officials that, for the present, they favor the use of unmanned lunar and planetary spacecraft for reasons of safety and economy.

Such conclusions might ordinarily be cause for suspicion as to motives, coming as they do at a time when the National Aeronautics and Space Administration's budget is effectively on the skids and its gaze is being directed away from the stars and down toward the earth's more prosaic domestic problems. The study was, after all, commissioned by the Senate space committee, whose sympathies generally lie with NASA.

But whatever credibility the study may lose by its sponsorship should be more than recouped by its authorship. It was directed, illustrated, and to a great extent written by Charles S. Sheldon II, the chief of the Science Policy Research Division of the Library of Congress and its senior specialist in space and transportation technology. Over the past decade Sheldon has made a career out of watching the Soviet space program. On the strength of his past performance, and that of the science policy division, the new study deserves close attention.

This is the third such analysis of Soviet space efforts Sheldon has directed since 1962, and it is unquestionably the definitive work in this area, at least in public print. Like the previous two, this study is based on unclassified American and Western European sources and on information released by the Soviet Union and Eastern European news media, but outside sources say it also benefits in perspective from the main author's access to classified data.

As for punditry, the space study has already scored one high mark: Sections written before the Soviets launched two probes toward Mars last year predicted that such launches would take place, went on to nearly guess the weight of the two probes, and correctly anticipated what they would do when they reached the planet.

Steering clear of any prescriptions for the U.S. space effort, the study makes a stab at comparing the size of the two space programs—an effort fraught with difficulties, not the least of which are a nearly total lack of useful Soviet budget figures and the fact that the value of the ruble varies from one sector of the Soviet economy to another. By the Soviet effort's visible dimensions, however, it appears that the "total level of Soviet space activity and total level

HEW Study on Financial Distress in Medical Schools

A Department of Health, Education, and Welfare (HEW) task force on medical school funding has produced an astringent "Financial Distress Study" which clearly has distressed some partisans of increased federal assistance to the financially hard-pressed medical schools.

The HEW intradepartmental group emphasizes that its study should be regarded only as a "status report," but there is nothing tentative in its complaint that data on medical school costs are so inadequate that no really complete analysis of financial problems is possible. The group also makes no bones about seeing a pattern of poor management in the medical schools and an accompanying unwillingness to make structural changes to correct organizational weaknesses. In addition, the reader gains the distinct impression that the group is impatient because the financial problems of the medical schools are being blamed on the costs of educating students for the M.D. degree when they believe it is the cost of other kinds of teaching, research, and patient care which are really causing the trouble.

Critics Dispute Analysis

Critics of the report seem to react most strongly to this point. They argue that separating the costs of educating students for the M.D. degree from the costs of other activities in the health science center, which is the setting for the medical school, is based on a false definition of modern medical education.

The study on the need for emergency financial assistance for medical and dental schools was called for in the Health Training Improvement Act of 1970 and was due for delivery to Congress last 30 June. It was released without fanfare last December and got little attention during a period when Congress was going and Christmas was coming. Little effort seems to have been made to call it to congressional attention. As one outside observer put it, "Nobody was out hawking it on street corners," and those working for increased federal support of medical education were obviously relieved that the study did not appear when health education aid legislation was before Congress, since they assumed that it would not have helped their cause.

The report, on balance, is not hostile to federal aid. Its recommendations do ask for better data-gathering and better management in the health science centers but also warn of possible adverse effects of pending legislation and point to inadequacies in present federal programs which provide financial support to medical education. At the same time, the study does leave the impression that medical schools/health science centers are inefficient and perhaps are even hiding something.

Part of the impression is conveyed by the report's spare, staccato style and its tendency to raise an important question, note that factual evidence is lacking, and thereby leave the question hanging.

For example, the study quotes from the book *Financing Medical Education* which Rashi Fein and Gerald I. Weber wrote for the Carnegie Commission on Higher Education, to the effect that there is an "excessive allocation of medical school resources to the research function with a consequent adverse effect on the attention of the medical school toward the provision of services." Taken out of context, this has an accusatory ring, whether intended or not.

The report was produced by a seven-man group chaired by Robert C. Harris, of the HEW comptroller's office. A range of professional expertise is represented in the task forces membership, and the two M.D.'s in the group were balanced by an accountant and an auditor. It is not surprising, therefore, that the HEW study reveals an interest in cost accounting not common in previous efforts on the subject.

