Highest North American Peaks.*

Among the objects for which the expedition recently organized under the auspices of the Academy of Natural Sciences, of Philadelphia, was dispatched to Mexico was the determination of the physical features of the giant volcanoes of the south, with special reference to a study of the vertical distribution of animal and vegetable forms. While prosecuting our observations in this direction, I took the opportunity, in company with one or more of my associates, of scaling the four loftiest summits of the land; namely, the peak of Orizaba, Popocatepetl, Ixtaccihuatl, and the Nevado de Toluca. This gave me the advantage of making personal comparisons between the life that existed in different regions of "cloud land," at the same time that it offered me the opportunity of more closely investigating the geological features of some of the most gigantic volcanic mountains known to us. Numerous measurements of altitude were made during the ascents, and, in the higher regions, always with the same instrument. This was a registered aneroid, tested and corrected at Philadelphia (immediately before the starting, and shortly after the return of the expedition), at the sea level of Vera Cruz, and in the Central Meteorological Observatory of the city of Mexico, at an elevation of 7,403 feet. To the officers of the latter institution I am indebted for the privilege of making comparisons with the standard mercurial column.

The results of our measurements show a striking accord in some instances with those obtained from earlier measurements, while in other cases they exhibit marked divergence. The fact that all the summits were ascended within a period of three weeks, were measured with the same instrument, and during a period of atmospheric equability which is offered to an unusual degree by a tropical dry season, renders the possibility of errors of any magnitude almost *nil*. At any rate, such errors as may have crept in will probably not affect a general comparative result. The points of important difference are: 1. The highest summit of Mexico is not, as is commonly supposed, Popocatepetl, but the peak of Orizaba (Citlaltepetl, the "Star Mountain"), which rises 700 feet higher (18,200 feet). 2. Ixtaccihuatl, the familiar "White Woman" of the plain of Anahuac, is but a few hundred feet (about 550) lower than Popocatepetl.

The peak of Orizaba was ascended on the 6th and 7th of April, Popocatepetl on the 16th and 17th of the same month, the Nevado de Toluca on the 21st, and Ixtaccihuatl on the 26th and 27th.

The restoration of the peak of Orizaba to the first place among Mexican mountains, and its increased altitude, open up the interesting question as to what constitutes the culminating point of the North American continent. The only other mountain that need be considered in this connection is St. Elias, situated approximately on the 141st meridian of west longitude, and whose summit is claimed for both the possessions of Great Britain and the United States (Alaska). The measurements of this mountain depart so widely from one another, however, that we are not yet in a position to affirm, even within limits of a thousand feet or considerably more, how nearly it approaches in height the Mexican volcanoes. ANGELO HEILPRIN.

The Man with a Patent.

