6. String searches do not retrieve all applicable studies since titles, resumes, and abstracts often do not contain the relevant search times; and

7. Slow terminal printout speed precludes obtaining useful information immediately when the number of responses is large.

Although some of these comments could have been anticipated inasmuch as it was necessary to limit the file size during the demonstration project, they are useful indicators of what users expect of a retrieval system. They do suggest that there is a need to keep the data base sufficiently current to satisfy most users. There also appears to be a need for faster printout at the terminal. Since subject area/key-word searches predominate, the present indexing scheme might be examined for adequacy to meet present-day user needs. On the other hand, the need for searching the various fields should be studied with a view to reducing the number considerably.

Although the BASIS system is reasonably straightforward, the casual user cannot use it optimally. From our experience the best results are obtained through interaction between a well-trained operator and the requester working right at the terminal. It helps considerably if the operator has at least a broad knowledge of the highway field.

To summarize, (a) the test period should have been longer; (b) the system gets good marks, but, because depth of search by fields is too complex for the casual user, a well-trained operator is needed; and (c) a quick response capability is clearly needed, but whether the system costs justify the benefits gained is questionable.

Kathleen Weber, Highway Safety Research Institute, University of Michigan

The Highway Safety Research Institute (HSRI), where I am the librarian, is part of the University of Michigan. We became a participant in this program as the agent for the Michigan Department of State Highways and Transportation (MDSHT).

Our facility is identified in Mobley's report as one of those whose use was moderate at first and then dropped off. I think this can be attributed to 2 major factors. First, the subject emphases of HSRI and HRIS do not exactly coincide, and HSRI does have a strong library collection that satisfies most of its information needs. We were, however, very interested in experimenting with this new system and testing its capabilities. Most of our early usage, therefore, consisted of demonstrations and experimentation rather than responses to specific requests. Second, although the HRIS files are more closely geared to the interests of highway department personnel, the primary use of the system was by HSRI research staff rather than by engineers at MDSHT. This was due to the physical separation of HSRI in Ann Arbor from MDSHT in Lansing. The absence of a truly interactive mode for the highway department personnel contributed to their low use rate.

The point here is that, if the retrieval system is going to continue, I feel it is essential that the MDSHT librarian and engineers learn to use the system themselves so that they can access it directly as their needs arise. The present arrangement, which involves the transmission of a request from an engineer to the MDSHT librarian, to me, and then to the data base, is not satisfactory. I agree with Mobley that the best situation involves a librarian or an experienced operator at the terminal and the engineer present as well to evaluate the output and suggest alternative terms or search strategies. Otherwise, the engineer will probably do better to write to Washington and request a standard batch search.

I would now like to make a few remarks about the system on an operational level. At a gathering of the Transportation Safety Information Committee in November, I detailed some of our early problems and funny experiences that we had as a new user of the system. Most of these problems, such as the inability to search on word stems or command words like "time" and "display" and the unreadable off-line print format, have been resolved. Really major improvements have been made in just this short experi-

mental period in direct response to user needs. A few problems, however, remain.

One is the lack of input format control. In addition to misspelled words, report and contract numbers may appear with or without hyphens or with or without "DOT" as the first element. Also corporate organizations are sometimes spelled out, sometimes partially abbreviated, and sometimes in acronym form.

Another potential problem is that free text searching sounds very easy and straightforward, but it can be very difficult and challenging. Much experience is needed to develop a feel for how many and what kinds of terms to use. An example in which using enough terms was important was a search on highway noise. Simply the terms "highway" and "noise" yielded 28 references. The addition of "or truck" produced 36. But if one asks for "noise" and "highway or highways or road or roads or automobile or automobiles or automotive or car or cars or tire or tires," the system responds with 70 items.

Another difficulty is knowing the right words to use. In searching for information on automated road design, we entered the 3 words connected by "and's" and were presented with several references on the design of automated roads, an entirely different subject. After experimenting with alternative terms, we discovered that the appropriate terminology was "interactive computer graphics." Again, if the interested engineer had not been there at the terminal during the search, we might not have located the information needed.

Finally, a very critical factor is the updating problem. The user will have confidence in this kind of system only if he or she knows that it is really up to date. Related to this is the question of data-base scope and content. Mobley's report shows that the greatest usage has been in the subject areas of highway safety and road user characteristics. As additional files are added, such as NHTSAs Highway Safety Literature, use will substantially increase.

We now come to the major problem, as I see it at this time. The best on-line retrieval system will not be used if no one knows it exists or if it is not tried at least once. Operational details and data base content will be improved if there is a strong demand in this direction. This system lends itself well to the problem of gaining the groundwork to begin a new project, evaluating the novelty and value of proposed projects, and just answering "I wonder if..." questions. Many professionals unfortunately do not know where to turn for this type of information, except to ask their colleagues. Others may know of a retrieval system but have never tried it or have decided it is too much trouble to use.

Personal demonstrations and easily accessible terminals can do much to overcome potential user ignorance or resistance or both. Earlier this month, I took a portable terminal to Lansing and demonstrated the system to a dozen MDSHT engineers. Although they had heard about how it worked, they did not really appreciate its capabilities until they saw it in operation and could ask for information they themselves needed. Again, I hope they will soon have their own direct access at MDSHT.

I would generally conclude that the system works well, although the data base could be improved; that the information is needed by researchers, field engineers, and managers; but that a greater effort must now be made to advertise and sell the system to those who could benefit from it.