

plainly seen as shadows on the screen. The cartilaginous laminae between the vertebrae could be distinguished. The heart could be seen in faint outline, being slightly more opaque than the lungs, which are very transparent. The liver is very opaque, and its rise and fall as the patient under examination breathed was very easily seen.

I was able to make a diagnosis of cases of tuberculosis, pneumonia, enlarged heart and enlarged spleen without difficulty. The outline of the heart was indicated by me and by Mr. Lawrence, who is working with me almost exactly as it had been mapped out by percussion, our greatest disagreement being about one-half an inch, the diameter of the heart being seven inches. An examination of some five seconds convinced us that a tuberculous patient was at least fairly sound on one side and very bad on the other, and this again agreed with the previous diagnosis at the hospital of which we, of course, were ignorant. The enlarged spleen could be outlined with great clearness, it being rather transparent, while the abdomen is ordinarily quite opaque.

A boy of three years, convalescent after an attack of pneumonia, was found to be transparent in that part of the lungs which had been diagnosed as 'clear,' and opaque in those portions which were shown by percussion to be still more or less filled up.

A buckle or a small pellet of lead is easily detected through any part of the body, except the lower part of the abdomen, and buttons and hooks and eyes are easily seen through the more transparent parts.

A patient was brought to us whose arm had been broken by a musket ball, and the exact location of the bullet was desired. After an examination of not more than a minute the bullet could be plainly seen. It had broken the ulna and then imbedded itself on the inner side of the radius about three inches nearer the shoulder. We marked the location of the bullet in two

planes, and when the surgeons made an incision it was found that we were not in error by more than an eighth of an inch.

We have taken photographs by means of a Thomson high frequency coil in one-fifth of a second, as it seemed to be desirable to be able to work very rapidly to get photographs of such objects as do not remain fixed in position for any length of time.

The skull is not opaque, and the thicker and thinner positions can be distinguished, but of course no notion can be obtained of the texture of the brain. The detail of the lower jaw, its joint, the teeth, the filling in the teeth, and so on, can be clearly made out. The œsophagus is very transparent, and a foreign metallic body could hardly fail of detection unless well down in the lower part. The cartilaginous rings in the trachea, the glottis and epiglottis can be seen in fair outlines. Younger persons are more transparent than older, but show less differentiation, even the bones being quite transparent in a boy of ten. The brilliancy of the tube is increased many times by grounding the cathode.

CHAS. L. NORTON.

MASS. INSTITUTE OF TECHNOLOGY.

#### CURRENT NOTES ON PHYSIOGRAPHY.

DE LAPPARENT'S LEÇONS DE GÉOGRAPHIE  
PHYSIQUE.

THERE is no European text-book that has so fully caught what has come to be called the American method in physical geography or geomorphology, as de Lapparent's *Leçons de géographie physique* (Paris, Masson, 1896, 590 p.). Omitting other divisions of the subject, the whole volume is devoted to the physiography of the land. The work of denuding forces, acting on various initial land forms produced by uplift, deformation, volcanic accumulation or otherwise, is deliberately followed through the geographical cycle to its close in a peneplain of faint relief. Modifications of the general scheme of geographical devel-

opment, due to movements with respect to baselevel, to glacial action, to wind action, and to subterranean waters, are considered in succession. These systematic chapters are followed by others in which an excellent outline of the physiography of Europe is presented, with briefer treatment of the other parts of the world. American readers who desire to cite European physiographic examples will find this book very helpful. It is illustrated with many diagrams and a good number of maps and views; its detailed table of contents hardly compensates for the absence of an index.

#### THE INTERIOR PLATEAU OF BRITISH COLUMBIA.

A RECENT report by Dr. G. M. Dawson on the area of the Kamloops map sheet in the interior of Columbia (Geol. Surv. Canada, Ann. Rept. vii., 1896) treats in more detail a portion of the region that the same author has previously described (Physiogr. Geol. of the Rocky Mountain region in Canada, Trans. Roy. Soc. Can., iii., 1890). Considered in a broad way, and in contrast to the mountains by which it is bordered, the interior region may be regarded as a plateau. Although deeply trenched by numerous valleys of late Pliocene date, these are lost to view when standing on the uplands, whose profiles run together to form a nearly horizontal sky line. The plateau is explained as a peneplain of subaërial denudation. It is enclosed on the west by the Coast range (not to be confused with the Coast range or the Cascade mountains of our Pacific slope), whose summits reach remarkably uniform altitudes of about 8,000 or 9,000 feet. This equality is explained as the result of the rapid consumption of any summits that may have formerly risen into greater altitudes, on the assumption that the progress of denudation in the partially snow-covered zone is several or many times greater than below it. This appears to be an interesting example of

Penck's 'Oberes Denudationsniveau' (Morphologie der Erdoberfläche, ii., 164). A pronounced 'rain shadow' and chinook belt occur on the plateau district in the lee of these mountains. Interesting details are given concerning glacial action, lake basins, alluvial fans and terraces, and other features.

