

FACULDADE DE FILOSOFIA, CIÊNCIAS E LETRAS
DA UNIVERSIDADE DE SÃO PAULO

DEPARTAMENTO DE FÍSICA

Av. Tiradentes, 11

COMPTON, ARTHUR HOLLY Sept. 10, 1892 - Physicist.

On May 15, 1940 Dr. Arthur H. Compton received the Franklin Medal awarded to workers in physical science or technology whose efforts have done most "to advance the knowledge of physical science or its application". This is just one of the many awards Dr. Compton has received. The American Academy of Arts and Sciences gave him the Rumford Gold Medal in 1927; he received the Nobel Prize in physics in that same year; The Radiological Society, the Italian Academy of Sciences and learned societies all over the world have honored him.

Dr. Compton's main work, like that of Robert Millikan (see sketch June issue) has been to discover the secret of cosmic rays. He started this work in 1931 and since then has roamed the world climbing mountains, descending to the sea, tracking the Arctic wates and the equator, seeking knowledge of the invisible, powerful rain of cosmic radiation that pours upon the earth from space. In 1932, with funds from the Carnegie Corporation of New York, he organized an elaborate world-wide cooperative enterprise for the collection of cosmic ray data. The earth was divided into several tegions for this enterprise, and eight associated expeditions within eight zones of cosmic ray research, equipped with a new electroscope that Compton had invented, made findings and reported them to him.

When his conclusions were made public at a meeting of the American Association for the Advancement of Science in 1932, it was found that his conclusions and Millikan's differed, Compton said cosmic rays were mostly electric particles while Millikan held that they were mostly photons (electrically inert bundles of radiation) It wasn't until January 1936 that Compton presented a résumé of his researches which was considered a victory for his conclusions.

Compton's mosto recent feat in his prolonged attempt to wrest the secret of the cosmic ray from nature was a high altitude flight to photograph the ray. In a big air liner flying above 29,000 feet, Dr. Compton and his assistants took 400 pictures under what were described as "ideal conditions" and Compton velieves that these photographs will "materially assist" in unlocking the mystery of cosmic rays and their importance to man.

It was for his work on X-rays that Dr. Compton received the Nobel Prize. With an apparatus "so sensitive it measured one ten-millionth of the energy of a mosquito climbing an inch of screen", he brought forth the "Compton Effect", which showed that X-rays, through radiation, act like solid particles when scattered by reflection from atoms.

Arthur Compton was born at Wooster, Ohio on September 10, 1892, into a family whose every member ha made his mark. His father, Elias Compton, is a Ph. D. and a D. D., a Presbyterian clergyman and long-time professor of philosophy and psychology at the College of Wooster. His mother, Otelia (Augspurger)Compton, received an LL. D. in 1932 from Western College at Oxford, Ohio "for outstanding achievement as a wife and mother". Arthur's oldest brother Karl has been president of the Massachusetts Institute of Technology since 1930 and is also a famous physicist; his sister, Mary (Compton) Rice is the wife of the president of a missionary colle in India and heads her own missionary school;

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his brother Wilson is a lawyer, manager of the National Lumber Manufacturers' Association, economics adviser to the Department of Commerce and a professor of economics at George Washington University. All three Compton sons were graduated with Phi Beta Kappa keys from Wooster College, all received Ph. D.'s from Princeton and all are listed in Who's Who in America. Mrs. Compton says she trained her children "on the Bible and common sense".

Arthur Compton showed a scientific bent early, and his family encouraged him. There was the time when eight-year-old Arthur showed his mother an essay he had written. "Here is what I think about this elephant question", he declared. "I have gone through a lot of books. They all say that African elephants have three toes and Indian elephants five toes. I believe this wrong. I say African elephants have five toes and Indian elephants have three toes and this," he concluded, pushing the papers in front of her, "is why I think so." Mrs. Compton looked gravely at the essay and congratulated Arthur on having gone into the matter so thoroughly. Thirty years later she asked him whether he remembered it. "Yes," he replied grinning, "and mother, if you laughed at me then it would have finished my urge for research!"

In his teens Arthur built a glider that actually flew, published articles on aeronautics, made an astronomical clock for a telescope and took pictures of Halley's Comet. He went to Wooster College in 1909, and while there invented a patented gyroscopic device for airplane control. By then he had decided that he was going to become a mechanical engineer, but Karl, five years older, steered him away from engineering by interesting him in advanced mathematics and physics.

In 1916 Arthur Compton received his Ph. D. in physics from Princeton University, summa cum laude, and right after graduation married Betty Charity McCloskey of New Waterford, Ohio. With his wife he went to the University of Minnesota to teach physics, but after only a year there left to enter industry. For two years he worked in the Pittsburgh laboratory of the Westinghouse Electric Company, where he was engaged in the development of electric light lamps. Then he said to his wife: "Betty, I'm going back to university work".

He got a research fellowship in the Cavendish Laboratory at Cambridge under Thomson and Rutherford and it was this year's research which led him to make fundamental discoveries in the field of light. He returned to America in 1920 to become professor and eventually head of the physics department at Washington University, St. Louis. Since 1923 Dr. Compton has been a professor at the University of Chicago. For the past years he has been teaching one class a day, at 8:00 a. m., after which he works in his office "which has a black steel desk, cream walls, tan curtains, gray rug, a comic-ray counter clicking away in a corner; or in the laboratories just outside where he has \$50,000 worth of equipment for his own researches".

Dr. Compton is a leading spokesman for those who see no conflict between religion and science. In 1935 he expounded his views in Freedom of Men, in which he showed how the newer discoveries of atomic physics lend support to the ancient basic ideas of religion. For years he taught Sunday School at the Hyde Park Community Baptist Church of which, though a Presbyterian, he was deacon, and in 1937 he was elected general chairman of the Laymen's Missionary Movement; in 1938 he was made co-chairman of the Conference of Jews and Christians. To Compton "science can have no quarrel with a religion which postulates a God to whom men are as his Children."

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To him "science is the glimpse of God's purpose in nature, and the very existence of the amazing world of the atom and radiation points to a purposeful creation, to the idea that there is a God and an intelligent purpose back of everything!"

With his wife and two sons Dr. Compton lives in Chicago in a big brick house filled with souvenirs from all over the world. He doesn't know the taste of hard liquor and almost never smokes. "A tall, rugged man with deep-set eyes and a heavy chin," he plays a fast game of tennis, swims powerfully and strokes a canoe manfully. Several times a month he puts in an evening of mandolin-playing with three friends. When his graduate students have finished an examination, he likes to take them out to dinner and the theatre.

References:

- Fortune 16:145 D'37 por
 Lit Digest 120:15 N 9 '35 il por
 NY Times pl 18 Ap 21'40
 Newsweek 3:32 Ja 6 '34 por; 12:23 D 12 '38; 15:4 Ap 29 '40
 Time 27:28 Ja 13 '36 por; 32:20 J1 11'38 por; 34:37 N 20 '39 por
 American Men of Science
 America's Young Men
 Hylander, C. J. Arthur H. Compton in American Scientists Pl 160-3 1935
 International Who's Who
 Jaffe, B. Radiation In outposts of Science p w69-416 1935
 Who's Who
 Who's Who in America