

it would not be permanent. But experiments show that if the training is continued for a few days with the instrument, the gain will be transferred to the ordinary singing without the instrument. This is the most encouraging feature in the process and deserves to be analyzed in great detail for the purpose of a pedagogy of singing; this we are now attempting to do in the laboratory. Such questions as these arise: How is association transferred from the visual to the auditory-motor? What are the common elements in visual and auditory control? How can we isolate each of these factors for the purpose of reduction of error?

This type of training is convenient, inexpensive and rigid. The pupil may be assigned any one of a hundred exercises in pitch training and practise all by himself under correction at every tone production; it may be to reduce a tendency to sharp or flat, to eradicate a tremulo, to gain control of a vibrato, or any other pitch figure the master may set. It gives opportunity for control drill under the severest correction at every stage.

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ORVILLE A. DERBY

IN November last the newspapers published a cablegram from Rio de Janeiro announcing the suicide of Orville A. Derby, director of the Brazilian Geological Survey. Letters from mutual friends have now thrown all the light on the subject that we can reasonably expect to get.

Mr. Derby first went to Brazil in 1870 as student assistant of Charles Fred Hartt, who was then professor of geology at Cornell University. He made two other vacation trips to that country, and went to Brazil finally in 1875 to be assistant geologist to the newly established geological survey of the Empire, and lived there the rest of his life. In 1877 the survey was suspended, and Professor Hartt, its director, died at Rio. Mr. Derby was shortly thereafter appointed curator of geology in the National Museum at Rio, and held that position until 1886 when he was put in charge of

a newly established geological survey of the state of S. Paulo, a position he held until 1904. In 1907 a new federal survey was provided for under Dr. Miguel Calmon, minister of public works, with Derby as its chief.

The war in Europe disturbed the financial equilibrium of South American countries as well as that of other parts of the world. Brazil was probably obliged to economize wherever it was possible to do so, and this led to the reduction of appropriations for the work of the geological survey to such a point as to destroy the efficiency, and even to threaten the existence of that organization. Probably the necessity for such economies was not apparent to Mr. Derby, and he looked upon them as an attempt to discredit him and the bureau under his direction. In any case he took the matter very much to heart, and his friends find no other reason, or shadow of a reason, for his suicide.

Mr. Derby never married, and he led the solitary life of a recluse and student. He was held in the highest esteem by all who knew him. His whole life was given to the study of the geology of Brazil, and no one, living or dead, knew it as he did, or was more profoundly or more unselfishly interested in it. At the time of his death he had published more than a hundred and twenty-five papers on the geology of Brazil, many of them in the Portuguese language, which he wrote with ease.

His successor as the director of the geological survey of Brazil is Dr. L. F. Gonzaga de Campos, one of the ablest and most trustworthy of the Brazilian geologists, and for many years one of Mr. Derby's most competent assistants.

A fuller account of his life and work will be published in the *Bulletin* of the Geological Society of America.

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DIRECTOR B. BAILLAUD, of the Paris Observatory, presented the results of the determina-

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