

disease. The result of research on diet and causes of disorder has been to lengthen the life of the average civilized man for by fifteen to twenty years. Till these days of experiment, physicians were able to treat symptoms mainly, for the solid basis of science had not been reached.

An example of the method of science is that by which Dr. Walter Reed and his associates have controlled yellow fever. The noble work of my old friend, Professor Ricketts, in making clear the nature of "mountain fever" in Montana, and of typhus in Mexico (in which he fell himself a martyr), will also illustrate.

Intensive study of another type of disorder, sugar poisoning, gave us insulin, a drug which has already saved thousands of lives condemned to death by diabetes.

Most such studies can only be made by tests on certain animals, rabbits, guinea pigs, rats, goats, dogs and sometimes monkeys or horses. Literal "vivisection" (cutting them up alive) is a rare thing, not done without anaesthetics. Certainly it has never been wantonly practiced by any sane man engaged in real research. There are two or three cases on record where outrageous acts have been committed, mostly so far as I know in France. Napoleon gave the cue: when he said that "a great soldier like me does not care a tinker's dam for the lives of a million men." But the greatest of Frenchmen, Pasteur, was guided solely by the spirit of helpfulness.

There may have been some cases of some tyro teacher cutting up a live animal for class illustration. But I have not heard of a case for forty years, and it has nothing to do with medical research as practiced in legitimate colleges or in actual centers of research like the Rockefeller Institute.

"Anti-vivisectionist" publications, so far as I have seen them, show certain traits:

1. Sheer ignorance of discoveries of the last half century, notably as to bacteria and protozoa.
2. Quotations from "eminent physicians" without names or dates.
3. Careless or conscienceless use of quotations from men of science.
4. Alliance with advocates of "freedom in medicine," which would double the horde of impostors who prey on the ignorance of the public in regard to medicine and sanitation.
5. Encouragement of faith-healing cults, sincere enough, but capable of dealing only with the promotion of optimism, a method which in many cases may be of positive use in certain types of disorder, but tragic if adopted for setting a broken leg, in treating an infectious malady and the like.

You would not think it workable truth to ascribe your plant successes to your magical control over the fatty matter ("materia pinquis") of the earth by waving of sensitized wands, rather than to scientific operations of selection, hybridization and segregation. I know of people who have gone to Santa Rosa to "see the wizard wiz." — always went for exactly the opposite purpose, to see how great useful results can be achieved by rigid use of all knowledge secured within the field of plant development.

With high appreciation of all your many services to clear thinking, as well as to horticulture, I am

Very sincerely yours,

(Signed) DAVID STARR JORDAN

SANTA ROSA, CALIFORNIA

June 2, 1925.

Dr. David Starr Jordan
Stanford University
California.

Dear Dr. Jordan:

I thank you most heartily for your very kind and very acceptable letter of June 1st, and you do state the truth in the case without doubt very accurately. I have been told by those who have participated that vivisection has been practiced on animals even in the High Schools by those who did not intend to take a medical course. And also I have had statements from parties at the State University who have told me that very evident cruelty has been practiced upon dumb animals.

I wrote that letter to the Anti-vivisection Society of California hastily and did not express myself as fully as I did to the New York Society which was more explicit in confining my remarks to the High Schools. I have never doubted the enormous value of the experiments that were carried on by real scientists anywhere or under any circumstances. I have seen the experiments of some of these scientists in the preparation of diphtheria vaccine, smallpox vaccine, typhoid fever vaccine and several other vaccines which have proved successful, these by scientists, and have never seen any unnecessary cruelty practiced upon any animals, either horses, guinea pigs, rabbits or other animals.

I hope this will make my standing plain to you and I do not question the facts stated in your letter which are all very true as far as I know. I am sure that we are both working for the best interests of humanity and if I have loaned my name to any parties who are working against science and humanity I wish to have my name taken from such organizations.

Faithfully yours,

(Signed) LUTHER BURBANK

INTERNATIONAL PHYSICAL UNION

DR. CHARLES E. ST. JOHN writes that at the general assembly of the International Physical Union on July 7, the significant action was taken, with no dissenting voice, that no international physical congress should be held until it is possible to make it international in fact.

After the rising of the general assembly of the Physics Union Professor Lorentz discussed the recent experiment of Michelson and Gale in connection with the original results found by Michelson. By use of the Stokes theory of the ether modified by a suggestion by Planck that the ether is compressible and subject to the action of gravity he thought the two

results could be reconciled. As to the findings of Miller he said that the preliminary results were in complete contradiction to the relativity theory as proposed by Einstein and if finally established they would mean the end of relativity in that form.

