debate in the House last week, and suggested that it would not save much taxpayers' money.

What seemed to bother most of the opponents of the Bill last week was that the functions that are envisaged for the office could be carried out either by committee staff or by expanding the staff of the General Accounting Office or the Library of Congress. Few congressmen, however, questioned the need for better and more broadly based studies of technological matters in Congress, and there was not much discussion of such important questions as whether the tools of technology assessment are yet sufficiently refined to justify setting up such an office. Moreover, experience in other countries of attempts to use such assessment studies as a basis for legislation has not been completely faultless. Perhaps the most ambitious technological assessment study, and one which nicely exposes the problems of such an exercise, was the effort of the Roskill Commission which spent two years and £2.1 million in choosing the best site for London's third airport, only to have its recommendation promptly rejected by the British Government.

Nevertheless, the legislation to set up the Office of Technology Assessment survived the House debate essentially intact. The only change that was forced was in the constitution of the management board, which instead of consisting of eleven members (four appointed by the President, two by the House, two by the Senate, the comptroller general, the director of congressional research and the director of the Office of Technology Assessment) would now consist of ten members who would come in equal numbers from the House and the Senate. The amendment which forced the change was proposed by Mr Jack Brooks of Texas to ensure that the office will be responsible only to Congress—Mr Brooks pointed out that under the original proposal, a majority of board members would be presidential appointees. Perhaps it is a measure of the interest of members of Congress in technological affairs that only 48 were present to vote on the amendment.

SACCHARIN

Off the List

by our Washington Correspondent

WITH the bitter taste left by the cyclamates farce still in its mouth, the Food and Drug Administration must have received with some trepidation the news that a study in Wisconsin has come up with tentative evidence of bladder tumours in rats fed on a diet heavy with saccharin. Although the findings are preliminary and the tumours are not necessarily cancerous, the FDA's response was to take saccharin off the list of food additives generally recognized as safe (GRAS), and to take action on an eighteen month old recommendation from a committee of the National Academy of Sciences by suggesting that the average daily intake of the sweetener should be limited to one gram per person (about 60 tablets, or seven 12 oz. bottles of so-called diet drink).

The FDA's action touched off barely a ripple of public anxiety, and thankfully was not followed by the precipitate worldwide action that greeted the tentative finding in 1969 that cyclamates produced bladder cancers when fed in huge quantities to rats over a period of two years. But if the Wisconsin experiment does produce evidence that the bladder tumours in rats fed with saccharin over a long period of time are cancerous, then the Delaney Amendment to the food and drug laws requires that saccharin, too, must be taken off the market. The Delaney Amendment disallows the use of any substance as a food additive if it is found to cause cancer when fed to animals.

The tentative findings on saccharin were made in the laboratories of the Wisconsin Alumni Research Foundation (WARF), through a study supported by the Sugar Research Foundation. Although no details of the experiments have been released, it is understood that the tumours were found in three out of twenty rats fed a diet of 5 per cent saccharin during a two-year feeding experiment. The experiment has not yet run its full length, and the suspected tumours have still to be examined by pathologists to see if they exhibit signs of malignancy. The WARF experiment is only one of about twelve two-year feeding experiments now being conducted, and the FDA says that none of the other experiments has so far produced any "adverse findings".

Nobody can accuse the FDA of precipitate action in its handling of saccharin; in fact, quite the reverse. In July 1970, the *ad hoc* subcommittee on non-nutritive sweeteners of the National Academy of Sciences recommended that saccharin be taken off the GRAS list, and that a safe usage level would be about 5 mg/kg/day (equivalent to about 0.25 to 0.35 grams per day for an adult). The committee based that recommendation on the results of several experiments which indicated that no effect on the growth, survival, production of bladder stones, kidney pathology or bone marrow hyperplasia are produced when rats are fed saccharin at the rate of one per cent of the daily diet.

The committee did point out, however, that at higher daily dose levels, notably at five per cent of the diet, saccharin does have some adverse effect on each of these variables, and suggested that one per cent of the daily diet could be taken as the level at which saccharin had no effect. On the basis that safe levels in man are conventionally set at one hundredth of the no-effect level in animals, the committee came up with the recommendation that saccharin intake should be limited to 5 mg/kg/day, but suggested that this limit is probably unduly conservative. But the FDA considered that the suggested level was too low and asked the committee to reconsider its recommendations in the light of its general conclusion that "present and projected usage of saccharin in the United States does not pose a hazard". This the committee duly did, and came up with the suggestion that 15 mg/kg/day would be a "safe" level (equivalent to about 1 g for an adult).

The Food and Drug Administration then allowed almost a year to elapse before taking action on the committee's suggestion that saccharin should be taken off the GRAS list. On June 25, 1971, the FDA published in the Federal Register the proposal to remove saccharin from the list and to set the new limits on its use recommended by the NAS committee. Such proposals are usually open to comment for thirty days before being put into effect, but in this case the FDA allowed another seven months to go by and was finally rushed into taking action when it received the preliminary WARF findings.

Although the delay would be difficult to justify on most criteria, at least it allowed the dust to settle over the cyclamate ban and perhaps forestalled a panic reaction to tentative results. But, on the other hand, if the FDA had proceeded with reasonable speed on the NAS recommendations, it would have taken action against the sweetener not on the basis of its possible carcinogenicity, but because of its other proven chronic effects when fed to rats. The public could then have been spared the suggestion that saccharin may cause bladder cancers until sufficient evidence is available to form a balanced conclusion. All the feeding studies should be completed by the end of 1972.

The possibility that saccharin may cause bladder cancer in rats fed massive doses of the sweetener also adds a final note of irony to the farce that surrounded the removal from the market of cyclamates in 1969. The key experiment that led to the ban consisted of feeding rats not pure cyclamate, but a mixture of cyclamate and saccharin in a 10:1 proportion (*Science*, **167**, 1131; 1970). The FDA then assumed that it was the cyclamate that caused the cancer, not the saccharin or a reaction between the two. The finding now that saccharin is suspected of causing identical bladder tumours is ironic to say the least.