



DR. W. E. RITTER  
Celebrates eightieth birthday.

## BIOGRAPHY

### "Unity" is Philosophy of Dr. William E. Ritter

"UNITY" would be the guide-word for the life of Dr. William Emerson Ritter, now reaching its eightieth milestone—if so varied a life could be oriented upon a single word. Researcher, teacher, director of a great biological institution, philosopher, counsellor to a newspaper-business genius, the late E. W. Scripps, co-founder with him of Science Service, Dr. Ritter reverts again and again, through all his multiplex activities, to the single and binding idea of unity.

Unity in the living animals he studied, underlying and dominating the apparent mosaic-like distinctness of parts and activities. Social unities within groups. Unity, not dualism, of body and mind in man. Unity not only in the final stage but in every step throughout development. He sees life steadily, and insists upon seeing it whole.

This idea of continuing developmental unity is brought to especially sharp focus in the concluding chapter of one of his books, "The Natural History of Our Conduct," wherein he elaborates upon a theme set forth by naturalists as far back as Aristotle: the interdependence of head and hands in human evolution and life.

Only a creature with a head and mind like man's can make use of human hands, Dr. Ritter points out. Conversely, only with hands like man's can the bid-

dings of the human head be carried out. Imagine the helplessness of a being with a human head and the forelimbs of a dog or horse; or the uselessness of one with human hands and the head of an elephant or an alligator. Human head and human hands simply belong together; they are not imaginable separately; they form a unity.

They form a unity now because they evolved as a unity, Dr. Ritter continues. Head, having flexible, adaptable hands at disposal, can invent new things to do, and hands will faithfully perform, particularly since tools in wide variety can be used as auxiliary organs. Hands, having remained in an unspecial-

ized state, keeping the full set of fingers and developing an opposable thumb, can offer head ready cooperation.

As a natural being, the birth of ages of evolution, man is in a startlingly literal sense self-made. His whole body, but especially his head, is the work of his hands.

Dr. Ritter is honorary president of Science Service and professor emeritus of zoology at the University of California. His eightieth birthday occurred on Thursday, Nov. 19. He is now working on an extensive study of the California woodpecker, which will be published soon.

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## PHYSICS

## Changes in Science Education Urged by Industrial Physicists

**D**RASTIC changes in the kind of scientific education needed to place more graduate physicists in industry were outlined at the meeting of the nation's five leading societies of physics.

The American Institute of Physics, it was revealed, has queried fifty of the country's leading industrial physicists to find out what industry wants in the oncoming generations of scientists and what is wrong with the present system of training them.

Too much emphasis on the so-called "new" physics with its atoms, atomic nuclei and theoretical mathematics on the structure of the atom and a consequent lack of the older but more practically useful "classical" physics was a major criticism advanced by the industrial replies as outlined and interpreted by Dr. Homer L. Dodge, dean of the University of Oklahoma Graduate School, and Dr. A. R. Olpin, director of research of Kendall Mills, Boston.

Industries need physicists trained in the fields of optics, magnetism and acoustics, it was disclosed, and yet too little emphasis is placed on these fields of physics in academic training, either undergraduate or graduate. The reason is that the best known scientists are working on the problems of cosmic rays, atomic disintegration and transmutation, and the younger students naturally look up to them for guidance and inspiration.

The personality of a prospective physicist entering industry is as impor-

tant as his technical and scientific knowledge, in the opinion of some of the industrial research leaders queried. The need is great for men who can work with, and lead, others.

Industry has little use for the eccentric, brilliant but self-centered research scientist, Dr. Olpin said. Boldness of imagination, daring in conception, courage for change and vigor of conviction are some of the qualities demanded of industrial physicists today just as much as comprehensive technical training. An industrial research man should be able to express himself clearly to any type of audience and be able to break down, as do the science writers for newspapers, the barrier which exists between technical shorthand symbols and terms and the language of the layman. The value of extra-curricular activities in this connection was stressed.

Some training in engineering courses is advocated for future industrial physicists, but it is easier to use an employe trained adequately in physics and have him attain engineering knowledge in the plant than to try to give an engineering student additional knowledge of physics.

Physicists receive adequate training in mathematics, it was shown by the survey, but it is not taught properly. As one research director said:

"It is one thing to solve a neat row of mathematical symbols and quite another to understand a problem well enough to set up a differential equation, determine the constants of integration

and keep one's feet on physical ground through the whole process."

If in mathematics the need is for better training rather than more of it, the opposite is true in chemistry training for industrial physicists. Most industrial laboratories do not employ physicists as such because few physicists have had sufficient chemistry. Yet the industrial chemists do much work which is strictly physics. In smaller companies, especially, the scientist desired must know science rather than merely chemistry or physics.

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cluded in the group are those showing in detail the vaporization and explosion of a drop of gasoline in an automobile engine cylinder; the operation of the cooling system of an automobile; simple methods and precautions by which fire and highway accidents can be avoided; the "New Frontiers" of the electrical industry; the operations of modern gas, electrical, and transportation facilities; the making of steel; and the drama of invention and research remolding the life of American people.

One special film will tell the story of chemistry in modern life as portrayed through the development of artificial dyes, fabrics, explosives, paints, and hundreds of other products by tearing down and recombining the basic molecules of matter.

Lowell Thomas, Boake Carter, and John S. Young are listed among the well-known commentators of the present day who supply the descriptive side-lights on the films.

Showing of the selected films will be open to the public on the centennial celebration day, Monday, Nov. 23, following which some of them will be dispatched on a nation-wide tour sponsored by the Junior Chamber of Commerce. Plans of the group also call for presentation of prints of these films to the National Archives as a nucleus for its collection of outstanding motion pictures of the present age.

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A slice of iron meteorite with a small diamond projecting from its surface is an unusual specimen recently brought to scientific notice.

Among the industrial by-products which are seen as possible livestock feeds are walnut oil meal, tomato canner's waste, grape meal, and hempseed meal.

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