Professor Naguoka gave an account of his experiments on the transmutation of mercury into gold. He had used differences of potential of 200,000 and believed he had obtained particles of gold that were not in the mercury employed in his experiments as it had been 2-3 times distilled and subjected to careful chemical analysis. He expressed the desire that confirmation of his experiments be undertaken by other physicists.

SCIENTIFIC MEN AND THE DEFENSE OF MR. SCOPES

AN important part of the plans of the defense counsel in the case of State of Tennessee versus John T. Scopes, recently convicted of a violation of the Tennessee anti-evolution law, was the presentation of scientific evidence upholding the facts of evolution.

An attempt was made to obtain competent and well-known scientists in various branches to come to Dayton and testify in behalf of Mr. Scopes. Although the scientists were asked to serve without compensation other than their actual expenses, the response was gratifying. Due to the fact that the judge ruled that the scientists could not be placed upon the witness stand and that their testimony should only be submitted in written form for the consideration of the higher courts in the event of appeal, not all the scientists who would have been summoned in the event of direct testimony were asked to come to Dayton. Following is a list of those who actually came to Dayton: Dr. Charles H. Judd, University of Chicago; Professor William A. Kepner, University of Virginia; Dr. Jacob G. Lipman, director Agricultural Experiment Station, New Brunswick, N. J.; Dr. Fay-Cooper Cole, University of Chicago; Wilbur A. Nelson, state geologist, Nashville, Tenn.; Dr. Maynard M. Metcalf, Oberlin College and Johns Hopkins University; Dr. Winterton C. Curtis, University of Missouri; Dr. W. M. Goldsmith, Southwestern University, Winfield, Kans.; Dr. H. H. Newman, University of Chicago; Dr. Kirtley F. Mather, Harvard Geological Museum, Cambridge, Mass.; Dr. Frank Thone, Science Service; Watson Davis, Science Service.

Among those who had signified their willingness to come upon call of the defense counsel were: Dr. E. E. Reinke, Vanderbilt University, Nashville, Tenn.; Dr. Charles T. Oliver, McCormick Observatory, Charlottesville, Va.; Dr. Elmer Roberts, University of Illinois; Dr. Avery E. Lambert, University of Ala-

bama School of Medicine; Dr. Ellsworth Faris, University of Chicago; Dr. R. T. Chamberlin, University of Chicago; Dr. David White, National Research Council; Dr. Anton J. Carlson, University of Chicago; Professor Charles A. Shull, University of Chicago; Dr. Homer N. Calver, American Public Health Association; Professor W. N. Rice, Wesleyan University, Middletown, Conn.; Professor Edward L. Rice, Ohio Wesleyan, Delaware, Ohio; Professor W. J. MacNeal, New York Post-Graduate Medical School; Professor Arthur McQ. Miller, University of Kentucky; Professor L. F. Rettger, Yale University; Dr. Shailer Mathews, University of Chicago.

Although the legal counsel for the defense, which consisted of Clarence Darrow, Dudley Field Malone, Arthur Garfield Hays, John R. Neal, were not technically trained in science, they won the admiration and confidence of the scientists who worked with them and they deserve the thanks of those working in science for their interest in protecting the right to teach the facts of biology. Dr. G. W. Rappleyea, manager of the Cumberland Iron and Coal Co., who instigated the test case against Mr. Scopes, also won the friendship and respect of the scientific witnesses and he deserves credit for having inaugurated and carried through the anti-evolution test case at Dayton.

WATSON DAVIS

SCIENCE SERVICE,
WASHINGTON, D. C.

SCIENTIFIC NOTES AND NEWS

PROFESSOR W. M. DAVIS, emeritus professor of geology at Harvard University, and Dr. G. Holm, of the Geological Survey of Sweden, have been elected foreign members of the Geological Society, London. Dr. T. W. Vaughan, director of the Scripps Institution; Professor P. Lemoine, professor of geology in the National Museum of Natural History, Paris; Dr. V. Madsen, of the Royal Library, Copenhagen; Professor P. Niggli, professor of mineralogy and petrography in the University of Zurich; Professor J. F. Pompeckj, professor of geology in the University of Berlin, and Dr. M. D. Zalesky, Leningrad, have been elected foreign correspondents.

THE University of South Carolina has conferred upon William Chambers Coker, Kenan professor of botany in the University of North Carolina, the honorary degree of LL.D.

WE learn from *Nature* that at the meeting of the Royal Society of Edinburgh held on July 6, the Macdougall Brisbane Prize for the period 1922-1924 was presented by the president to Professor H. Stanley Allen, professor of natural philosophy in the Univer-