

consistent with the three governments' policies to the non-proliferation treaty. In the sense that Britain is offering to West Germany information which might make it easier for her to build nuclear weapons, the agreement is controversial. But, of course, it would be better that this information formed part of a tripartite agreement than if West Germany were to proceed alone. Besides, if West Germany's civil nuclear plans go as is hoped, it will become a substantial plutonium producer in the next ten years or so, offering an alternative route to nuclear weapons.

#### MEDICAL EXAMINATIONS

### New Ways of Finding Doctors

MANY have criticized the system of examinations for medical students, but few—particularly among the students themselves—have set out practicable alternatives. A step in this direction has now been taken, in a World Health Organization publication by J. Charvat, professor of medicine at the University of Prague, Christine McGuire, of the College of Medicine, Chicago, and Victor Parsons, senior lecturer in medicine at King's College Hospital Medical School, London (*Public Health Papers*, 36; *A Review of the Nature and Uses of Examinations in Medical Education*).

Any technique for measuring competence should fulfil three criteria. It should yield objective data—that is, independent observations of different experts should agree. It should be valid in the sense that it should measure what it claims to measure. Third, examinations should be reliable, yielding consistent scores when given repeatedly to the same group under the same conditions. They should be designed to measure not only knowledge but also skill in solving problems, the ability to communicate with patients, colleagues and other members of health teams as well as the capacity for original work. Under the present system, the report suggests, examinations tend to sample only a narrow range of the requisite knowledge and skills. The questions are sometimes trivial, and the student may be forced to answer in terms of the provincialism or personal views of the examiner.

One new development is the "process approach" to determining whether an examination measures simple recall of isolated information or, at the other extreme, the ability to solve complex problems. Most of the studies in which this approach has been used show that 75–95 per cent of questions currently in use in the United States and Canada measure only recall of information. A number of new tests have been designed to measure the achievements of the student in the cognitive and psychomotor domains. These range from multiple-choice tests and questionnaires to objectively rated diagnostic or therapeutic interviews with an assigned patient. New approaches to the design of essay and oral examinations can be used to measure the student's ability to communicate with a colleague or a patient or to assess his ability in taking a patient's history and his judgment in determining and defending a plan of management for a specific patient. Two new methods are being introduced as a means of objectively assessing a student's professional habits, attitudes and values. Objective anecdotal statements of a student's professional behaviour, by an instructor accumulated during medical school, are used to identify his chief

qualities. The second approach is to set out to identify certain variables in professional behaviour such as response to criticism.

#### GERMAN SATELLITES

### Up with the Mark

from our Special Correspondent

*Munich, November 26*

THE reconstruction of Germany's aerospace industry has involved several famous names of German aviation—admittedly now only shadows of their former selves—in an ambitious space programme. For some years now, the Bölkow group of companies has strenuously searched for a merger within the German aircraft industry with the intention, it seems, of forming an aerospace industry on a European scale. In this it has been encouraged by the German Government, which has wanted to see a merger of the aerospace industry in south Germany. Last month, Bölkow managed to acquire the Messerschmitt company, and the new Messerschmitt-Bölkow group located at Munich is involved with the HEOS-A satellite which, with luck, should become ESRO's third successful satellite early in December, with a third stage of Europa I, with the first German research satellite and with a proposed solar probe in cooperation with the Americans.

Another historical name, Junkers, also has a part in the merger, having been acquired by Messerschmitts in 1965. Junkers is primarily contractor for HEOS-A, responsible for the satellite's basic structure and the integration of its experiments.

The novelty of HEOS is its highly eccentric orbit taking it to a distance of between 200,000 and 300,000 kilometres from the Earth at apogee. This orbit was chosen so that HEOS would traverse the largely unknown boundary of the magnetosphere, the near-Earth region dominated by the terrestrial magnetic field. A measure of the eccentricity of the orbit—which HEOS takes five days to complete—is that the satellite is influenced by the masses of the Sun and the Moon. The scheduled launch date for HEOS is December 5, when it will be fired from Cape Kennedy by a Thor-Delta vehicle. If the launch is successful, HEOS will then become ESRO's third satellite launched this year, and the value of the experiments it is carrying into a comparatively unexplored region of space should go a long way to appeasing scientists' doubts about the organization.

Looking further ahead, the Messerschmitt-Bölkow group will be responsible next year for launching the first German research satellite Azur—a 78 kilogram vehicle for inner radiation belt measurements. A more important project is an interplanetary solar observation satellite. So far it is still in the design stage; the specification calls for a probe to explore the solar plasma and interplanetary matter up to a perihelion of 0.3 astronomical units, by German and NASA experimenters. The talk is of a launch date in 1973–74.

#### PLANNING

### How to keep Everybody Happy

At last planners are realizing that countryside planning is as vital as urban planning. In a country as small as