remembered by the cells, i.e., hallucinations. So, too, an abnormal lack of blood may exhaust the brain, may render a person incapable of carrying on mental processes, and may even cause such a degree of hunger for oxygen in the cells as in turn to produce irritation, and thus again hallucinations, followed by loss of memory. It is evident that Meynert regards many forms of mental disease as dependent upon abnormal nutrition of the brain, either from hyperaemia or anaemia, — a position in which he by no means stands alone.

The description of physiological processes in the brain forms a fitting introduction to the study of its disorders. This division of the subject is to be taken up in the second volume, which will be eagerly looked for by those who have read the first. It will doubtless be as suggestive and original as this volume.

Meynert's book should be read both by medical men and those interested in the problems of psychology. Its technical parts will be of great service to those who study the minute anatomy of the brain. Its physiological portion is of general interest, and will excite much notice and comment. The facts and the conclusions are entitled to careful consideration, as they are the product of most mature and thorough work, even though the materialistic explanation is at times inadequate. Meynert is not to be placed in the ranks of German philosophers. He does not grapple with the problems of psychology, as Lötze or Wündt have done: he writes from the stand-point of an alienist who seeks to resolve a mental process into its simplest elements, and to detect in any given case of mental disorder the particular element which is lacking. The explanation of the manner in which we acquire the idea of space is unsatisfactory (p. 166). The causal relation is not sharply differentiated from the simple association of ideas by correlation in time (p. 164). The time element in memory is not exhaustively discussed. There are, doubtless, many trains of thought which are largely the simple rising into consciousness of associated memory pictures. There are others which are not to be so easily accounted for, and to which no clew can be gained by a study of association fibres and of variations in the blood-supply. To the psychologist, therefore, this work will be of service only as a collection of facts in one department bearing upon his science, — facts which he must consider, but which by no means carry with them the explanation of the problems involved.

The work raises many questions which the author does not attempt to answer. It would perhaps be unjust to demand from him the attempt, for he does not pretend to be writing as a psychologist. As a study of thought-mechanism, and as an introduction to a study of psychiatry, to which alone it lays claims, it is more satisfactory than any work which has recently appeared.

ENGINEERING GEOLOGY.

IT is now generally admitted by mining and civil engineers that a knowledge of the principles of practical geology is necessary for the successful execution of those plans, depending upon a correct conception and understanding of the character of the surface of the earth and underlying rocks, where engineering works, such as bridges, railroads, canals, and even buildings, are to be constructed, and through which, as in the case of railroad-tunnels and mines, excavations are to be made.

The rapid progress which has been made in America during the past fifteen years in practical geology has so completely absorbed the active professionalist, that none of our field-geologists have found time to contribute a treatise to our literature such as Geikie's Field, Penning's Engineering, and Page's Economic geology, Burat's 'Géologie appliqué,' and the more recent work by Wagner, on 'The relation of geology to the engineering sciences.'

This last work is an elaborate and strictly technical discussion of the application of practical geology to tunnel-work and closely related subjects. It contains superior plate (quarto photolithographs) and text illustrations, and will prove a work of great value, not only to professional field-geologists, but to students in practical geology and engineering, in defining some of the more useful and economically important applications of geology to engineering work.

Some of the geological cross-sections in the text clearly illustrate the geotectonic principles referred to, but evidently perpetuate an abominable custom, long since abandoned by the best American geologists, of exaggerating the vertical scale. The chapter on explorations by boring is not up to the standard of our home practice.

The practical examples cited from Wagner's own experience add much value and interest to the work, which would be more useful to

Die beziehungen der geologie zu den ingenieur-wissenschaften. Von C. J. WAGNER, ober-ingenieur und sectionsleiter des Arlberg-tunnels. Wien, *Spielhagen & Schurich*, 1884. 88 p., 65 figs., 24 pl. 4°.

practising American engineers if in a more familiar language.

As stated in the preface, "der ingenieur muss geologische kenntnisse besitzen, aber braucht kein specialist zu sein." His eye should be trained to observe those phenomena which are of importance in determining the structure of rocks; but in special problems he must expect to consult the expert geologist, who will be able to deduce conclusions from data given him by the engineer.

