gain will enable the bird to turn and mount to a much higher plane than it formerly occupied. On the face of it I think this must strike every reader as extremely improbable and almost nonsensical. The opinion is strengthened as we continue on in the original discussion. Suppose a bird to be soaring at a speed of twenty miles per hour in a current which is itself moving at the same rate. It is very evident that this velocity must have been attained by the bird with almost no assistance from the air current, for the resistance of the air against the soaring bird it practically nothing. It is also evident that, if the bird continues soaring in this current, it must lose the velocity it had attained, and very quickly fall if not assisted in some way. If it descends in an inclined plane, its velocity, so far as the current of air goes, will not be changed in the least, for two reasons. First, it has the same velocity as the air current at starting on its downward path, and hence the air current could not accelerate it any more than if it had continued soaring in a horizontal plane. Second, as just suggested, the resistance of the air is practically nothing, so that the current will have no effect. The assumption that there is some occult assistance given to the bird, because it is going down an inclined plane instead of horizontally, will not be regarded as of any value by any one at all familiar with the simplest principles of mechanics.

But this is not all: an attempt is made to prove this occult assistance from a concrete example. The author takes a ship moving at twenty miles per hour and places upon it an inclined plane, whose vertical height is 13.38 feet, which is the distance through which an object must fall to attain a velocity of twenty miles per hour. Now, if a ball should be allowed to roll down this inclined plane, it would attain, so it is assumed, a velocity of forty miles per hour with respect to the water outside of the ship neglecting friction on the plane. This velocity of forty miles per hour is made up, as the author states, of the twenty miles per hour due to the motion of the ship or the initial velocity, and twenty miles per hour additional due to the acceleration from the fall of 13.38 feet in the descent of the ball on the inclined plane. It is perfectly plain that there is no occult effect coming in so far from the motion of the ship. The author shows that with a velocity of forty miles per hour, if the ball should roll upon an inclined plane fixed off the ship, it would rise to a point more than twenty-six feet higher than the starting point. This conclusion is quite startling, and shows a most serious fallacy in the reasoning. If the ball had rolled up an inclined plane fixed to the ship, it would have risen to exactly the same height as at starting, as was clearly shown by Prof. J. P. Church. That the ball would not rise to any such height will be clearly seen by considering what would happen if it rolled from its first position upon an inclined plane fixed upon the water. In this case it would rise exactly 13.38 feet, and its motion would cease altogether.

The vicious reasoning is brought out very clearly even in the original paper, for the author considers what would happen if the ball fell vertically instead of rolling down the inclined plane. In this case the twenty miles per hour initial velocity he considers as equivalent to a fall of 13.38 feet, and as the inclined plane is 13.38 feet high, the total fall would be equivalent to 26.76 feet, and he shows that with this fall the velocity attained would be 28.28 miles per hour. That is to say, a ball rolling down an inclined plane, where it must meet with a slight resistance, will attain an accelerated velocity of twenty miles per hour due to the fall of 13.38 feet; but, when the same ball falls vertically in free air, and where it meets with no resistance, its acceleration is only 8.28 miles per hour. I am sure nothing farther is needed to show the utter fallacy of all this reasoning. H. A. HAZEN.

Nov. 21.

PORTRAITS OF HELMHOLTZ.

I THINK it will be of interest to the many admirers of the distinguished physicist, Von Helmholtz, to know that on his recent visit to this country he was induced to sit for a photograph in the gallery of the well-known artist, Mr. Brady, of Washington.

Some most excellent pictures were obtained, copies of which may be obtained by addressing Mr. M. B. Brady, photographer, Washington, D. C.

The prices are: For the largest size, 9x14, $2.00; intermediate, 8x10, $1.00; cabinet, 25 cents.

The cabinet size and the others (*unmounted*) will be sent by mail. The larger sizes (mounted) must be sent by express, at the expense of the purchaser—usually 25 to 35 cents. T. C. MENDENHALL.

Washington, D. C., Nov. 7.

SONGS OF BIRDS.

HAD I not expected that we should have more satisfactory answers to the query as to whether the voices of birds expressed emotion or not, I should have ventured a word before now.

I think any student or observer of birds, who has carefully noted them with his heart in the study, will agree with me when I say that if there is such a thing as expression of emotion in voice, then bird voices most clearly express it. The mere fact that a bird soon forgot his loss and grief, and sang in the natural bouyancy of his spirits, or that another, lame and confined, was yet happy, and expressed his happiness in his song, certainly does not prove lack of emotional expression in the voices of birds.

The untrained ear may fail to detect the difference in the joyful and sorrowful notes of some birds, but surely the ear must be indifferent, indeed, that does not detect plain expression of sentiment or of joy in the happy song, or of sorrow in the disturbed wail of any of the common birds about our doors.

