as nuclear fusion and solar energy.

Finally, Teplitz suggested that "our impression is that science and technology just isn't very important to the Nixon Administration". The Administration would, of course, dispute that claim, but the fact remains that science and technology *per se* is probably not important enough to the electorate to figure in the forefront of the election campaign.

SCIENCE FUNDING

Almost Recovered

by our Washington Correspondent

ONCE again, the National Science Foundation has come up with a set of figures to show that federal expenditures on science and technology are increasing. Total government expenditures are expected to increase from $15,500 million in 1971 to "an all-time high" of $17,800 million in 1973, the report suggests. Not so prominently displayed, however, is the fact that if inflation is taken into account, total expenditure in 1972 was some $2,500 million less than in 1967, and it will still be below the 1967 figure, in purchasing power, in 1973.

Nevertheless, the decline in funding that set in during the late 1960s seems at last to have reached its nadir, even though the increases of the past two years have been insufficient to wipe out the decreases of the previous four. And there has also been a marked shift in funding with the Department of Defense, NASA and the Atomic Energy Commission accounting for a diminishing share of the total research and development budget. In 1963, for example, these three agencies together carried off 90 per cent of the total federal science budget, but in 1973, they are expected to take a mere 75 per cent.

The NSF figures also show that the development end of the research and development spectrum is undergoing a relative decline, while basic and applied science funding are on the upswing. Between 1963 and 1973, the share of the federal science budget devoted to development has dropped from 68 per cent to 59 per cent, while basic and applied research together have increased their share from 32 to 41 per cent. Among the various fields of science, engineering accounts for the largest expenditure, while expenditures on life science have grown the fastest during the past decade.

MENTAL HEALTH

Ecopsychiatry

by our Washington Correspondent

RELATIONSHIPS between pollution and health have for long been the subject of debate and study. The effect of air pollution on respiratory diseases, the contribution of poor sanitation to the spread of diseases such as cholera and even the relationship between soft water and arteriosclerosis have all been discussed in the scientific and popular Press. But what of the effects of pollution on mental health? What, for example, are the consequences to the mind of living in urban squalor, breathing polluted air and eating chemically contaminated food? According to a study carried out for the National Institute of Mental Health, such questions have received at best only scant attention, and much more research is required not only on the physiological effects of pollutants on the central nervous system, but also on the mental stresses and strains of living in a degraded environment.

The study (*Pollution: Its Impact on Mental Health*, DHEW publication No. (HMS) 72–9135, US Government Printing Office, $0.45), which was essentially a literature search, turned up 110 scientific papers dealing with pollution and mental health. Not surprisingly, most of the research so far has been concerned with physical damage to the central nervous system resulting from exposure to specific pollutants such as mercury, lead and arsenic. More subtle effects, such as the impact on mental health of chronic exposure to noise, poor housing and environmental degradation in general, have so far received scant attention. The report suggests, moreover that even those studies that have been carried out on the direct physiological effects of pollutants often leave much to be desired—for example, the impact on the nervous system of chronic exposure to low levels of insecticides, metals and even airborne lead, is poorly known.

That there are yawning gaps in the literature concerning pollution and mental health is perhaps not surprising in view of the complexities of the interrelationships, and the relative novelty of concern over the environment but, according to Dr Rene Dubos, who wrote an introduction to the report "The elusiveness of the problem is no excuse for ignoring its importance or neglecting its study".

As for the importance of studying the impact of pollution on mental health, Dr Dubos suggests that the "most deplorable aspect of existence in American cities may not be murder, rape and robbery, but the constant exposure of children to pollutants, noise, ugliness and garbage in the street. This constant exposure conditions children to accept public squalor as the normal state of affairs and thereby handicaps them mentally at the beginning of their lives". But whether or not ecopsychiatry will ever be sufficiently rigorous to contribute to the solution of such problems is a moot point, and fortunately, one which lay outside the purview of the study.

LUNAR SCIENCE

Swansong for Apollo

by our Washington Correspondent

APOLLO 17, the last in the series of flights which fulfilled President Kennedy's wish to have men land on the Moon in the 1960s, is set to blast off from Cape Kennedy at 9.53 pm local time on December 6 (2.53 am December 7 GMT). The preliminary timetable for the mission, released last week by NASA, will make Apollo 17 the longest of all the flights in the series, and up to 21 hours have been set aside for scientific work on the lunar surface. Splashdown is set for 2.24 pm (7.24 pm GMT) on December 19.

The landing site, Taurus-Littrow, is set in the Taurus Mountains in the south-eastern rim of *Mare Serenitatis*. The site is believed to be a young volcanic area, characterized by a smooth appearance and a lack of large blocks, set between massif units of the Taurus Mountains. It is hoped that the landing site will enable both younger volcanic materials and older massif materials to be collected. Work on the lunar surface is scheduled to take place in three seven hour shifts starting at 11.33 pm (GMT) on December 11, 10.13 pm (GMT) on December 12 and 9.33 pm (GMT) on December 13.

Because Apollo 17 is the last in the series, it seemed until recently that there would be no manned space flights from the United States between Skylab, which is set for launch next year, and the advent of the shuttle in about 1978. But the joint agreement with the USSR for a rendezvous between an Apollo spacecraft and a Soyuz spacecraft in 1975 has bridged the gap, and perhaps kept the NASA manned spacecraft teams together. NASA announced last week, for example, that Dr Rocco A. Petrone, Apollo Program Director, has been appointed Program Director for the NASA portion of the joint US/USSR space mission, and that he will use the Apollo team for the mission.

Support staff at the Manned Spaceflight Center in Houston, the Marshall Spaceflight Center in Alabama and the Kennedy Space Center in Florida, have, however, not fared so well. NASA announced last week that to keep its spending within 1973 budget limitations, some of this staff would have to be laid off. Up to 2,700 jobs may be involved.