pital in New York there are reported up to July, 1929, more than 1,467 transfusions made there in three and a half years. Among these transfusions, there were two deaths, one resulting from an error made in determining the blood group, and the other, also possibly avoidable, in an emaciated infant belonging to group A which received blood from a so-called "universal donor" of group O. Three deaths out of 1,036 transfusions reported by Pemberton, of the Mayo Clinic, were the result of errors in the determination of the blood groups. In Kiel, as I was informed by Dr. Beck, in the course of five years there were 2,300 transfusions given without a single death. In from 2 to 3 per cent. of the patients there were symptoms such as chills and a rise in temperature, which were, however, not of a severe character. A case of Beck's, one of pernicious anemia, is noteworthy: during a period of three and a half years, the patient received a total of 87 transfusions without any serious consequences.

Notwithstanding the favorable aspect of these results, there are reported, as said above, in addition to slight disturbances, exceptional severe and even fatal accidents which may not be attributable to errors in technique. It is not probable that in these cases the blood differences as indicated by the atypical isoagglutinins play an important rôle, in which event such accidents might easily be avoided. Whether, as has been assumed, injury can be caused by a marked pseudo-agglutination by the recipient's serum has not been definitely ascertained. Some of the disturbances appear to be due to allergy to food substances present in the injected blood, while others were ascribed to the action of antibodies formed as the result of former transfusions. The problem as to whether or not there are individual differences in protein which give rise to antibody formation has not been sufficiently investigated.

On the whole, the results obtained up to the present time with transfusion therapy are very satisfactory, and we may hope that an intensive study of the cases showing an unfavorable outcome will help to assess the significance of the supposed causes and reveal perhaps unknown ones, so that the slight degree of danger still attending the use of transfusions may be almost entirely averted.

Apart from the solution of this practical problem there is the possibility of developments resulting from the study of the biological aspects of individual serological differences in general, and particularly from the elaboration of procedures for finer differentiation of human blood and a continuation of the genetic analysis of serological blood differences in man and animals considering, that as a result of similar studies, we very probably possess to-day, apart from the sex chromosomes, knowledge of at least two pairs of human chromosomes which are marked by distinct characteristics.[10]

OBITUARY

JOHN HENRY COMSTOCK

Born in Janesville, Wisconsin, on February 24th, 1849. Died at his home in Ithaca, N. Y., March 20th, 1931. Between these dates, the career of one who rose from poverty and pioneer hardship to world service and honor.

HIS father was a frontier teacher, who died when the lad was three years old, and left him and his mother to struggle with want. At sixteen he became a sailor on the Great Lakes. Once in the course of his sailing when at anchor in the port of Buffalo, he visited a bookstore and came upon a copy of Harris's "Insects Injurious to Vegetation." Here was something that interested him beyond anything he had ever read. The illustrations fascinated him; but the price was beyond his means. He went sadly away. But he could not forego the possession of this precious book. He borrowed the money and returned and bought it; and this book had a large part in determining his future career.

At the age of twenty, though largely self-educated he was ready for college, and he entered Cornell University. That was in 1869, its opening year. He chose Cornell because there he could work his way; also, it was to be a place where in the words of its founder, one could "find instruction in any subject." So he came to study entomology.

But there was then no entomology at Cornell. There was, however, a sympathetic teacher of zoology, Dr. Burt G. Wilder, who promised the young man that he might work with insects to his heart's content. Under such friendly guidance his real work in entomology began.

So well did he work that he soon had a reputation for expert knowledge of insects; and so contagious was his enthusiasm that in the spring of 1872—his junior year—thirteen of his college mates petitioned the faculty to permit him to give them a course in entomology.

The request was granted. His teaching of entomology at Cornell began in a little room away up in the square tower of McGraw Hall, a building that had been built in part by the labor of his own hands. Later a department was created for him and in White

[10] While in press, an article on the subject was published by F. Bernstein, *Zeitschr. f. ind. Abst. u. Vererbungslehre*, 57: 113, 1931.

Hall for more than a score of years he was training men from all over the world for service in entomology.