The study, as a matter of fact, consists of two general sections. The first is a survey of the general topography

of hardware commitment is running higher than did the U.S. program at its peak in 1966." Drawing on Defense Department analyses of the Soviet economy, the study indicates that funding for military and civilian space ventures is equal to about 2 percent of the U.S.S.R.'s gross national product (GNP). The overall U.S. program, by comparison, peaked at 1 percent of the GNP and is now down to about one-half percent.

The study deals gingerly with the sensitive question of who is ahead of whom in what respect, although the United States does seem to have eked out and maintained a marginal supremacy in the technology of large booster rockets.

In the early years of the space age, the U.S.S.R. held the upper hand with its large and rugged "A" vehicle, the first stage of which developed 1 million pounds of thrust. This was the original Soviet ICBM. It launched Sputnik 1, and improved versions are still the mainstay of the Soviet space program. The heftiest launch vehicle in the Soviet stable, however, is now the "Proton" booster, roughly the equivalent of the infrequently used American Saturn 1-B. Even after 6 years of use, though, Proton's reliability still leaves something to be desired, and only last year did any evidence appear to suggest that the Soviets had begun to use liquid hydrogen and oxygen in its upper stages. What's more, there is evidence that Russian missilemen are still trying to fly their ledendary "G" rocket, a colossal booster with a first stage that is supposed to produce substantially greater thrust than the 7.5 million pounds of the Apollo moon rocket, Saturn V.

As for an alleged computer gap between the two nations, this seems to be more a problem of production and bureaucratic bungling than laggard technology. The space study reports Soviet complaints that a number of general purpose computer systems have turned out to be incompatible with one another—that a design philosophy of "each for himself" seems to prevail among the various ministries. And there is a dearth of computers available for lower priority space program tasks such as processing scientific data, as well as a "grave" lack of programmers. Nevertheless, the space program has not fared badly, as one might surmise from the ability of ground controllers to dock two orbiting spacecraft (Kosmos 186

Focuses on Shortcomings in Data Showing Cost Allocation

of health science center problems. It documents, for example, the increase in the ratio of faculty to students in medical schools during the 1960's and notes that this is attributable mainly to the growing enrollments of residents, graduate students, and fellows who take a relatively greater share of faculty time.

The study observes by quoting the available literature that faculty are attracted by opportunities to provide advanced training in their own fields and that this is true in both the basic and clinical sciences. And it describes the anomalous situation created by federal research policies under which much of the teaching is done by faculty members who spend a much greater portion of their time on research.

The heart of the study, and the part which seems closest to the hearts of the task force members, however, is a discussion of cost allocation studies in which medical schools try to tell where the money really goes.

Medical schools receiving funds are required to account for the use made of these funds, but so far the federal camel doesn't seem to have its nose very far under the tent. The task force did, however, make a close study of 11 cost allocation reports filed by medical schools/health science centers, and these formed the main basis of the group's conclusions on costs.

The 11-school sample included only schools classified as financially "distressed," but the distribution of costs in various sectors of expenditures seems to differ only a few percentage points from those shown in a pilot study of several centers with assorted financial situations. The 11-center study showed an average expenditure of 22.4 percent of the budget for instruction, 20.3 for research, and 57.3 for patient care.

Even allowing for the report's admission of the difficulties of separating the costs of instruction, research, and patient care, the assertion in this section which is likely to be most quoted and controversial is that ". . . after adjusting to eliminate large items of unrestricted income such as State appropriations which have been allocated in a manner to simply cancel out functional deficits, the severity of financial difficulty directly related to 'undergraduate M.D. instruction' is at least open to question."

In reply to this and other assertions in the report, the Association of American Medical Colleges (AAMC) is preparing a detailed analysis of the study to submit to Congress. An AAMC spokesman said his organization views the study as "an honest effort to understand the problem," but is critical of the study's measuring the cost of medical education while there is no real agreement on the experience necessary to qualify an individual for an M.D. degree. "Our basic concern," he says, "is that they do not allow basic limitations of the measurement process to prevent them from drawing fundamental conclusions."

More on Subject Coming

More on the subject is certain to be heard from the AAMC and its allies and also when a major study of the cost of educating manpower in the major health professions is completed. This study, required in the Comprehensive Health Manpower Act passed last year, will probably be carried out by the National Academy of Science's Institute of Medicine, if negotiations prosper, and is due in 1973.

Meanwhile, the HEW task force report is likely to affect the dialogue on aid to health education in Congress and elsewhere because it focuses not on the very real financial needs of health education institutions but on questions of unit cost and of how extensive and expensive the "educational environment" of a health science center should be. And these questions are awkward ones since there are at present no really solid data to consult—JOHN WALSH