

tically nothing at the present time."

Sir Macfarlane Burnet writes in "The Integrity of the Body" that it is one of the "concise statements of modern immunology that the body will accept as itself only what is genetically indistinguishable from the part replaced." He says it is as if "the body can recognize its own individuality and will accept nothing that is inconsistent with that individuality."

Sir Macfarlane says most workers in immunology believe that the small lymphocyte must play a major part in immune processes. He takes the viewpoint that the lymphocyte is probably a carrier of genetic information; also that "any form of stress or, what perhaps amounts to the same thing, administration of large doses of cortisone and similar corticosteroid hormones, will sharply reduce the number of lymphocytes in blood and in the lymphoid tissues."

**He points out** that even the "most optimistic and courageously experimental of surgeons will find that nature fiercely defends the integrity of the body."

And, as Dr. Barnard knows, any attack on that integrity, in defense of a transplant, is an attack on the body's ability to survive totally unrelated infections.

Dr. Barnard and other heart surgeons expect to continue their efforts, while hopeful patients wait in line.

## TRANSPLANTATION II

### Ethical Problems Reverberate

While Louis Washkansky fought his losing battle against death in a South African hospital, an international panel of heart surgeons, meeting in New York, thrashed out the ethical implications of his heart transplant.

The American heart surgeon, Dr. Jacob Zimmerman of St. Barnabas Hospital, New York, told his colleagues from Switzerland and Great Britain, "I will never participate in such surgery." To which Dr. Donald Ross of The National Heart Hospital, London, a pioneer in transplantation of heart valves from the dead to the living, rejoined, "But you will, we all will."

**Asked if** a heart transplantation were imminent in Zurich, Swedish-born surgeon, Dr. Ake Senning replied with a reluctant yes. Dr. Senning, who has repaired defective valves joining the heart's left ventricle with the major body artery, the aorta, using connective tissue from the patient's hip, said he was most concerned about the physician's judgment as to when a patient's heart is fatally damaged or defective.

Neither he nor Dr. Ross felt that heart transplants posed a greater hazard

of rejection by body defenses than do today's fairly common kidney transplants. In fact, they suggested that the heart is probably better able to withstand the attack of white blood cells and antibodies than either the kidneys or the liver.

But Dr. Zimmerman was more concerned with the donors. "It is medically and morally wrong," he said, "for us as doctors to stand by a dying patient's bedside hoping he'll get it over with quickly so we can grab his heart." The heart surgeon even envisioned a despotic ruler doomed by a diseased heart, ordering the execution of a political enemy to obtain the organ for transplant. "A million dollars," he continued, "could buy a patient almost anything—including a new heart."

Dr. Senning said that though there are many problems in obtaining donor hearts quickly, and even more problems in choosing among the many applicants for heart replacement, techniques already developed in Europe and the U.S. should give surgeons at least an hour between death of the donor and removal of the heart. (In the late 19th century, French surgeons removed the heart of a guillotined criminal, iced it, and then made it resume beating many hours after the execution, Dr. Ross recalled.)

Both Dr. Ross and Dr. Senning were optimistic that heart banks could be established by chilling and storing the organs from dead persons just as corneas, kidneys, skin and bones are stored today.

## EARTH SCIENCE

### Creation of an Island

A new island was created last month in an eruption of lava, smoke and steam spewing 4,000 feet high from the surface of the ocean. The outbreak of the restless earth was sighted east of Fiji Island in the southwest Pacific by the New Zealand freighter Tofua.

**The new island** is No. 7 Metis Shoal of the Tonga Islands, a volcano that rises some 3,300 feet from the floor of the sea. Until last week it had been submerged 10 feet below the surface of the water. Capt. Peter Bennett of the Tofua estimates the new island to have been half a mile long and 150 feet high when he sighted it building up from the sea. Further eruptions and the erosion waves and wind may change its dimensions.

Many sea islands are created, then washed away by further volcanic activity, waves and wind. This activity is constantly going on, but is seldom reported because it often takes place in remote ocean regions. Two weeks ago the ring-shaped volcanic island, Detec-

tion, erupted in the Antarctic Peninsula in the South Shetland Islands. The much observed new island Surtsey was created a few miles southwest of Iceland. It rose from the sea Nov. 14, 1963, and is now a substantial two-square mile island on which small plants are taking root. The world's most massive sea volcano is Hawaii, rising some 29,000 feet from the bottom of the ocean, perhaps the largest volcano of the world.

## FROM BRUSSELS

### Euratom Drops Out

On January 1, Euratom quit the fields of fast breeder reactor research and studies of fusion power, thanks to an intransigent France.

Euratom's budget for 1968 is a meager \$40.6 million, less than half of last year's. This budget will cover Euratom's activities in the four Joint Nuclear Research Centers at Ispra (Italy), Mol (Belgium), Petten (Holland), and Karlsruhe (Germany).

**Research** into the second generation of proven water and gas-cooled reactors, treatment of irradiated fuel and radioactive waste, which were the main fields of activity in the just-ended Second Five-Year Program, will continue.

The budget for 1968 has now been accepted as provisional and a group of experts is being asked by the ministers responsible for science and technological research in the six member countries to study plans for a third quinquennial program. But it does not look as though any long-term program will cover anything like the range of activities formerly carried out by Euratom scientists.

All Euratom's association agreements (with individual member governments) and contracts (with national institutes and companies) were suspended at the New Year. Association contracts covered all the most advanced fields of research including fast reactors and the construction of prototypes. This research will now be continued by the national governments on their own or through a series of multilateral agreements, without Euratom's coordination and with no Community budget.

**The root** of Euratom's troubles was French determination to keep key areas of research to herself. The French were firmly supported by the Italians, who claim that their industry does not obtain sufficient contracts in view of their 23 percent share in the Euratom budget.

The French will doubtless be glad to say good-bye to Euratom's participation in the construction and operation of a sodium-cooled fast reactor at Cadarache in the South of France; France was, in any case, planning to go ahead on its own with a similar reactor. This reactor,