LYMAN A. PAGE (Stanford School of Medicine, Palo Alto, Calif.): Do you have data on whether the reduced size of other organs is due to reduced cell number?

Dr. KNITTLE: We have no data now. We have organs in the deep freeze, and we will be doing DNA and protein ratios to determine cell number and size.

- 12 *Defective Coenzyme Biosynthesis in B₁₂-dependent Methylmalonicaciduria.* MAURICE J. MAHONEY, MILDRED C. STAMBAUGH and LEON E. ROSENBERG. Depts. of Ped. and Med., Yale Univ. Sch. of Med., New Haven, Conn. (introduced by C. D. Cook).

Chairman GILBERT B. FORBES: Would you like to multiply vitamin B₆ by a factor of 2 and talk about vitamin B₁₂?

CHARLES R. SCRIVER (Montreal Children's Hospital, Montreal, Que.): If only I had half the expertise to attempt it! The authors have presented a beautiful piece of work and there is nothing I can say to add to it.

I would like to ask about something that may be of interest in the future, and which could be one of the legacies of your observations. When these patients respond to the administration of vitamin B₁₂, you are also giving an atom of cobalt for every molecule of vitamin B₁₂. About 3 years ago, in Quebec we had an epidemic of cobalt toxicity with cardiomyopathy. Do you know whether long-term administration of vitamin B₁₂ to your patients will also give them a load of cobalt that may actually be toxic? Do you think this is a danger?

Dr. MAHONEY: I believe we will need a long follow-up period to answer that question. The cobalt atom is held in a tight organic complex in the cobalamine molecule and the cobalamine molecule is rapidly cleared from the blood by renal excretion. Thus we can hope that the cobalt load will not reach a high toxic level.

We have treated the first patient described for over 2 years with twice a week injections of 1 mg of cyano-B₁₂. At times we have substituted the same amount of the coenzyme, deoxyadenosyl-B₁₂.

- 13 *Extending the Evaluation of the Effects of Early Enrichment.* JULIUS B. RICHMOND and BETTYE M. CALDWELL. Upstate Med. Center, Syracuse, NY, and Univ. of Arkansas.

ALEXANDER DRESCHER (Albany Medical College): Do you feel that 0.5 h/week may provide the placebo effect of a caring and concerned adult, rather than any other educational phenomenon?

Dr. RICHMOND: I think this is an important issue. Many of the home 'tutoring' programs that are currently in process, that of WEIKART and several others, stem from the concern over the importance of parent involvement. The impact programs have on parents, and what it does to their attitudes and care of the child, may indeed be the important issues. These are some of the problems that remain to be solved. This suggests that we need alternate programs to explore a variety of approaches.

MARSHALL KLAUS (Case Western Reserve University, Cleveland, Ohio): Historically, it has been of interest to see what is important in pediatrics and how pediatrics has changed over the years. What does the teacher usually do during the half-hour?

Dr. RICHMOND: First, I would suggest that I do not know that we should generalize from this half-hour. Remember, in the program it was the lead teacher who knew these children well and who visited the children at

home. I think that the emotional factors as well as the content of what was presented would be extremely important. I also preface my comments by indicating that our numbers are small and we could rely on only one highly skilled tutor.

Also, I might say that this was a dimension of the program that was not originally planned. In our early days we were not heavily invested in home tutoring. We were rather invested in the group care program, so that at the time we undertook this we did not have an available pool of tutors. We, therefore, used the teacher who was the most skilled and who knew these children, to go into the home.

LEONARD M. LINDE (University of California Medical Center, Los Angeles, Calif.): I have been working this past year with the disadvantaged student as he applies for medical school, and one of the problems that we have encountered is that the tests are made up by advantaged people. I am wondering if the disadvantaged student is not learning some other kinds of skills that allow him to cope with his own environment, miserable as it may be, that may be missed in the testing.

In other words, how do you test for what this disadvantaged child has to know to get along? And is it possible that the tests, made up by advantaged people are merely testing something that advantaged children learn?

Dr. RICHMOND: I think this is a very important question, and certainly relates to the whole matter of the testing of cognitive function. Certainly, no one has been successful in developing a test that is free of cultural bias. We use tests that are the best that we have. We do feel, and other data that we have concerning social and psychological functioning of these children indicates, that there are many other gains beyond the cognitive. As a matter of fact, ZIGLER and BUTTERWORTH, in New Haven, and others have become very interested not only in following cognitive function, but also in learning something more about motivation. If we achieve cognitive gains and do not build in motivation for continued learning we have significant losses as a consequence.

As you point out, we are not suggesting that these children are incapable of learning. But they may be incapable of learning what is required of them in the one social institution that we require all of them to attend, the schools. We made that judgement in the middle of the last century, and we are programming some of our children to fail in those institutions.

CHARLES D. COOK (New Haven, Conn.): We have heard a good bit about the interrelationship between nutrition and growth and intelligence. I wonder if you have any information about the growth of these children, so that we could see the relation between the developmental quotient that you measured and their growth.

Dr. RICHMOND: We do have such data. I am not prepared to comment on it at this time, however. The nutrition of our children generally was reasonably good. That is, we have not encountered any striking deviations. Although we are dealing with quite a low income population, nutritionally they seem to in rather good condition.

HANIA W. RIS (University of Wisconsin Medical School, Madison, Wisc.): Are you planning to use the television program 'Sesame Street' as an enrichment program for the preschooler?

This is one of the most creative and imaginative educational programs for children, which is at the same