

"(18) The complete composition of lymph, chyle, and blood."

"(19) Particular studies of the blood-corpuscles."

"(40) Prolonged studies of the physics of the body directed particularly to work out the history of the force generated in blood oxidation."

#### OUR BOOK SHELF

*The Patentee's Manual.* By James Johnson and J. Henry Johnson. Fourth Edition. (London: Longmans and Co., 1879.)

THE law relating to letters-patent for inventions, as at present administered, has been the growth of one short sentence in a declaratory statute passed in the twenty-first year of the reign of James I. (A.D. 1623), by which the Crown was restrained from making extravagant or oppressive grants of monopolies. The history or details of patent cases may often form an interesting subject of inquiry for the scientific reader; for although men of the highest intellect may be content with the discovery of general laws, and may leave their useful application and development to the crowd of humbler followers whose only power consists in the exercise of mechanical ingenuity, yet it cannot be denied that the successive steps which have been made in the steam-engine, in the electric telegraph, in machinery for spinning, weaving, or sewing, for manufacturing paper, or for printing a newspaper, may each in turn afford matter of considerable interest to a philosopher whose imagination is wearied by an endeavour to trace the fantastic excursions of a molecule, or to carry his dynamical laws into new and unexplored regions.

A book which shows the manner in which the property in inventions is dealt with in our Courts, and which, in order to accomplish its object, must of necessity review the various cases in an historical and logical order, affords, in a small compass, an epitome of much valuable learning. It is remarkable that the first patent case of any importance involved the validity of Arkwright's invention of machinery for drawing out and spinning cotton (A.D. 1785), while the second occurred ten years later, and related to the invention of the separate condenser of a steam-engine by James Watt. Since that period a number of distinct steps in the useful application of physical or mechanical laws have successively passed the ordeal of judicial inquiry, and those who take up the volume before us will find a reference to such matters as Wheatstone's telegraph, the hot blast for smelting iron, the interlocking of railway points and signals, the operation of currents of air between the grinding surfaces of mill-stones, the combing of wool, the laying of submarine telegraph-wires, &c., and so on in a list which appears almost interminable.

But although the variety of subject-matter may be great, the principles which govern the cases are few and easily comprehended, and, in reading the statements of principles laid down by Chief-Justice Tindal and other judges who have moulded our patent law into a coherent form, the thought may arise that the purely scientific writer who is composing his manual for the use of students might with advantage borrow something of power of style and of clear logical exposition from the lawyer, who is popularly believed to be tied down and hampered by the jargon of technical phraseology.

The book now under notice has already passed through three editions, and the authors have enlarged it by the interpolation of recent cases, as well as by the addition of new chapters. It is not within the scope of this journal to examine such a treatise from a strictly legal point of view, but we should describe it as exhibiting abundant evidence of being the work of writers who are practically engaged in professional pursuits. One important appendix

consists of a digest of the patent laws in force in foreign countries, and in the body of the work there is a chapter on the "oppositions to the grant of patents," which suggests many melancholy thoughts to the sanguine inventor, and leads one to hope that some improvement of the enactment of 1852 will be conceded at an early period. In conclusion we have only to say that the book has fairly earned the circulation which has carried it to a fourth edition.

T. M. G.

*A Manual of the Carbon Process of Photography, &c.* By Dr. Paul E. Liesegang. Translated from the German by R. B. Marston. With Illustrations. (London: Sampson Low, Marston, Searle, and Rivington.)

WHEN, forty years ago, Mungo Ponton discovered that a sheet of paper, moistened with a solution of potassium dichromate, became darker when exposed to the rays of the sun, he made the first of a series of experiments which have led to the discovery of a method of rendering photographic pictures as permanent as engravings made in printing ink, though the completion of the work to a point at which it could fairly be said to be capable of competing with the well-known silver chloride print was not made till nearly thirty years afterwards, when Swan, by an admirable series of inventions, made it a practical means of producing prints.

In the history of the long struggle with nature which has produced so great a result every Englishman has reason to be proud, for it may be fairly said that the world owes the process from first to last to English workers. The process is now worked on an immense scale in this country by the Autotype Company and others, while another branch of the same stem has developed into the well-known Woodbury-type system of press-printing. Notwithstanding, however, the success of the process in its original home, we are somewhat deficient in connected accounts of it, most of the English publications on the matter being, like the autotype manual, confined to working details of the methods in use. We therefore welcome Dr. Liesegang's work as attempting something more than this, and presenting what is really a most interesting account of the whole subject, interesting, indeed, to any one who has a taste for well-written scientific technology, and apart from its value as a manual for actual working details. In one respect, indeed, the carbon process has all through been singularly fortunate. It seems, from the first, to have fallen into competent scientific hands, and to have escaped the dreary round of mess and muddle experimenting which is so characteristic of the history of the collodion negative processes, and which reminds one of nothing so strongly as of the story ascribing the invention of a certain process for the purification of sewage to its inventor going into a laboratory and taking down bottles at random, to the number of some half dozen, adding their contents to a sample of sewage, and patenting the mixture. From this misfortune the carbon process has been free, and Dr. Liesegang has been able to make its history instructive and interesting; he has given clear and precise accounts of the processes in use, and we note that he has kept well up with the latest improvements, while the illustrations are well and clearly cut. The popularity of the work in Germany has caused no less than six editions to be demanded.

It would be unfair to close this notice without a word of praise to the translator, who, in a modest note, states that his share of the work was done in leisure hours. We can only wish that he will continue, as he has begun, to introduce sterling foreign technical works to the public in as vigorous and correct English as that in which he has dressed Dr. Liesegang's little book.

R. J. F.