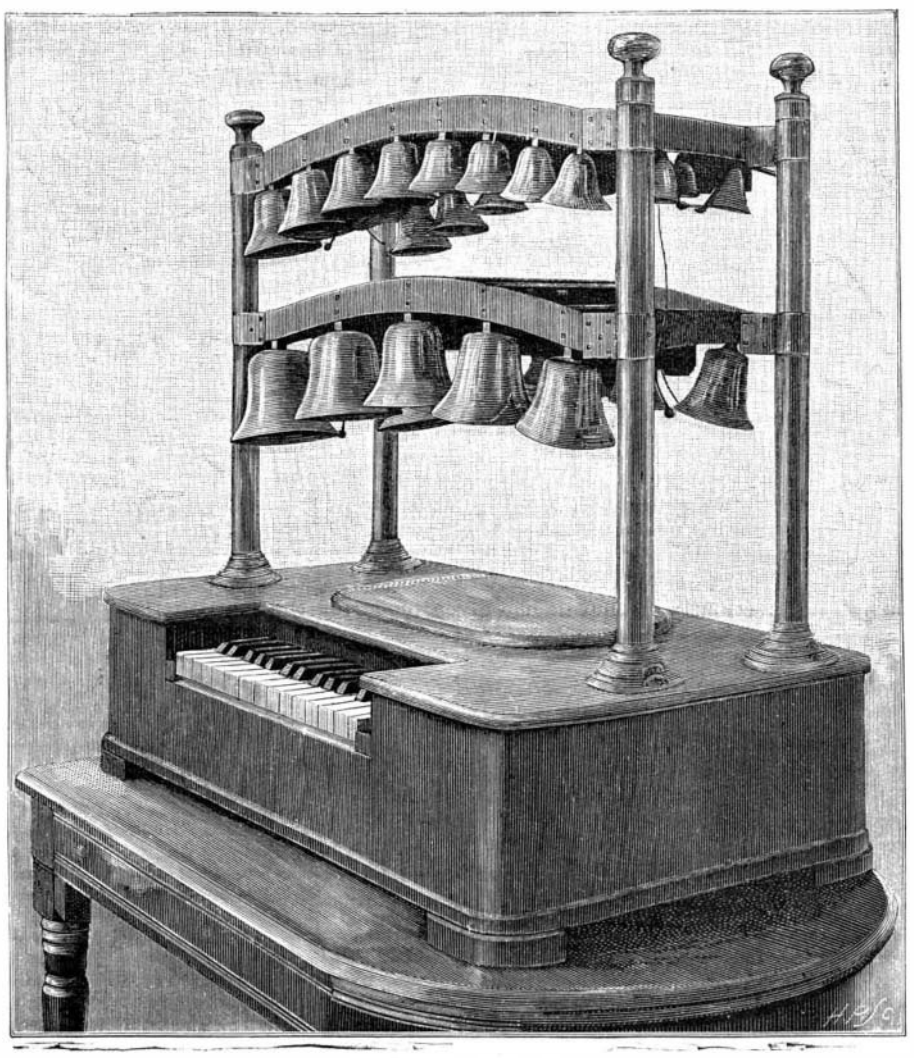
The New York *Sun* relates the following story: 'There were only half a dozen people in the palace car all day long, and after dinner, when the man who had been sleeping and reading in seat No. 12 came over to me for a chat, I welcomed him with open arms. He said his name was Saunders, and that he had a patent or improvement on some part of a locomotive. He was going through to Cincinnati to have it perfected or adopted, or something of the sort. He had been in partnership with a mean man—a man who had tried to swindle him out of a fortune. To get even, he had stolen the patent and run away. He had it with him in a valise. That was all he said just then, but later on he confided to me the fact that at a town about 30 miles away this wicked partner of his might possibly be on hand to board the train and attempt to wrest the treasure from his keeping. He wanted my advice, and I offered to take charge of the valise. He thanked me with great effusiveness, and as we approached the town he shut himself into the smoking compartment.

"As the train drew up I saw an old acquaintance on the platform, and while we were talking a posse was hunting the train for my friend. They didn't find him, as he had dropped off and struck out for the country. I went on to Cincinnati, taking his valise along, and although I was there four days he didn't show up. I arranged to leave it with the landlord, and it was carried to the office, to be opened by a meddlesome clerk. Instead of a patent, it contained wedges, drills, a brace, fuse, and other neat little devices for successfully working a burglar's job, and it cost me two days of the hardest kind of talk to satisfy the chief of police that I wasn't in it. I had ridden over 100 miles with a full-fledged burglar, and one who had made his mark, and I must say he was a better talker and more of a gentleman than any governor I ever met."

* From the proceedings of the Academy of Natural Sciences, of Philadelphia.

ELECTRIC CHIMES.

Dr. Alva Owens, of Chicago, recently constructed the somewhat unique musical instrument shown in the illustration. The apparatus, which might be described as a set of chimes to be rung by electricity, was designed for advertising purposes. The instrument, it is intended, will be carried through the streets on an electric tricycle and will be played on the trip after the manner of an ordinary piano. The details and operation of the device are so simple as to require but little explanation: Attached to each of the thirty bells hung on the rack above the key-board is an electro-magnet. The keys make the circuit from a battery in the base to the electro-magnets at the bells.—*Western Electrician.*



ELECTRIC CHIMES.

Iron Ore Discovered by Lightning Strokes.

