diameters of pores could be obtained, sufficient to answer many outstanding dimensional questions in relation to the colloidal state; but one should be prepared to exert pressures as high as 100 atmospheres."

He speaks of "the metallic optics of colloidal silver" as "a field of great promise" and one "to be looked to for decisive results, not only for silver but for other colloids." Zsigmondy's discovery of the ultramicroscope about five years later, brilliantly confirmed this prognostication.

The gradual dominance of chemical forces with increasing subdivision appears in the concluding paragraph:

"Of the two interpretations which may be given Carey Lea's brilliant discovery, the one originally advocated by Dr. Schneider and myself is to me intensely the more interesting. As an aggregate of excessively fine suspended particles, colloidal silver introduces a whole series of fascinating physical problems, subject to forces which as to their nature are almost tangible. Even in an ordinary case of sedimentation if I write

Muddy water + acid = acidulated water + mud,

the later body being precipitated, I have a chemical equation in embryo—an equation which so far as can now be discerned lacks stoichiometric precision, but which in its general character is undoubtedly a double decomposition. If the actuating forces be traced, they must lead by slow gradations up to affinity."

It will be a real service to science if Brown University will collect and publish the widely scattered papers of her emeritus professor of physics, as was done in Belgium with the work of Walther Spring, and by the University of Toronto with the work of Professor Wilson Taylor.

JEROME ALEXANDER

SYSTEMIC EFFECTS FOLLOWING THE STING OF A SPECIES OF EPYRIS

FOR the past three years reports have come to me from a family living on a more or less isolated delta farm in Clarksburg, California, regarding the activities of a tiny wasp which has become a pest because of its readiness to sting.

Before describing the disturbances caused by the sting, it might be well to state that, through the kindness of Dr. Frank Lutz, the wasp was identified by S. A. Rohwer as belonging to the genus Epyris and represents a species near *clarmontis* Kieffer. The wasps belonging to this genus are, as a rule, parasitic on lepidopterous larvae.

There are five members in the family, namely, the parents who are forty years of age and the children aged four, six and eight years. The parents are unusually intelligent and both college graduates and they are fully aware that only by accurate observations could any conclusions be drawn.

The wasps appear in fairly great numbers in the fall after a warm spell and invade the house where they get into the bedding and clothing, and sting when brushed or crushed by clothing or sheets against the skin, and only one instance is recorded where stinging occurred when apparently unprovoked. The sting is distinctly felt as a fairly sharp prick, decidedly less intense than a bee sting, but sufficiently so to make the youngest child cry. In every member is there a definite local reaction, namely, redness and swelling. In the oldest and youngest child no further manifestations occur, but in the parents and second child a decided systemic disturbance follows.

A few minutes after being stung, there is felt a numbness, often at the site of the sting, but at other times beginning at the finger tips. It remains localized for a few minutes and then gradually spreads and involves the entire body. In the mother there is an intense itching of the vulva and in the father an itching of the pubes. This is followed by a marked diarrhœa, not painful in the father, but resembling severe uterine cramps in the mother. The diarrhœa and cramps last for about ten minutes. The mother, who is an asthmatic, experiences no respiratory difficulty, but in the father who has never had an attack of asthma wheezing occurs occasionally. Accompanying these symptoms there is marked prostration, weakness and sweating. The duration of the attack is about half an hour. The second child becomes drowsy and is awakened with difficulty and wheezing occurs. He also recovers in about the same time as the parents.

On one occasion the father was bitten while visiting a neighboring camp and the effect was so severe that he was forced to lie down utterly helpless.

In the fall of 1926 there was a greater invasion of these wasps than usual and stinging was almost a daily occurrence. So bad were the effects that moving was contemplated.

It would be of considerable interest to know of similar reports. Unfortunately the attacks are of comparatively short duration and I have never witnessed the distressing effects. I am also unable to find any similar history among the neighbors, although they complain of the stings of these insects, but not the systemic disturbances.

There is little question in my mind, however, that the severe disturbances are caused by the stinging of these wasps. This conclusion is drawn on the following, namely, the experience of three years occurring only in the fall when the invasion of insects takes place, the finding of the insect shortly after

stinging occurs, and the invariable similarity of the attacks.

CHAS. E. VON GELDERN, M.D.
SACRAMENTO, CALIF.

