CHEMISTRY

# Atomic Hair-Splitting

**Chemists report researches on shape of protein molecules, that of hair being a long, coiled spring. Helical shape controversy now raging across Atlantic.**

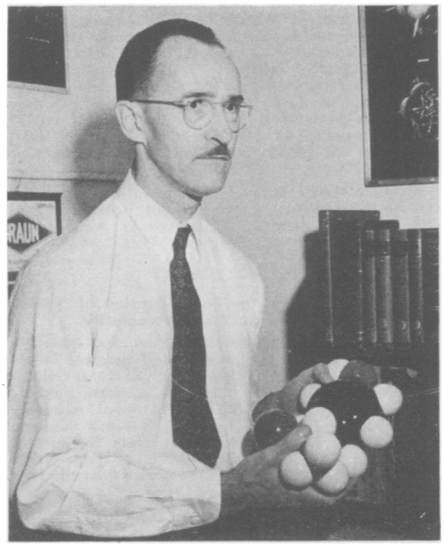
**See Front Cover**

➤ LITERAL HAIR-SPLITTING on the atomic scale is telling the secret of stuff that makes up hair. A controversy on the shape of protein molecules of hair is now being tossed back and forth across the Atlantic.

Dr. Linus Pauling and Dr. Robert B. Corey at the California Institute of Technology, told the American Chemical Society meeting in New York that the helix, the long coiled spring, best illustrates the molecular structure of keratin and certain other proteins.

Keratin is the substance of hair, wool, finger-nails and other skin modifications. Fibers of contracted muscles, and some simpler proteins made in the laboratory have their smallest, finest structures in the same form, Drs. Pauling and Corey have found.

The conquest of disease and even the fundamental puzzle of life itself is wrapped up in the structure of proteins and other polypeptides. That is why discovering their form is important.



***SPIRALLING ATOMS — Research by Dr. Robert B. Corey, pictured here, and Dr. Linus Pauling and associates at the California Institute of Technology on the previously obscure structure of proteins has shown that the atoms which make up bone, wool, muscle, red blood cells and other proteins are arranged in the form of a spiralling spring.***

In the structure announced by Drs. Pauling and Corey, some 37 repeats of the simplest chemical unit of the protein occupy ten turns of the spring.

Objection to Dr. Pauling's conclusion appears in the British journal, NATURE (Aug. 25), which recently reached the U. S. It is based on a different interpretation of X-ray photographs of some of these proteins by Drs. C. H. Bamford and W. E. Hanby, of Courtaulds Research Laboratory, two of the men who took the photographs that Dr. Pauling and his associates used. The British team find certain measurements of molecular distances smaller in their interpretations than those reported by the California scientists, and thus cast doubt on the helix structure.

Dr. Pauling, using sticks and wooden balls, made molecular models sized in proportion to measurements made with X-ray beams on crystals of the protein material. By experimenting with these models he developed his theory. His conclusions have been verified by Dr. M. F. Perutz of the Cavendish Laboratory, Cambridge University, England.

Shown on the cover of this week's SCIENCE NEWS LETTER is an x-ray photo of a crystal of asparagine monohydrate, one of the amino acids which make up proteins. The spots are reflections from the planes of atoms in the crystal. From the positions and intensities of the spots, the positions of the atoms are determined.

Another structure announced by Dr. Pauling and his California associates is the "pleated sheet" form of feather protein. Atoms in this substance form zig-zag connections between the spreadout layers of feather keratin.

Science News Letter, September 15, 1951

PSYCHOLOGY

## Paralyzed Patients Move Legs After Hypnosis

➤ PATIENTS WITH spinal cord injury with legs completely paralyzed and numb for as much as two years were enabled to move their legs again as a result of hypnosis.

Four such dramatic cases were reported to the meeting of the American Psychological Association in Chicago by Dr. Dorothy Twichell Chappell of the University of Michigan and Kennedy Veterans Administration Hospital.

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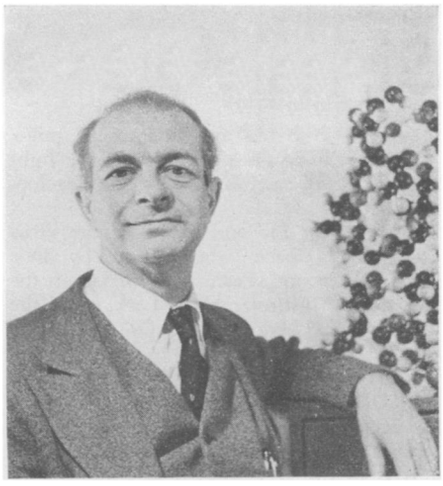

***PROTEIN RESEARCH — Dr. Linus Pauling of the California Institute of Technology shown with a model of a polypeptide chain of amino acids such as found in proteins of connective tissue and bones. Research by Drs. Pauling, Robert B. Corey and associates on the structure of protein atoms was reported at the American Chemical Society Diamond Jubilee Meeting in New York.***

SOCIOLOGY

## Social Beliefs Depend On Way Person Thinks

➤ THE WAY a person thinks about social problems depends on whether he is radical or conservative, tenderminded or toughminded.

People who are tenderminded and conservative believe in survival after death, compusory religious education and in the need for a general return to religion. Those who are tenderminded but radical believe in pacifism, more lenient treatment for prisoners and the need for a whole state.

Conservative toughminded people are war-minded, anti-semitic and prejudiced against Negroes. Radical toughminded people favor trial marriage, easier divorce laws and think Sunday observance is old-fashioned.

Toughminded people, regardless of their radical or conservative leanings, are all for compulsory sterilazation and euthanasia; while all tenderminded people seem to favor the principle that the state exists for the benefit of the individual.

These facts were presented recently to the British Association for the Advancement of Science by Dr. H. J. Eysenck of London's Institute of Psychiatry at Maudsley Hospital. He gave a battery of psychological tests (including inventory of social attitudes, national preferences test, and a Social Test) to 500 adults, who were urban, middle-class men and women.

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