



Title 440

The first Institute for **Scientific Team Work** was the **Institut Pasteur** founded in 1888 by international subscription, and originally designated for research on rabies. Soon expanded to include bacteriology, virology, biochemistry, immunology and molecular biology, it became a center of excellence for research, teaching and the production of vaccines and serums. It also expanded geographically, for example to branches in Algiers, Guyana and other French colonial territories.

This French '5 Franc' banknote, showing Louis Pasteur (1822-1895) on the left and the **Institut Pasteur in Paris** on the right, was in circulation from 1965-1970. *Author's Collection.*

L'ART * C'EST MOI—LA SCIENCE * C'EST NOUS

Claude Bernard 1813-1878

(ART * I CREATE ALONE—FOR SCIENCE * WE WORK TOGETHER)

This distinction, so clearly enunciated by Claude Bernard, will be obvious to modern scientists, but this was not always so. There have often been exceptions, with art created by a team, and great scientific discoveries made by a single genius, at least so in the past.

To begin with the obvious: All great Literature is created by one author alone and not by a committee, but unless it is printed, or electronically transmitted, who would ever be able to see, read or enjoy it? Even more so for Music, as Beethoven's score of his Ninth Symphony may be read by a single person, but needs a Conductor and soloists, with a choir and a full symphony orchestra to create the sound which the Composer wanted the audience to hear. Still further, the modern art of the motion picture or the television play demands a team of creative technicians, if the artistic view of the Producer or Director is to be recorded for later projection to an audience. Only in the visual arts can the artist's lonely work be directly communicated.

Let us take 1663 as the beginning of modern science with the foundation of the Royal Society of London, when about 40 gentlemen met weekly. Typical of these was Robert Boyle FRS, an Irishman, wealthy from the income of his estates in County Cork, and able to use several rooms in his large houses, first in Oxford, then in London, for his air pumps and chemical experiments. Even then Boyle had as his research assistant none other than Robert Hooke FRS, and a few servants to fetch and carry what was too heavy for the two gentlemen.

Real working together in Chemistry started in Justus von Liebig's Giessen Laboratory around 1840 and came to England five years later [see Title 10]. It became more general to work in teams, when a great man had an Institute funded for him, like Pasteur for biological researches on rabies in 1888. The famous Cavendish Laboratory for physics and later nuclear physics in Cambridge, could not flourish until the Cavendish family endowed it in 1871. Henry Cavendish (1731-1810), although a millionaire, never left a penny to science.

The greatest working together for science and medicine for the benefit of mankind so far, through the Scientific Temper, was the total eradication in 1977 of smallpox through the World Health Organisation. WHO is now hoping to finish the Global Polio Eradication, by vaccinating 70 million African children to achieve this. The ISS is another great example of team work.