MARTIN'S ELEMENTARY HUMAN PHYSIOLOGY.

AMONG the numerous recently published works of its class, the volume before us easily takes a very high rank. From the pen of a thoroughly trained instructor in biology, it is characterized by great clearness and precision of statement, and, being prepared with the co-operation of an experienced teacher of young pupils, the subject is presented in a simple and attractive way that cannot fail to interest the youthful reader. As an example of the way in which difficult points in anatomy and physiology are elucidated by reference to familiar facts, the following illustration of the protection which the skull affords the brain may be quoted: —

"If you turned upside down a thin china teacup, wrapped round it a covering of raw cotton, and over this put a thin casing of tough wood, any thing placed under the cup would be protected from blows, jars, and piercing, much as your brain is protected inside the skull."

The enactment in several states, of laws providing that the teaching of hygiene in the public schools shall include instruction in regard to the action of stimulants and narcotics, makes it incumbent upon all authors of text-books of hygiene to devote several chapters to this subject. Professor Martin has, upon the whole, accomplished this portion of his task in a very satisfactory manner, though some of his remarks will probably be read with surprise by practitioners of medicine. Thus we are told that 'the bromide is just as dangerous as the opiate,'—a statement which, however well adapted to accomplish the object of the author in discouraging the use of the drug without a physician's prescription, can hardly be regarded as a strictly accurate therapeutic guide.

The human body: a beginner's text-book of anatomy, physiology, and hygiene. By H. NEWELL MARTIN, D.Sc., M.A., M.D., professor of biology in the Johns Hopkins university, and HETTY CARY MARTIN. New York, *Holt*, 1884. 4+261 p., illustr. 8°.

The long list of diseases which may affect every organ and tissue of the body as the result of alcoholic indulgence is well calculated to strike terror to the heart of the toper, and rather tends to give this portion of the book the character of a temperance tract.

The illustrations are taken from Professor Martin's larger text-book of physiology, also entitled 'The human body,' and are therefore not always perfectly in harmony with the elementary character of the smaller work.

This defect is not, however, of any great importance, and does not prevent the work from being, upon the whole, the best English text-book for beginners in the sciences of which it treats.

NOTES AND NEWS.

THE annual stated session of the National academy of sciences will be held at the national museum in Washington, commencing Tuesday, April 21, 1885, at eleven A.M.

— The island of Formosa, which has recently been the scene of Franco-Chinese conflict, is stated, in Dr. S. Wells Williams's valuable work on China, to have been unknown to the Chinese before the year 1403, about the beginning of the Ming dynasty. As the mountains of Formosa are visible from the Chinese mainland in favorable weather, this appears due to some misconception, which is explained by Réné Allain. It appears, according to this author, who has recently published a work on Formosa, that, before the conquest of China by the Mongols (202 B.C.–226 A.D.), Formosa was already known, but under another name, to the Chinese historians, who counted its people among the 'Manti,' or southern barbarians. It was visited by the Chinese in the year 602, and was known as Liéu-Kiéu, or the Great Loo-Choo. Chinese colonies were established there in the fourteenth century. For two hundred years it took the name of Taï-wan, which it still bears in Chinese literature. In 1624 it was ceded by China to the Dutch, who were driven out in 1662 by a celebrated Chinese pirate known to Europeans as Koxinga, who maintained himself there for some twenty years. His successors made submission to the Chinese government, which subsequently made permanent colonies on the island. Formosa is about two hundred and forty-five miles long, with a greatest width of seventy-six miles. It has an area of some fifteen thousand square miles, and is separated from the mainland by a strait nowhere less than sixty miles wide. It is characterized by possessing a range of mountains of remarkable uniformity in height, and attaining a very exceptional altitude, the peaks ranging between eleven thousand and thirteen thousand feet. There are no good harbors, except for vessels of light draught, as far as known; and the land appears to be rising at a remarkable rate. The Dutch fort of 1624, originally built on an islet at some distance