#### THE VOLCANIC GROUP OF TOPOGRAPHIC FORMS.

THE chapter devoted to volcanos in most physical geographies is chiefly concerned with volcanic cones, so young as to be little worn. The more thorough study and classification of geographical forms, as primarily determined by structures and secondarily modified by sculpture, greatly extends the list of features associated with volcanic action, even including the products of those abortive attempts at eruption which have been blindly satisfied before reaching the surface. The buttes formed when these 'plutonic plugs' are revealed by denudation occur in fine variety of development and expression in the region of the Black hills of Dakota, and are described in the current number of the (Chicago) *Journal of Geology*, by Russell, with his customary appreciation of physiographic relations. A number of excellent photographs are reproduced as illustrations. The series of forms begins with Little Sun Dance dome, an arch of limestone, stripped of a great thickness of overlying weaker strata, but unbroken, even uncracked; the igneous rock not yet revealed. Mato Teepee, Inyan Kara and other imposing buttes are fully revealed plugs. The surrounding rims of harder stratified rocks offer interesting examples of outer slope and inface,\* with inner subsequent valleys, all in concentric circular arrangement. One of the illustrations is a view looking outward

\* The invention of this excellent term, the abbreviation of 'inward facing escarpment,' should be credited to Mr. L. C. Glenn, of Darlington, S. C.

along a radial consequent valley through a notch in a limestone rim.

#### LE TOUR DU MONDE.

THE illustrated weekly, published by Hachette & Co., Paris, under the above title supplies so many excellent illustrations well reproduced from photographs taken in various parts of the world, that it deserves mention as a contributor to physiographic knowledge. The volume for 1895 contains, among many others, a number of admirable pictures from the inner Sahara, portraying the escarpments, dunes and wadies with remarkable effect of glaring sunlight; of the lakes of Bavaria, both within and without the Alps; of tropical and polar scenes. The text is generally narrative and descriptive, with much about peoples and their customs, entertaining rather than strictly scientific; and some of the pictures bear evidence of touching up or even of invention by the too facile hand of the Parisian artist; but the volume as a whole is as instructive as it is attractive.

#### THUNDER STORMS AT SEA ARE NOCTURNAL.

THE greater frequency of thunder storms in the winter and at night around the coast of Scotland has been shown by Buchan. When thunder storms occur in New England in winter they are generally observed along the coast and after nightfall, as has been shown by records of the New England Meteorological Society. Now Meinardus, of the *Deutsche Seewarte* at Hamburg, finds even the thunder storms of the Bay of Bengal to have a distinct nocturnal maximum (*Annalen der Hydrog.*, 1895, 506-511). It has been suggested by Grossmann and others that the cause of this contrast with thunder storms on land probably arises from the dependence of the maritime storms on instability produced by radiation and cooling of the upper surface of cloud sheets, which proceeds best at night, especially in winter nights; while local storms on the

land arise from the overheating of lower layers of air close to the hot ground, and this condition has its maximum on summer afternoons.

#### CURRENT NOTES ON ANTHROPOLOGY.

##### THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN.

ON January 21st this institution held its annual meeting, when its President, Mr. E. W. Brabrook, delivered the address of the occasion, reviewing the work of the body during the past year. It presents an encouraging list of papers on the leading branches of anthropologic study, and notes the advancements which have been made in the popularity of this department of learning. The establishment of a professorship of anthropology at Oxford proves that that famous University is no longer the house of refuge for effete ideas, as was once charged against it. The speaker referred to the Galley Hill skeleton (see *SCIENCE*, 1896, Jan. 17), and from a close personal inspection of it declares that "the balance of probability lies in favor of its authenticity." He adds some strong words on the unity of the anthropologic sciences, refuting the narrow views of Topinard, who, in direct conflict with his great teacher, Broca, would confine it to the study of physical types.

The address is one which will foster and develop the study of man in its true sense.

#### CANADIAN ARCHÆOLOGY.

A VALUABLE archæological report, prepared by Mr. David Boyle, appears as an Appendix to the Report of the Minister of Education, of Canada (also printed separately). It covers 79 pages, a number of which are devoted to the exposition of 'primitive industries and working methods.' Several earthworks in the province of Ontario are described, with illustrative plans and surveys. Some rock paintings are mentioned, especially one at Lake Mas-