

at which a programme sponsor is satisfied by a proposal will be a more exacting one.

This said, the range of the interests of the Office of Naval Research remains impressive. In the coming fiscal year, if Congress grants what has been asked of it, roughly \$50 million will be spent on the three laboratories which the office maintains, two of them by contract, and a roughly equal amount will be spent in universities on research contracts. At the same time, it is likely that basic research in industry will cost \$8 million in the year, that \$4 million will find its way to non-profit agencies under research contracts and that



Naval Research Laboratory, Washington.

between \$1 and \$2 million will be spent in federal contract research centres. Admiral Owen says that in the process of contraction by about 20 per cent which has been forced on the office in the past three years, care has been taken to keep support for universities and for domestic laboratories more or less in balance, so that there has been no undue concentration of effort on the places at which the office would itself be most immediately affected.

In the universities, the range of work supported is still quite substantial (and in value is roughly 3 per cent of all federal money for basic research in universities as well as about a fifth of what the National Science Foundation spends in this way). Thus the ONR has been the chief sponsor of the development of the supersonic particle accelerator at Stanford University, chiefly on the grounds that the technology of superconducting machinery is essential to its long term interests. (The National Science Foundation now shares in this development.) Naturally enough, oceanography takes a large and growing share in the office's budget—nearly a quarter of what was spent on basic science in 1969. Over the years, the ONR has been responsible for the development of submersible research vehicles, including the deep submersible Alvin which was lost in 1968 after having helped to locate the hydrogen bomb which went astray off the coast of Spain, and also the up-endable research vehicle used widely in the BOMEX programme of meteorological and oceanographic observations carried out a year ago in the eastern Atlantic.

Admiral Owen says that his office is at present particularly interested in a number of general themes which bear on the US Navy's long term interest. The development of techniques for surveillance under water

and above it is understandable enough, as is the interest in techniques for command and control. The navy has its own special interest in materials technology, being as often concerned to make hollow objects which will withstand pressure of deep water as air forces are to make lightweight lifting surfaces. Energy conversion is another field of interest (responsible for some 5 per cent of the budget in the past few years). Increasing attention is being given to problems of the management of people, chiefly on the grounds that the questions of how best to get a good service out of 650,000 people (not counting the marines) have not previously been given the weight that they deserve.

The principal laboratory is the Naval Research Laboratory, with interests in thermonuclear fusion, radio astronomy and rocket astronomy as well as the more obvious functions of a naval research establishment. (The two smallish contract laboratories are the Naval Biological Laboratory at Oakland, California, which is largely concerned with aerosols, and the Arctic Laboratory in Alaska which is concerned with physiological problems.)

The part played by the Office of Naval Research in the years since the Second World War is thus not simply measured by the amount of money spent on research grants. At the same time, however, there is no doubt—this is simple arithmetic—that the scale of operations has been declining in real terms for the past three or four years, with the result that the involvement of the ONR in the direct sponsorship of basic research in the universities has necessarily become a smaller proportion of the total. In the long run, no doubt, this may be not merely inevitable but desirable—everything will depend on whether the budget of the National Science Foundation grows at such a pace as to take up the slack. But the ONR seems still to retain some of the daring that endeared it to university scientists in the years after the Second World War.

MOLECULAR BIOLOGY

Elites and Labels

THERE are now almost too many labourers in the vineyard, in the view of Dr James Watson, director of the Cold Spring Harbor Laboratory of Quantitative Biology. "Until recently all of us have thought of (the world of molecular biology) as a small group, containing most of our best friends, plus a few dissidents whom, nevertheless, we wanted to talk with if not exchange preprints." In the annual report of the laboratory Dr Watson estimates that world wide "the number of intelligent people now doing sensible, if not important, work in molecular biology" is probably at least 2,500, of whom two-fifths passed through Cold Spring Harbor last summer. The existence of the Symposium now has to be under-advertised because there is room for less than half the applicants. But despite having to turn away the crowd from his doors, Dr Watson intends to see that Cold Spring Harbor "remains an institution where graduate students are as welcome as their professors, where bad science is so labelled, and good science encouraged with every resource at our disposal".