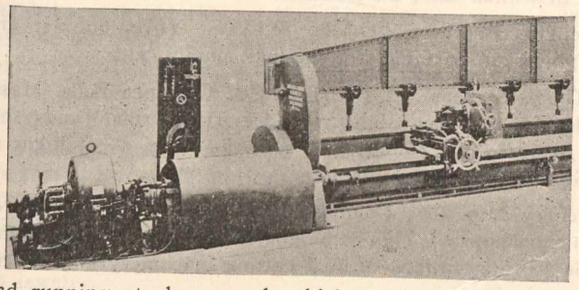
ELECTRICALLY DRIVEN PLANT.

The attached illustration shows a 32-foot, heavy plate planer, built by Hilles & Jones, of Wilmington, Del., and recently installed in the United States Navy Yard, at Charlestown, Mass. Direct connected to the main driving screw of the planer, through gearing and magnetic clutches, is a 50-horse-power, Westinghouse, multipolar motor of 220 volts



and running at slow speed, which furnishes ample power to enable the machine to plane two-inch armor plate, taking a heavy chip. The saddle of the planer is designed to carry two tools, one cutting in each direction, also a third tool for vertical feed, the saddle and tool holder being shifted automatically at any point desired.

LITERARY NOTES.

"The All Red Line" or "The Annals and Aims of the Pacific Cable Project" is the double title of a valuable record of the development of the movement which has resulted in the completion of the state-owned cable connecting the British American colonies with the great colonies of the South Pacific and by them the British Empire in Asia with the Motherland. George Johnson, the Dominion Statistician, is the editor of this volume of 486 pages which is published by James Hope & Sons, Ottawa. In reading the instructive history of this project one cannot help being struck by the perseverance and penetration shown by the Canadian public men whose work made this ideal a reality—and these qualities may be said to have been incarnated in Sir Sandford Fleming, whose courage and persistency nothing could daunt. The Pacific cable may be termed the great sciatic nerve of the nervous system of the new federated British Empire, and occasions may not be far hence when its vital importance will be demonstrated.

"Modern Machine Shop Tools." By W. H. Vandervoordt, M.E., published by Norman W. Henley & Co., 132 Nassau St., New York, price $4. This is an octavo volume of 555 pages and 673 illustrations and takes in its scope the construction, operation and manipulation of both hand tools and machine tools. These tools are grouped into classes and a description of each is given according to the relative importance attached to it by the author. It is designed to be a book of practical instruction, giving to the apprentice a full course of instruction, to the mechanic a manual of practice and to the superintendent at least some valuable hints. There are chapters on gearing, belting and transmission machinery, and on shop conveniences.

"The All Red Line" or "The Annals and Aims of the Pacific Cable Project," by George Johnson, Dominion Statistician, published by James Hope & Sons, Ottawa; 486 pages $1.50, net. This is a record of the development of the movement which has resulted in the completion of the state-owned cable connecting the British American colonies with the great colonies of the South Pacific and by them the British Empire in Asia with the Motherland. In reading the instructive history of this project one cannot help being struck by the perseverance and penetration shown by the Canadian public men whose work made this ideal a reality—and these qualities may be said to have been incarnated in Sir Sandford Fleming, whose courage and persistency nothing could daunt. The Pacific cable may be termed the great sciatic nerve of the nervous system of the new federated British Empire, and occasions may not be far hence when its vital importance will be demonstrated.

"Elementary Treatise on Electricity and Magnetism," by G. Carey Foster, F.R.S., Professor of Physics in University College, London; and Alfred W. Porter, B.Sc., assistant Professor of Physics in the same college, 2nd ed., 568 pages, illustrated, price, 10s. 6d. net, published by Longmans, Green & Co., Paternoster Row, London, Eng. This is founded on Joubert's "Traite Elementaire d'Electricite." The electrical section, in the first chapters, explains the fundamental phenomena of electricity, the law of inverse squares, electric influence, electrical potential, general theorems, etc., as an introduction to further chapters on electrical machines and apparatus for electro-static measurement. Electric discharges, galvanic batteries and electric currents are then treated of, and following chapters explain Ohm's law, thermo-electricity and the chemical action of the current. The section on magnetism sets forth the principles of the magnetic field, magnetic potential, magnetic induction, permanent magnets and terrestrial magnetism. Electro magnetism, the cathode stream, Roentgen rays, Becquerel rays and canal rays are dealt with in concluding chapters. There are also valuable tables of resistance of metals and alloys and resistance of aqueous solutions, and the electro-motive force of the galvanic cell.

"Notes on Track," by W. M. Camp, Am. Soc. C. E., editor of Railway and Engineering Review, 1214 pages and 620 illustrations, $3.50, published by the Railway and Engineering Review, Manhattan Building, Chicago. In this monumental work every aspect of track construction and maintenance seems to be treated and the student must be struck by the marvellous industry of the author, who has spared no pains to get data as to costs, etc., and modern labor saving machinery applied to railway work. The index contains over 3,000 headings and references. The following are some of the topics treated of: earthwork and grading, culverts, highway crossings, boarding trains, wrecking outfits and wrecking work, fence, cattle guards, bridge floors, bridge end construction, snow fence, snow sheds, bumping posts, sign boards, repairs at washouts, track elevation and depression, track tanks, ash pits, railway gates, tracks in tunnels, yard layouts, and switching movements, interlocking switches and signals, automatic electric block signals and track circuits, principles of rail design, handling ballast and filling materials, steam shovel work, fighting snow, tie preservation, metal and concrete ties, tree planting for tie cultivation, capacity of single track, section houses, tool houses. spiral curves, etc.

"Earthwork and its Cost," by H. P. Gillette, associate editor Engineering News, late assistant New York State Engineer, 244 pages, diagrams, price, $2, published by Engineering News Pub. Co., 220 Broadway, New York. The author, who has had a varied experience both in mining regions and as a teacher connected with the School of Mines of Columbia University, has produced the first book ever published treating specifically on the economies of earthwork. The question of excavation enters into most engineering contracts and it is well said that an erroneous answer to this question may mean to the engineer a loss of reputation, while to the contractor it may mean ruin where the work is extensive. One difficulty in such a work is the variation in the cost of labor and appliances in different parts of the country; but the author gives data in such detail and variety as will enable one to check off these local differences very well, while the information on the different classes of earth and rock and the various modern methods are given in such a way that very valuable general rules can be framed and applied to one's special case.

The buoyant energy and business ability of the men of the Canadian west is mirrored in two sample papers representing diverse fields of activity. One is the Manitoba Free Press, of Winnipeg, whose regular Saturday edition contains 32 pages, the ordinary daily running from 12 to 24 pages, and which recently issued a monster special edition dealing with the crop and other prospects of Manitoba and the Northwest. The other is the Nor' West Farmer, Winnipeg, which has issued a special summer number of 128 pages and pictorial cover, handsomely printed and giving many telling evidences of the progress made in agriculture on the prairies of the great west.