 23 and 24 November in Kansas City, Mo. Papers are invited on the broad applications of measurements and instrumentation. Deadline for receipt of abstracts: *15 July*; for papers: *1 September*. (E. J. Martin, Jr., Midwest Research Institute, 425 Volker Blvd., Kansas City, Mo. 64110)

The call for papers has been issued for a conference on **flight testing**, to be held 15–17 February 1965, in Huntsville, Alabama. The meeting will be sponsored by the American Institute of Aeronautics and Astronautics. Papers are invited on pre-flight or pre-launch preparations, flight measurements, data analysis and evaluation, test requirements for manned versus unmanned systems, development of flight test equipment, and future requirements of flight testing. Classified sessions may be held, and authors are requested to indicate preference and security level. Abstracts of 500 to 1000 words are required. Deadline: *13 July*. (K. K. Dannenberg, Systems Office, NASA Marshall Space Flight Center, Huntsville, Ala.)

Courses

Current developments in **analog modulation and continuous estimation** will be the topic of a course at Massachusetts Institute of Technology, 13–24 July. The course is designed for scientists and engineers concerned with using analog transmission techniques for transmitting continuous information, and for teachers of demodulation the-

ory at the graduate level. Participants must have a degree in science or engineering and a semester course in random processes, or the equivalent experience. The course will include a week's review of random process theory, and a week developing a logical approach to optimum demodulation theory. Tuition is $350. (Director, Office of the Summer Session, Room 7-103, M.I.T., Cambridge, Mass. 02139)

A course on the **genetics and physiology of bacterial viruses** will be held 11 September to 9 October at the International Laboratory of Genetics and Biophysics, Naples, Italy. Applicants for the UNESCO-sponsored course must be postgraduate students in mathematics, physics, chemistry, or biology; proficiency in English is required. Participation is limited to 16 persons. Fellowships covering travel and living expenses are available—four for Italians, ten for other Europeans, and two for non-Europeans. Deadline for applications: *1 July*. (Laboratorio Internazionale di Genetica e Biofisica, Casella Postale 104, Naples, Italy)

A **linguistics** institute will be held from 17 June to 14 August at Indiana University, sponsored by the university and by the Linguistic Society of America. The program will include course work, invited lectures, and seminars in the traditional areas of linguistics and linguistics analysis and in related fields. (T. A. Sebeok, P. V. McNutt Quadrangle, Central Bldg., Room 304, Indiana University, Bloomington)

Grants, Fellowships, and Awards

A research training fellowship in **allergy and immunology** is available at the Kaiser Foundation Hospital, San Francisco, California. Applicants must hold an M.D. or Ph.D. degree and have a background in biochemistry, immunology, immunochemistry, or allied fields. The fellowship is for 2 years and carries a $7000 annual stipend. (B. F. Feingold, Allergy Department, Kaiser Foundation Hospital, 2425 Geary Blvd., San Francisco, Calif.)

Fellowships in **cancer research** are available through the International Union Against Cancer, with funds provided by the Eleanor Roosevelt Cancer Foundation. The awards are for a year's work at an institution in a country other than the recipient's. Appli-

cants must be experienced investigators in clinical or experimental cancer research and must be on the staff of a university, teaching hospital, research laboratory, or similar institution. Stipends will be based on the recipient's current salary and on salaries of persons with comparable qualifications in the host institution. Round-trip travel allowances will be provided for recipients and their families. Deadline for receipt of applications: *1 September.* (International Union Aganist Cancer, P.O. Box 400, Geneva 2, Switzerland)

Senior scientists who wish to make **short-term visits to Australia** may apply for fellowship support from the Australian Academy of Science. Applicants should be professors or the equivalent, and must have had prior correspondence with the Australian laboratories they wish to visit regarding the desirability of the trip. The trips should be for at least 6 weeks and recipients of the fellowships will receive economy class air fare, plus £A5 (about $11 U.S. funds) a day. Fellows will be expected to participate in colloquiums and to deliver a limited number of lectures. The awards are made quarterly; next deadline for applications: *31 July.* (Executive Secretary, Australian Academy of Science, Gordon St., Canberra City, A.C.T., Australia)

Scientists in the News

Carlton C. Hunt, chairman of the physiology department at the University of Utah college of medicine, has been appointed chairman of the department of physiology at Yale University's medical school, as of July 1.

Paul A. Weiss, professor of developmental biology at the Rockefeller Institute, New York, has been named university professor and dean of the graduate school of biomedical sciences at the University of Texas, Houston, effective 1 October.

John B. Lucke, former head of the geology and geography department at the University of Connecticut, has been appointed professor of geology at Grand Valley State College, Allendale, Michigan.

Morton L. Curtis, professor of mathematics at Florida State University, has been named professor and chairman of the department of mathematics

at Rice University, effective 1 September. He will replace **Gerald R. MacLane**, who has been appointed head of the division of mathematical sciences at Purdue University.

Keith R. Porter, biology professor at Harvard, and **George E. Palade**, professor of cytology at the Rockefeller Institute, will share the $5000 Passano award for 1964. The award cites their work in developing the use of the electron microscope for cytological research, and the subsequent importance of their work in genetics.

David B. Beard, physics professor at the University of California, Davis, has been appointed professor and chairman of the department of physics and astronomy at the University of Kansas, Lawrence, as of 1 July.

The Industrial Research Institute has elected **Philip M. Arnold** president. He is vice president for research and development at Phillips Petroleum Co.

James A. Peters, professor of biology at San Fernando Valley State College, Northridge, California, has been appointed associate curator of herpetology at the Smithsonian Institution, effective 1 July.

St. Lawrence University, Canton, New York, has appointed **James H. L. Roach** professor and head of the psychology department, effective with the fall term. He is currently associate professor of psychology at Albion College, Albion, Michigan.

John M. Stalnaker, president of the National Merit Scholarship Corporation, has been named executive director of the Commission on Presidential Scholars, established in April by President Johnson.

George V. Coelho, formerly visiting scientist in the adult psychiatry branch of the National Institute of Mental Health, NIH, has joined the department of adult education and youth activities in UNESCO, as programme specialist.

Walter A. Sedelow, Jr., human factors scientist at the System Development Corporation, Santa Monica, California, has been appointed director of the department of sociology and anthropology, St. Louis University, St. Louis, Missouri, as of 1 September.