SCIENTIFIC BOOKS

Three Centuries of Chemistry, Phases in the Growth of a Science. By IRVINE MASSON, D.Sc., F.I.C., professor of chemistry and head of the department of pure science, The University of Durham. The Macmillan Company, New York, 1926, 191 pages, 1 plate.

OF the recent histories of chemistry which have come to the reviewer's notice, the present work is one of the most stimulating and inspiring. The volume is not a complete history, even for the three centuries which it is supposed to cover, the author having "chosen to portray the genesis and evolution of ideas rather than to rehearse every discovery that gains a place in our chemical text-books." Very little information, for example, is given concerning the rise and development of organic chemistry, these phases of the subject being regarded by the author as of too specialized a character for the non-technical reader. Professor Masson's book, therefore, should not be read as a mine of information, but rather for its suggestiveness and the inspiration which it arouses to pursue further the history of a great department of science.

In Part I, upon "The Rise of Scientific Thought," the author after a brief introduction discusses the work of Sir Francis Bacon and its influence in establishing the Philosophical or Invisible College of London about the beginning of 1645. From this club of scientists there afterwards emerged the Royal Society which Professor Masson regards as the *fons et origo* of a considerable part of subsequent scientific developments. He mentions in this connection the stimulating influence of Boyle and others of the Royal Society upon their fellow member, John Winthrop, Jr., the founder of chemistry in the English Colonies of North America. The letters written to the Royal Society by Winthrop, Leonard Hoar, William Avery and others are of particular interest to American readers, for they show that the efforts of the society "to season the youth of New England with its experimental philosophy" had begun to bear fruit.

In Part II upon "The Genesis of Modern Chemistry" the influence of Boyle "the father of chemistry" is traced. This section of the book is most delightful reading, for fine scholarship is intermingled with warm human interests. It is the most accurate and appreciative evaluation of the work of Boyle that has yet been published and deserves to be read again and again.

In Part III upon "The Search for the Elements" five interesting chapters are devoted to the work of Mayow, Hales, Hooke and other English chemists upon combustion, to the growth of the phlogiston hypothesis under Stahl, to the development of the use of the balance under Black, to the investigation of gases by Cavendish and Priestley, and to the final overthrow of the conceptions of the four elements and of phlogiston by Lavoisier. In this section Professor Masson gives well-balanced accounts of the work of these chemists with brief references to their influences and personalities. In commenting upon the inheritance of scientific knowledge, on page 96, he traces Mayow's experiment of burning a candle in a jar inverted over water back to Sir Francis Bacon. He might have followed this path of transmission to a much earlier date, for the experiment is recorded in a Latin translation (*De Ingeniis Spiritualibus*) of the "Pneumatica" of Philo of Byzantium who lived in the second century B. C.

In Part IV upon "The Search for the Structural Units," the final section of his book, Professor Masson traces the development of the ideas of the molecule, atom and ion. This is the least satisfactory part of an otherwise most successful volume, for the treatment is one which appeals neither to the chemist nor to the non-technical reader. The effort to crowd the chemical developments of the past 125 years into a small compass of forty pages is an impossible task under almost any plan of curtailment. Part IV of "Three Centuries of Chemistry" is in consequence a fragment with little of the humanistic atmosphere which gives so much of quality and charm to the earlier pages. The postscript upon Professional Chemistry, which Professor Masson has added to his book, is an essay that will appeal more to teachers of chemistry than to the general reader.

"Three Centuries of Chemistry" leaves the reader with the unsatisfied feeling of a person who has had his appetite whetted for more. One wishes that Professor Masson might have included many more of the personal sketches which he has drawn so vividly in the case of Bacon, Black, Cavendish, Hartlib, Hooke, Mayow, Petty, Priestley, Wallis, Wilkins and Wren. These pen pictures are almost epigrammatic in brevity, yet they convey clean-cut impressions, so that the reader is in no doubt as to the character and personality of the men described. Hooke, for example, is portrayed as "a hollow-cheeked, sallow, wry-bodied little man; a 'fretful porpentine,' far too ready to stick a quill into any one whom he suspected of impinging on his own discoveries; very jealous for his own credit, in that uncomfortably assertive way sometimes seen in an unprepossessing person with a good brain." The reader not only sees the man but actually knows him.