

proved the nonconservation of parity theory for which two former Chicago students (Chen Ning Yang and Tsung Dao Lee) won the Nobel prize; Yoichiro Nambu, a pioneer in the studies related to the regularities in the relationships between strange particles and one of the first to suggest the existence of the omega vector meson; Roger H. Hildebrand, who with a colleague discovered the ratio of intensities of two cosmic ray components to provide an important clue to the understanding of the origin of cosmic rays; and John A. Simpson, widely known for his experimental and theoretical studies in high energy astrophysics.

In a related development, Chicago recently appointed Albert V. Crewe as the dean of its Division of Physical Sciences. Crewe is no newcomer to "big science"; from 1961 to 1967 he was director of the Argonne Laboratory, 25 miles west of the university's campus. There, as head of a \$300 million dollar research complex, he directed the work of more than 1,000 scientists and 3,000 supporting staff members and helped to build the zero gradient synchrotron. Returning to the Chicago campus, Crewe designed and built a scanning electron microscope and devised a technique that revealed single atoms in molecular structure for the first time.

Geographically, the University of Chicago is in an advantageous position to develop close rapport with the new laboratory. Robert R. Wilson, the laboratory's director, also is listed on the university's physics faculty; he too is on leave from Cornell University. Despite its developing strength in high energy physics, however, there are students of elementary particle physics who feel that the University of Chicago still must add a few more "stars" to its faculty if it is to achieve pre-eminence again in physics.

Buying in top grade physicists may be less expensive than signing on football stars, but it takes rather longer for the new blood to make an impact on the team's reputation. Chicago's reputation as a physics institution, as measured by the quality of its graduate teaching faculty, has declined from fifth place in the table of US universities in 1957, to tenth place in 1964, according to surveys prepared by the American Council on Education. The council's most recent report, based on questionnaires distributed in 1969, lists Chicago's physics faculty as equal ninth in the top league, tying with Cornell and being beaten by Berkeley, CalTech, Harvard, Princeton, MIT, Stanford, Columbia and Illinois. The downward slide seems to have been halted, but will even the attraction of the nearby National Accelerator Laboratory help restore the vanished glories of Fermi's day?

NATIONAL ACADEMICS

Merit and Power

by our Washington Correspondent

IF there existed an organization such as a national academy of successful business and government executives, its membership would probably not differ greatly from that of the National Academy of Engineering. The new intake into the academy consists of the following personages (the names are not important):

The Deputy Secretary of Defense, an Assistant Secretary of the Navy, the Deputy Director of the Office of Science and Technology, the Vice-President of Bell Laboratories, the Manager, Milwaukee Operations, of the General Motors Corporation, the Vice-President for Research and Development of Beckman Instruments Inc., the Chief of the Hydraulic Design Branch of the Office of the Chief Engineers of the Department of the Army, the Assistant Vice-President for Engineering of the American Telephone and Telegraph Company, a Vice-President of the Ford Motor Company, the Executive Vice-President of the Esso Research and Engineering Company, an Assistant Director of the Atomic Energy Authority, the Chairman and Chief Executive Officer of the Aluminium Company of America, the Honorary Chairman of Texas Instruments (who doubles up as Mayor of Dallas), the Chairman of the Board and Chief Executive Officer of General Dynamics, the Assistant Commissioner for Science and Technology of the Environmental Protection Agency, a General Manager of the Westinghouse Electric Corporation, a Lieutenant General who is commander of the Space and Missile Systems Organization of the US Air Force, the President of the Raytheon Company, another executive from Bell Laboratories, another executive from the Raytheon Company, and a Vice-President from the Lockheed Aircraft Corporation. In addition the Chief of the Illinois State Geological Survey and seven academics, all of the rank of professor, dean or chairman, have made the grade.

The fact that each of these 29 new members holds some important office as well as being doubtless an engineer of merit suggests that merit alone is not a sufficient qualification for entry into the academy. Indeed, most of new entrants are credited in the academy's announcement of their election not with any specific engineering accomplishment but with extraordinarily diffuse achievements which imply skills in business management rather than engineering, for example, "leadership and direction

of the Minuteman weapon system", "personal leadership in the development of ballistic missile technology", "contributions to aerospace management", "accomplishments in managing the development and applications of new technologies".

The National Academy of Engineering is allowed to select members on a somewhat wider basis than does the National Academy of Sciences of which it is a recent offshoot. Members may be chosen on the basis either of important contributions to the literature of engineering, or for "demonstration of unusual accomplishments in the pioneering of new and developing fields of technology". Whereas individual merit in science is usually easy to recognize, it could be that engineers, who tend to work in large teams, may not be able to demonstrate their individual merit except by rising to the top of the management tree. Even so, it is hard to understand how the National Academy of Engineering, with so many thousands of American engineers to choose from, can exhibit so little imagination as to draw its new membership almost exclusively from the top brass of the Defense Department, Ford, General Motors, General Dynamics, Lockheed and so forth.

A selection that is so obviously dependent on factors other than merit is bound to be injurious to an institution whose prestige and purpose depend on its being an elite. The academy's sister organization, the National Academy of Sciences, is facing critical and often hostile scrutiny as it plays the increasingly difficult role of tendering and being seen to tender independent advice to the government, but the necessary appearance of independence is not exactly assisted by the stratum from which the National Academy of Engineering likes to draw its members. Nor does it show any exquisite sensitivity to the objections of potential critics for the Academy of Engineering to appoint as chairman and vice-chairman respectively of its membership committee Dr Edward E. David, the President's science adviser, and Dr Alexander H. Flax, president of the Institute for Defense Analyses. It goes without saying that Dr David is not a man who would allow his political sympathies to interfere in any way with his job as chairman of the NAE membership committee, but is the academy really unable to find a more neutral figure to undertake this chore?

A self-perpetuating elite is an institution rather like a monarchy; both are useful as long as they preserve their dignity, but since in concept they verge so close to the ludicrous, a single false step can be fatal. With its new membership list the National Academy of Engineering seems to have lost its sense of the absurd.