

left for some time, tabasbeer is sometimes found inside the stem when broken." In Japan it is called *Take Miso*, and I have only heard that some portion of fluid, or some solid particles, occur inside the stem of bamboo, but not to such a remarkable extent as we meet with in India. In the Island of Kiusiu, the stem of bamboos is found sometimes filled with fluid, and especially in the province of Satsuma, particles like grains of sand are often detected. In a new Japanese work about bamboos, entitled "*Nihon Chikufu*," or "A Collection of Japanese Bamboos," by Nawoto Katayama, published in three volumes in Tokio in 1885, it is stated that in Tokio, if bamboos from the neighbouring provinces of Shimotsuké and Hitachi are kept till July or August and then broken, some watery juice or particles like sand may frequently be found. These particles are pale yellow in colour, but the quantity is only sufficient to fill a very small shell. "*Sômoku Seifu*," and other Japanese botanical books, also mention tabasbeer.

TOKUTARO ITO

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**"The Origin of Mountain Ranges"**

THE reviewer of "The Origin of Mountain Ranges in NATURE (Feb. 17, p. 361) says, in reference to my views on the contraction hypothesis:—"He seems to hold that, according to the contractionists, crumpling is produced by unequal contraction in the solid shell itself, which certainly is not their view. And he entirely omits all reference to the one fact which is the life and soul of the hypothesis, that the earth's crust is not strong enough to stand by itself without support, a fact which admits of rigid mathematical demonstration."

Will you kindly permit me to state that this is an entire misapprehension; that I hold neither view; and I have a difficulty in understanding how such inferences can be drawn from anything contained in the work.

T. MELLARD READE

Liverpool, February 18

I AM very sorry if I have represented Mr. Reade as saying what he did not intend to say, but the construction I put upon his words seemed, and still seems, to me to be that which they naturally bear. Mr. Reade's notion of what it is that the contraction hypothesis maintains, and his reasons for differing from its conclusions, are apparently summarised in Chapter XI. on pp. 121-25. He there tries to form an estimate of the ratio between the radial and circumferential contractions *within a shell of 30 miles* in thickness which he assumes to be solid. It seemed to me accordingly that he was contemplating only contraction within a thin shell which he himself starts with assuming to be solid, and that he deals only with "unequal contraction in the solid shell itself."

If Mr. Reade meant something quite different from this, I failed to grasp his meaning; that this was so may or may not be my fault, but in either case I am much obliged to Mr. Reade for putting me right, and very sorry that I should have laid upon him the troublesome necessity of pointing out my mistake.

What the other view is which Mr. Reade disavows, and what other inferences are contained in the passage he has quoted, I confess that I am unable to discover.

A. H. GREEN

Leeds, March 13

**The Vitality of Seeds**

IN a letter in your last issue (p. 414) upon the vitality of seeds, "N. E. P." states that Prof. Judd in his address to the Geological Association (I presume he means the Geological Society) was reported to have said: "The botanist cites the germination of seeds, taken from ancient Egyptian tombs, as a striking illustration of how long life may remain dormant in the vegetable world." This appears to be a remarkable assertion to emanate from such an eminent scientific man as Prof. Judd, for if he really did make this statement one would think he must have some good proof quite incontrovertible. I must admit I am sceptical, and do not place credence in the statements that have been made by certain people, that wheat or barley, which is frequently found in the ancient tombs of Egypt, could possibly germinate after the lapse, say, of 3000 years.

We have often heard of people having had tricks played upon them by crafty Arabs, who, when discovering grain, knowing, perhaps, that the purchaser wished to test it, substituted for it some of modern date, which was said to be of the same species.

When this was sown, it germinated, and probably yielded a fine crop; but the real grain found in the tomb was to all purposes dead. Mummy-wheat is, I presume, simply a commercial name for a certain species, which has no sort of connection with the tombs of ancient Egypt. Sir Gardner Wilkinson, in his book "*The Ancient Egyptians*," vol. i. p. 471, refers to experiments having been successfully made with some grains of corn discovered in the tombs. Dr. Birch added the following footnote:—"The experiments are said to have been made in France. (The possibility of corn germinating after so many years is strongly denied by some botanists on account of the impossibility of the delicate and minute embryo, placed immediately below the surface, being preserved so long in life, close to the surface.)"

As the late Dr. Birch in the above made reference to experiments having been made in France, I beg to quote the opinion of M. Paul Pierret, a very eminent Egyptologist, Conservateur du Musée Égyptien du Louvre, in his "*Dictionnaire d'Archéologie Égyptienne*," under the head of "*Blé*":—

"Tout ce qui a été dit sur la germination des grains recueillis dans les hypogées est absolument faux; tous les essais tentés dans les conditions voulues de sincérité scientifique ont avorté. Ce blé, semé dans la terre humide, s'amollit, s'enfle, se décompose, et, au bout de neuf jours, est entièrement détruit."

F. G. HILTON PRICE

29 Weymouth Street, W., March 7

I BEG to refer your correspondent "N. E. P.," on this subject, to my "Memoir of the Late Professor Henslow," p. 207, where I have given the results of copious experiments made by him in reference to the vitality of seeds, as well as the results of a close investigation of the whole subject by himself, Dr. Daubeny, and others—being a Committee appointed for the purpose in 1840 by the British Association; all tending to show that no seeds retain their vitality for much more than forty years, and very few for anything like so long, and throwing utter discredit upon often-received statements as to the long-retained vitality of the so-called mummy-wheat found in the catacombs of Egypt.

Bath, March 7

L. BLOMEFIELD

THE question put by your correspondent with reference to the germination of seeds taken from ancient Egyptian tombs appears to be directly answered by M. A. de Candolle in his work on "*The Origin of Cultivated Plants*." His words are:—"I think it pertinent to say that no grain taken from an ancient Egyptian sarcophagus and sown by agriculturists has ever been known to germinate. It is not that the thing is impossible, for grains are all the better preserved that they are protected from the air and from variations of temperature or humidity, and certainly these conditions are fulfilled by Egyptian monuments; but as a matter of fact, the attempts at raising wheat from these ancient seeds have not been successful."

However, if the germination of mummy-wheat is not sufficiently authenticated, Prof. Judd might perhaps point to other cases which, although of less value on account of their antiquity, would nevertheless go far enough to prove his point. There is, I believe, the case recorded by Dr. Lindley of some raspberries "raised in the garden of the Horticultural Society from seeds taken from the stomach of a man whose skeleton was found thirty feet below the surface of the earth, at the bottom of a barrow which was opened near Dorchester. He had been buried with some coins of the Emperor Hadrian, and it is therefore probable that the seeds were sixteen or seventeen hundred years old."

The following well-ascertained fact, recorded by Prof. Duchartre and others, may prove of interest. Some years ago in Paris, when a number of very old houses were being pulled down in the "Cité" to make room for Haussmannian improvements, Dr. Boisduval examined some dark-looking earth taken from the very foundations of one of those houses. The earth was found to contain seeds, which, being planted carefully under a glass bell, germinated in due time, and proved to be seeds of *Funcus bufonius*, L. This plant, as is well known, affects damp, marshy places such as the island was on which *Lutetia Parisiorum* grew up. It was therefore admitted as very probable that those seeds of *Funcus bufonius* must have been dormant in the ground ever since the time when the "Cité" marshes became dried up, and the ground began to be occupied by houses.

L. MARTIAL KLEIN

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