Commenting upon a report that a house in Ohio, supposed to be situated over a bed of iron ore, has been struck by lightning eight times within three years, a writer in the Chicago *Journal of Commerce* says: The truth is that all iron ore deposits are not confined to the several well known localities of the United States where they most abound. If careful observation was made, undoubtedly many new fields might be opened up in places where the presence of iron is not suspected. The writer, in his youth, lived on a farm in Southern Wisconsin, on two acres of which lightning had struck, it was estimated, at least forty trees. No sane man could for one moment suppose that the stricken trees of themselves possessed sufficient metallic attraction for the lightning to single them out for destruction. The suggestion made at the time, that underneath these two acres was a bed of iron ore, has never been effaced; yet it is doubtful if ever any other person noticed the peculiarities of that particular plat of ground.

Nature seldom errs in her indications of mineral wealth, and makes electricity a prominent agent in determining the location of iron deposits near the surface. Hence if a forest at any point shows unusual effects of lightning, or if a house becomes a peculiar attraction for it, it might pay to engage an experienced prospector to develop the hidden ore.

Selections of Building Materials.

In preparing plans for a new structure, says the *Carpenter and Joiner*, the most important matter to decide upon is the selection of the material. This, to a large extent, is determined by its cost, but not to so great an extent as might at first be imagined. It is to be taken for granted that an architect will build his structure of the best material his cost limit will permit. Now, this does not mean always the costliest material, although the public are apt to think so; but if the designer be a man of fine taste and well trained in his art, he will select a material that, while essentially durable, will confessedly subserve the best effect. Effect is a prime cause with every architect who has a genuine love for his art, and to a large extent is the dominant feeling in his design, but he still has a wholesome respect for a material that is admittedly substantial and durable.

If the new structure is a public building, he will naturally choose stone in preference to brick for his external walls, because with stone he can obtain a more noble and dignified effect. With stone, too, he can obtain a much more beautiful and permanent color scheme, and if the structure will admit of decoration, he can obtain, more closely, a better interpretation of his designs than is now possible in brick or terra cotta. Public buildings demand dignity and repose and simplicity of coloring, and stone, as a material, offers the proper medium of expression. As to stone itself, great care and considerable knowledge of its structure is required to enable an architect to make a proper selection.

Considerations governing the choice of material exist naturally in the purpose of the proposed structure, its geographical location and its situation with respect to adjoining or contiguous structures. In addition to these, a further condition is imposed on its selection by a circumstance which we have reason to believe is seldom thought of, namely, the character of the coal burned in its immediate vicinity. In a district where soft coal is used largely for manufacturing purposes it is impossible to use a coarse, white stone, such as granite, marble or limestone, because soot becomes deposited on its roughened faces, and darkens and ultimately blackens the entire stonework to such an extent as to destroy its original expression. Where the use of soft coal prevails so as to become detrimental to the beauty of stonework, it is necessary to resort to brick and terra cotta work, because they are not injured so readily as stonework. Where granite is to be used it is advisable to employ it in such a manner that it will not be damaged by fire from other buildings. This can be done only by strict isolation, and would relegate granite to isolated public buildings. For office buildings, built close to adjoining structures, it is evidently quite unsuitable. Granite-faced structures are often built of one uniform tone as to color, and the effect is cold and harsh. This practice has prevailed in the past, but it is gratifying at the present time to observe a marked change in this regard. Dark-colored granites are now used for lower stories, upon which are imposed stories lighter in color as the crowning cornice is approached. This choice is in keeping both with the proper expression of stability and of aerial perspective.

Where brick is chosen for the sake of its inviting field as to color, it is necessary to use the utmost care in selecting not only materials but color. Brickmakers, with good judgment and taste, owing, we believe, to the urgent demands of architects and their clients, have been making marked innovations not only in the color of brick, but in their forms. Bricks 12 inches long, 1½ inch to 1¼ inch face, are now made. Other irregular sizes are obtainable, and in addition to this, rock-faced stonework has been imitated by rough-faced brick. This roughing face is a moulded face, and when used in a climate or locality free from soft coal smoke, it can be used to great advantage. It is a mistake, however, to suppose that artistic brickwork is cheaper than desirable stonework. The choice of either at the same cost is dependent, to a large extent, on the capability of the designer. Some men have a positive talent in designing brickwork which will be exquisite in its refinement of line and its delicate glow of color. In every case permanent effect is the ultimate aim, and can be obtained only by an almost encyclopedic array of information which has been carefully classified and fully studied.