His combined research-room and office was adjacent to his advanced students' laboratory, and the door between was generally open. Nothing in either was too sacred for use in the other if needed. He loved to share with his pupils the joys of discovery, and they delighted to share in his enthusiasm. There was no pretense about him, no derogation of the work of others, no bickering with those in whose beliefs he could not concur. His methods were those of simplicity and directness and reverence for truth. One of his admonitions that is perhaps best remembered by those who did research work under his guidance was this: "Be sure you are right, and then look again."

In the year 1872 he studied under Dr. H. A. Hagen during the summer vacation at Harvard. In 1878 he married Anna Botsford. The year 1888–9 they spent together at the University of Leipzig. In 1879 he became for a few years entomologist for the federal government at Washington. He then returned to Cornell where he taught continuously until his retirement in 1914.

Meanwhile, he occupied his winters from 1891 to 1900 with the work of organizing the department of entomology at Stanford University, teaching at Cornell during the summer by mutual agreement between the two universities. And, as he had sent L. O. Howard ahead of him to Washington and left him there to continue in the service, so he took V. L. Kellogg with him to Stanford and left him there to carry on.

After his retirement came a dozen fruitful years, during which he rounded out his life as a productive scholar. He had previously published his "Manual for the Study of Insects," and had repeatedly revised it for many editions, and had made it the most generally serviceable entomological text-book of his generation. He had published also "How to Know the Butterflies" and "Spider Book." Now, when freed from classroom duties and office routine, he settled himself to put together in final form the ripe results of his chief entomological studies. First appeared "The Wings of Insects," and later "An Introduction to Entomology." His books were products of slow and steady growth, and they are his chief monument.

In his later years he was the recipient of many honors. His pupils established at Cornell University a Memorial Library of Entomology to bear his name. The Fourth International Entomological Congress made him an honorary member. He was an honorary member of the Entomological Society of London. He was a member of the Entomological Society of France and of the California Academy of Sciences. A number of American national societies—entomologists, naturalists, zoologists—claimed him a member, fellow and betimes president.

In his day he taught entomology to more than 5,000 students. Practically all of these at some time or other entered the hospitable Comstock home. All the entomological world knows how John Henry and Anna Botsford Comstock worked together for more than half a century; how they supplemented and aided each other; how common were their interests; and how mutual was their labor. All know, also, how generous was their hospitality. Many savants from foreign shores were their guests. Many struggling students found under their roof-tree a second home.

Mrs. Comstock preceded her husband into the Great Unknown by half a year. Their ashes rest in a grave under an oak tree on a knoll in Lake View Cemetery at Ithaca. Within the view are the towers of the university of which they were so large a part. Outspread beneath lies Cayuga Lake and the valley they loved, with its flat woods and winding water-paths that they explored together in the days of their youth. Round about are the rugged hills of Ithaca whose insect fauna they made known to the world through intimate records and beautiful illustrations.

Their influence lives on in the hearts of thousands. One of Professor Comstock's earlier pupils, Dr. Ephraim Porter Felt, well expressed what they all feel when on March 21 he wrote:

> A great teacher has passed and left an enviable record. Professor Comstock endeared himself in a most charming way to all of his students. He exercised a very profound influence in establishing teaching standards for entomology. His writings are admirable models for his successors. His life was an inspiration to all searchers for truth, and an exemplification of possibilities in this land of equal opportunity.

JAMES G. NEEDHAM

MEMORIALS

THE John Burroughs Memorial Association made April 4 the occasion for the annual meeting of the association this year and a birthday celebration in the auditorium of the American Museum of Natural History. The speakers were Professor Franklin D. Elmer, of West Hartford, Conn., and Dr. Clyde Fisher, curator of visual education and astronomy of the museum. The object of the association is the acquisition and preservation of Slabsides, the house of John Burroughs, and the fostering of his teachings as a naturalist.

AT Bordighera, where Pasteur lived for several months, special ceremonies were held recently in his honor. The commemoration was attended by many Italian physicians, Frenchmen, Belgians, Americans and Jugoslavs, under the chairmanship of Professor