The gift of voice was unquestionably intended as a means of expression to all creatures thus endowed, and wherever our powers of comprehension enable us to hear and understand them aright, we cannot fail to detect expression in them.

This may seem a trivial matter to bring up at this time, but it seems hardly fair that we should pass over the matter without giving to birds and all other creatures their just dues. B. S. BOWDISH.

Phelps, N. Y., Nov. 1, 1893.

DICTIONARY OF SCIENTIFIC NAMES.

THROUGH your query column, permit me to ask if there has ever been published a pronouncing dictionary of scientific names in use in the study of natural science for the benefit of the young student who does not care to delve too deeply into the study of Latin, and if not, why would not such a publication be a welcome addition to our library? B. S. BOWDISH.

Phelps, N. Y., Nov. 9, 1893.

ORIGIN OF THE CARVINGS AND DESIGNS OF THE ALASKANS AND VANCOUVRE INDIANS.

A FEW years ago I crossed the ocean on a slow steamer in company with a returning missionary, who had spent fourteen years among the Vancouvre Indians. He had with him a large collection of carved implements and *fac simile* drawings of the quaint figures on their boats and other objects. His opinion was that they were Japanese in design; that at some time some people from that country had been blown across the Pacific, and left there traces of their arts, which were perpetuated. He thought there were some traditions among the Indians that pointed that way also.

In looking over the collections at the Exposition this

summer it occurred to me to verify his conclusions.

In the Anthropological Building was a large collection of "totem poles," carved implements, and drawn figures from Alaska, also from California, Mexico, Central America, and Peru, as well as from other parts of the Americas. In many places Japan was largely represented.

There is a most striking difference between the arts of the western coast and the interior of America. They have something of the grotesqueness of Japan, but not much other likeness. They are akin to those of ancient Mexico, and would indicate that the arts and the people of the western coast were of like origin; that the "totems" and other figures of Alaska and Vancouvre are survivals of the arts of Central America and ancient Mexico.

P. J. FARNSWORTH.

Clinton, Iowa, Nov. 12, 1893.

ON THE SYSTEMATIC POSITION OF THE DIPTERA.

As a student of diptera, I have been interested in the recent letters by Professors Packard, Smith and Riley in *Science*, on the systematic position of this order of insects, and wish to express my entire concurrence in the views presented by these gentlemen. That the diptera, or some of them, are the most specialized of insects—that they depart most from the primitive type of insects—seems to be almost without argument; but that they therefore hold the highest position among insects by no means follows. Even the advocates of the supreme rank of the order have never ventured to carry their conclusions to the logical ultimatum, and give to the sheep-tick, or, better yet, the wingless, eyeless bat-tick, the highest rank. That the bat-tick is the most specialized among diptera admits of no question; that it is one of the most degraded of flies is equally certain. The whale and the bat are more highly specialized animals than is the dog; but, nevertheless, they have a very inferior rank.

I have collected flies for years, and have necessarily observed their habits somewhat closely, but I have never seen anything in them that might be called intelligence. Man's claims to preëminence in the animal kingdom rest almost wholly upon his intelligence: for the same reason, preëminence among insects must be conceded to the hymenoptera.

S. W. WILLISTON.

BOOK-REVIEWS.

Lecons de Chimie, a l'usage des Eleves de Mathematiques speciales. Par HENRI GAUTIER, ET GEORGES CHARPY. Paris, Gauthier-Villars et fils, Quai des Grands-Augustins 55 471p., Ill., 1892, 9Fr.

We take pleasure in announcing to students of chemistry in this country the above able work of MM. Gautier and Charpy, which while designed, according to its title, particularly for students of mathematics is of highest interest to all chemists. The title is misleading to American readers as the book is in no sense a volume of difficult and complex mathematical theories as one might suppose but an extraordinarily clear exposition of the ground work or base of chemical science, mathematical in its exact and succinct statements. It is not wished to imply that chemists should avoid mathematical because they are such even though they may deal with chemical theory, but it is nevertheless a fact that the mathematical training in many of our colleges (we speak of special courses in chemistry) has been pushed to the wall. There is a reason for this, a doubtful one however, in the shortness of the collegiate course which necessarily prevents more than an introductory knowledge of chemistry even when this subject is taken alone. The main difficulty rests in the confusion of college and university and in the effort to complete one's education in the four years following the "high school" graduation.

The authors aim to present the subject to students, not as a mass of facts and recipes, but as a science which while it may be as yet more or less imperfect is already far advanced in definite form. This is particularly the purpose of the first part of the book, which deals