where the direction that research should take is reasonably clear. Included in that group are acute childhood lymphatic leukaemia, Hodgkins disease, choriocarcinoma, Wills' tumour, carcinoma of the cervix and some skin carcinomas. But for the majority of cancers a NASA style assault may not be the best approach since the way ahead for research is "not at all clear". The institute suggests that research on such cancers "ought to involve rather less in the way of centralization, and rather more of a tendency towards decentralization". The institute puts into a nutshell many of the arguments against strong central planning of basic research.

"What is most urgently needed for problems of this kind is an abundance of new ideas and these are most likely to emerge from the imagination of individual scientists . . . it is much less likely that the administrators of large programs, or committees of administrators, at the centre of a highly centralized bureaucracy, can generate the kinds of ideas that are needed".

In particular, the trend towards central control and planning of cancer research has generated two highly controversial issues in the funding of research in the USA. The first is a move towards more contract research as opposed to grants (more than 50% of the research supported by the NCI is now accounted for by contracts), and the second is an attack on the peer review system by which NIH grants are funded. The two issues are closely intertwined, and they represent considerable change in the operation of biomedical research.

The traditional way of determining which research should be funded by NIH is by committees of scientists which examine grant proposals submitted by individual researchers and rate them according to their scientific merit. The final funding decision rests with NIH officials, but the peer review mechanism is perhaps the most influential part of the process, and it is jealously guarded. A recent memorandum prepared by the Office of Management and Budget suggested, however, that the peer review system "is not readily compatible with targeted research or directed research to achieve specific national objectives", and suggested several ways of "improving" the system, including abolishing it (see *Nature*, **243**, 256 ; 1973).

The cancer plan specifically stated, however, that the peer review system will continue to be utilized for review of research proposals submitted by those individuals who wish to apply for support through the grant mechanism. But it had little to say about the trend towards contract research, except to point out that "the assessment of contract proposals for scientific merit is as important as grant proposals". One concern is that if contract research continues to grow, it will take money away from investigator-originated research. Dr James Watson of Harvard University, recently told a Congressional Committee, for example, that "the forthcoming governmental prescription for cancer research . . . ominously points in the direction of more contract money, in which the individual scientist decides where the future may lie".

Another central question about the crusade against cancer is that it may be swallowing up funds for other areas of biomedical research. Such charges, in fact, seem to have some substance since every Institute in NIH except for the National Cancer Institute and the National Heart and Lung Institute suffered budget cuts last year. The Institute of Medicine said in its review of the plan, for example, that many areas of basic biology may be crucial to the cancer programme, and pointed out that "it would be a dead loss to the cancer effort if research of this kind were to go without support because of fund shortages in other institutes of NIH".

But the actual level of support recommended for cancer research in the plan is likely to become a controversial issue in itself, aside from the question of whether it is soaking up money from other research.

It is suggested in the plan that the NCI should receive $500 mililon next year, which is the same amount as the administration requested. But the National Cancer Advisory Board, whose annual report was published last week, recommended that $600 million should be made available. Moreover, the plan calls for a budget for the NCI in 1975 of about $600 million but a preliminary budget plan drawn up by Dr Charles C. Edwards, the Government's top health official, which was recently leaked to Senator Edward Kennedy, recommends an increase in the NCI's budget of only $25 million. That would fall some $75 million short of the level proposed in the plan. It is thus likely that the most prominent debate about the cancer programme is how much money it should receive. But it is clear that more basic issues are involved.

SKYLAB

Preparing for Kohoutek

by our Washington Correspondent

NASA officials are studying plans to delay launch of the third and final Skylab crew for 10 days in order to get a better look at the comet Kohoutek. Predicted to be one of the most interesting and perhaps the most spectacular comets this century, Kohoutek will swing behind the Sun, reaching perihelion (its closest approach to the Sun) on December 28, and will pass closest to the Earth on January 15. Skylab is now set for launch on November 9 and splashdown in the Pacific on January 4, and so a 10-day delay will enable closer study of the comet after its periphelion has passed.

The original launch schedule would allow the comet to be studied during its approach to the Sun and for a short time after perihelion. But it would miss the period during which the comet will be cooling down, when it so happens that the Earth will be in the best position to view the tail. A new ultraviolet camera will probably be added to Skylab's instruments in any case, and the Apollo Telescope Mount will be used to view the comet over a wide spectral range at perihelion.

In addition to Skylab, NASA is hoping to look at Kohoutek with instruments aboard several other spacecraft. The Orbiting Solar Observatory (OSO-7) will be used to view the comet at perihelion, while OAO-C (Copernicus) will turn its instruments towards Koboutek as the comet approaches and recedes from the Sun. (Copernicus cannot turn its instruments and its solar panels towards the Sun at the same time.) The Mariner Venus–Mercury spacecraft, which is set for launch on November 3, and the Pioneer spacecraft which are on their way to Jupiter will also be used to study Kohoutek, and in addition NASA is planning to launch sounding rockets and to use high-altitude aircraft. There has also been talk of sending an Explorer spacecraft directly into the tail of the comet, but it seems that idea has been shelved because of lack of money, although there is a proposal under consideration to send an Explorer to the Grigg–Skjellerup comet in 1977.

One reason for the intense interest in comets is that if they were formed outside the orbit of Neptune, as one widely-held theory suggests, they may consist essentially of primordial solar system material largely unmodified by solar radiation. That would be especially true of a long period comet such as Kohoutek, which is reckoned to have an orbital period of several thousand years.

A decision on the final Skylab launch date will not be taken until after the present mission is completed, but there is a possibility that the launch, instead of being put back, may have to be brought forward to reduce the length of time that the laboratory will be unmanned ; the decision hinges chiefly on an assessment of the condition of the spacecraft at the end of the present mission. But if the launch is brought forward, the chance of using Skylab's instruments to observe the comet may be missed entirely.