

- New ideas on education and the instruction of the young have been receiving a great deal of attention in Europe and in the U.S.A. Filipino educators need to be aware of them.

JEAN PIAGET: NOTES ON LEARNING

The man behind the ideas of many of the plans and programs to improve the curricula in the schools is not an educator. Jean Piaget is the seventy-one-year-old French-speaking Swiss director of the Jean Jacques Rousseau Institute in Geneva, the founding director of the International Center for Genetic Epistemology, director of the International Bureau of Education, and professor of child psychology and of the history of scientific thought at the University of Geneva. Some psychologists are convinced that his work might become as influential as Freud's. Some educators are fearful that this may be true.

In March, Piaget came to U.S.A. to deliver three lectures on the nature and nurture of intelligence and on related matters in science, psychology, and education. He spoke at New York University and addressed the convention of the American

Orthopsychiatric Association in Washington.

It has been said of Piaget that he is by vocation a sociologist, by avocation an epistemologist, and by method a logician. He tells his listeners and readers that he is not an educator, that he is a psychologist with an interdisciplinary bent, that he is an investigator using the tools of the related fields of biology, psychology, and logic to explore the genesis of intelligence in the human young. All his long life he has drawn upon these three fields to conduct research and to build his theories of the development of intelligence in children.

For Piaget, the crucial question in the study of the growing child is how he adjusts himself to the world in which he lives. And for Piaget there is nothing pejorative in the word *adjustment*. It involves backing and filling, winning and losing, un-

derstanding and gaining knowledge. As he expresses it:

"Knowledge is not a copy of reality. To know an object, to know an event, is not simply to look at it and make a mental copy, or image, of it. To know an object is to act on it. To know is to modify, to transform the object, and to understand the process of this transformation, and as a consequence to understand the way the object is constructed. An operation is thus the essence of knowledge."

This is the voice of the epistemologist, but it speaks from the soul of the teacher. Piaget's techniques for observing, recording, and understanding the way a child thinks is quite literally to get inside of the child's mind and see the world through the child's eyes. One of his notable experiments, for example, was to join in a child's game as an equal. He would "learn how to make a good shot at marbles, how to make bad ones, and even how to cheat."

Piaget sees four major stages of growth through childhood: the first is the

sensory-motor stage, which lasts from birth to about two years. Here the child learns muscles and senses and develops certain habits for dealing with external objects and events. Language begins to gain form. He can deal with and know that things exist even when they are beyond his sight or touch. He begins to "symbolize," to represent things by word or gesture.

The second stage is the *preoperational* or *representational* stage. It begins with the beginning of organized language and continues to about the age of six. This is the period of greatest language growth and through the use of word and other symbols the child can represent the outside world and his own inner world of feeling. It is a period when magical explanations make sense, when "God pushes the sun around" and stars must go to bed when he does. The child begins to gain a sense of symmetry, depends on trial and error adjustments, and manages things by a kind of intuitive regulation.

The third stage, between seven and eleven years, is

one in which the child acquires the ability to carry out what Piaget calls *concrete operations*. He can move things around, make them fit properly. He acquires fine motor skills and can organize what he has and knows how to solve physical problems.

The fourth stage is one of *formal operations* and prepares the way for adult thinking. It usually begins between twelve and fifteen years and involves the development of "hypothetical reasoning based upon a logic of all possible combinations and to perform controlled experimentation."

In successive studies Piaget and his associates have explored the growth of intelligence, the development of moral awareness, the child's concept of physical reality, and the elaboration of appropriate logic to deal with complex nonrepresentational problems.

Although *The Language and Thought of the Child* was published in English in 1926, it was not until the early 1950s that Piaget's ideas made any significant impact in the United States.

Professor Jerome S. Bruner of Harvard is probably responsible for the current public awareness, which can be traced to his important little book *The Process of Education* (1960), and his most recent book, *Toward a Theory of Instruction* (1966). Bruner describes Piaget as "unquestionably, the most impressive figure in the field of cognitive development." Piaget, he says "is often interpreted in the wrong way by those who think that his principal mission is psychological. It is not . . . What he has done is to write the implicit logical theory on which the child proceeds in dealing with intellectual tasks."

Some of Piagets Ideas

1. "If we accept the fact that there are stages of development, another question arises, which I call 'the American question,' and I'm asked it every time I come here: If there are stages that children reach at given norms of ages, can we accelerate these stages? Do we have to go through each one of these stages, or can't we speed it up a bit? Well, surely, the answer is yes . . . but how

far can we speed them up?

"A few years ago (Jerome S.) Bruner made a claim which has always astounded me; namely, that you can teach anything in an intellectually honest way to any child of any age if you go about it the right way. Well, I don't know if he still believes that. But I have a hypothesis that I am so far incapable of proving: Probably the organization of operations has an optimal time . . . For example, we know that it takes nine to twelve month before babies develop the notion that an object is still there even when a screen is placed in front of it. Now kittens go through the same stages as children, all the same sub-stages, but they do it in three months — so they're six months ahead of babies. Is this an advantage or isn't it? We can certainly see our answer in one sense. The kitten is not going to go much further. The child has taken longer, but he is capable of going further, so it seems to me that the nine months probably were not for nothing.

"It's probably possible to accelerate, but maximal acce-

leration is not desirable. There seems to be an optimal time. What this optimal time is will surely depend upon each individual and on the subject matter. We still need a great deal of research to know what the optimal time would be."

2. "Should schools attempt to create individuals who are capable of understanding everything that has been done in the history of ideas, and capable of repeating all this history, or should they focus on forming individuals who are capable of inventing, of finding new things in all areas: in modest technical inventions, or in more highly developed scientific inventions — that is, people who are capable of going beyond the present and previous generations? This gives us the alternative between two types of pedagogy, one in which the child is receptive, the other in which he is active — education which stimulates the activities of the child in the area of his inventiveness."

3. "Intelligence is born of action. Any act of intelligence — whether it be on the part of a man involved in

scientific research, or of any normal adult in his everyday problem-solving, or the child of seven and eight — any act of intelligence consists of operations, carrying out operations, and coordinating them among themselves."

4. "Even in order to understand we have to invent, or, that is, to reinvent, because we can't start from the beginning again. But I would say that anything is only understood to the ex-

tent that it is reinvented."

5. "Each of the stages (of learning) is essential for the development of the following stages. This isn't simply a linear order in which you could jump over one stage and still get to the next one. Each stage integrates the preceding stage and prepares the way for the following one." — *By Frank G. Jennings, Extracts from Saturday Review, May 20, 1967.*