ence to an allusion of Mr. Sedgwick, he said he should always consider it to be one of the brightest episodes of his career that, having found in Balfour a young man capable of giving instruction, he had afforded him facilities. The late Professor was not only an instructor but a student, and no one ever remained so much a student."

Prof. Williamson proposed "That a committee be appointed to collect subscriptions and to draw up conditions under which, with the sanction of the subscribers at a future meeting, the fund shall be offered to the University."

Dr. Michael Foster proposed the following resolution :—"That the Committee be instructed—(1) that the value of the studentship be not less than 200*l.* a year; (2) that while it is desirable that the studentship should be in some way closely connected with this University, persons other than members of this University shall be eligible to it; (3) that it be not given away by competitive examination; (4) that in framing regulations both for the conduct of the student and the award of occasional grants, the primary object of the fund—namely, the furtherance of original research, be closely adhered to." He said he thought the above instructions to the Committee did not need any defence. The object of the memorial was not to keep Prof. Balfour's memory alive, for his works would do that, but to connect his name with some useful thing. The idea in fixing the value of the studentship at 200*l.* was that such a sum would be just sufficient to attract men led by enthusiasm to turn their attention to research, while it would be insufficient to induce persons to accept it as a competency. He thought it right not to restrict the studentship to members of the University, for they desired to attract talent from all parts of the country, while he considered that it was a proper condition not to throw it open to a competitive examination, for the studentship was not intended as a reward for past work or an acknowledgment of merit, but to encourage men of promise to undertake research.

An influential committee was appointed to collect subscriptions and draw up detailed conditions under which, after a future meeting of subscribers, the fund may be offered to the University. Mr. J. W. Clark, M.A., 1, Scroop Terrace, and Mr. A. Sedgwick, M.A., Trinity College, Cambridge, were appointed secretaries of the committee, the former to act as treasurer. The fund starts well, with the munificent contribution of 3000*l.* from the family of the late Prof. Balfour, and to 1000*l.* which had been left by the deceased to Dr. Michael Foster to be applied according to his discretion for the promotion of biology; nearly 1000*l.* was subscribed in the room or shortly afterwards.

DR. THWAITES

GEORGE HENRY KENDRICK THWAITES, whose death was recorded in a recent number of NATURE, was a well-known member of the older generation of British botanists. I do not know the exact date or place of his birth, but suppose it to have been in 1811. In his early life he followed the profession of Notary Public at Bristol, and apparently had a hard struggle to support and educate numerous younger brothers and sisters. He had a natural passion for botanical studies which he cultivated to such good purpose as to obtain the appointment of Lecturer on Botany and Vegetable Physiology at the School of Medicine at Bristol. He was no less ardent as an entomologist, and throughout his life collected assiduously; some of his earliest papers are on entomological subjects. His principal published work has, however, always been botanical. Till he left England he was mostly occupied with microscopical investigations, and what he published of these were like all that he did later—excellent specimens of careful and intelligent observation. His paper "On the Cell-membrane of plants" (1846) which established many interesting and at that time novel points, received a good deal of attention. Amongst other things it apparently gave the first accurate interpretation of the mucous investment of the cells of many *Palmelleæ*, *Nostochineæ*, and *Diatomaceæ;* Thwaites was able to show clearly that this was the product of the gelatinisation of the cell-walls. His capital discovery, however, was that of Conjugation in the *Diatomaceæ*. This he observed in *Eunotia turgida*, and the paper describing it bears the date May 11, 1847, and was published in the *Annals and Magazine of Natural History*. It was, as Thwaites himself remarked, "a discovery which is valuable as proving that a relationship of affinity as well as of analogy exists between the *Diatomaceæ* and the *Desmideæ* and *Conjugatæ*, and will help to settle the question as to whether the former are to be referred to the animal or the vegetable kingdom." I have been told nevertheless that when this important discovery was communicated to the British Association at Oxford, it was received with but little attention.

The present director of the Royal Gardens, Kew, then Dr. Hooker, was about this time attached to the Geological Survey. At the instance of Sir Henry de la Bêche he was engaged in the Bristol Coal Field, endeavouring to ascertain whether any definite relation could be traced between the superficial flora and the underlying rocks. This brought him in contact with Dr. Thwaites, who was, notwithstanding his professional pursuits, in the habit of spending the early hours of the morning in teaching himself the practical details of gardening in the Durdham Down nurseries. It was probably this circumstance which brought under his notice the curious instance of hybridity in a Fuchsia, which so much excited the interest of Mr. Darwin, and has often been referred to. A seed of *F. coccinea* fertilised by *F. fulgens* contained two embryos. These were extremely different in appearance and character, though both resembled other hybrids of the same parentage produced at the same time. What was still more remarkable, was that they were closely coherent below the two pairs of cotyledon-leaves into a single cylindrical stem.

In 1847 Thwaites was an unsuccessful candidate for a chair of botany in one of the newly founded Queen's Colleges in Ireland. His combined scientific and practical knowledge, however, indicated his fitness for a botanical post, and on the death of Dr. Gardner, he was appointed in June, 1849, Director of the Royal Botanic Garden, Peradeniya, Ceylon, on the recommendation of Sir William Hooker. He never returned to this country, and from the first threw himself into the duties of his post with great fervour; under his management Peradeniya became perhaps the most beautiful tropical garden in the world. He continued the labours of his predecessors in investigating the very peculiar flora of the island with great success, and, between the years 1858-64, issued, in parts, the "Enumeratio plantarum Zeylaniæ." This was at the time of its publication the first complete account on modern lines of any definitely-circumscribed tropical flora. The want of affinity which the flora thus worked out was seen to have to the general vegetation of the contiguous peninsula of Hindostan and its marked relationship to that of the Malayan region established facts of the greatest significance in the study of geographical distribution. A passage from the preface (1864) is worth quoting, as showing that Thwaites was one of the earliest English naturalists to give his adhesion to the Darwinian theory :—

"These forms or varieties would probably be viewed by some botanists in the light of distinct, though closely-allied species, and they occupy, in fact, that debatable ground the difficulties and perplexities of which the practical naturalist alone knows, and which in the opinion of many (and I may include myself amongst the number) are only to be got rid of by the adoption of the views enunciated by Mr. Darwin as regards the relationship of

allied forms or species by descent from a common ancestor."

Besides the "Enumeratio," Thwaites published subsequently a few papers on detailed points in Ceylon botany.

His tenure of office was associated with some of the most important developments of the Ceylon planting industry. In 1861 and subsequent years he took an active part in the operations undertaken by the Government of India, in concert with the Royal Gardens, Kew, for the introduction of Cinchona into the East. From the first the enterprise succeeded in Ceylon beyond expectation, and in 1869 the first ton of bark grown in the island was sent to England for sale. In 1864 he began to urge the cultivation of tea, and in 1868 a sample, manufactured in Ceylon, was sent to this country. Cocoa was similarly brought forward in 1867, and it now bids fair to be one of the most important of Ceylon staples. Liberian coffee was introduced from Kew in 1873. In 1876 the plants of Para, Ceara, and Central American india-rubber plants, obtained for the Indian Government, were sent from Kew, where they had been propagated, to Dr. Thwaites' charge in Ceylon, which was made the depôt, for their subsequent distribution to India.

During the later years of his life Dr. Thwaites had been in weakly health, and lived latterly a retired and extremely abstemious life. But his singularly refined and cultivated mind always gave him a position of distinction in Ceylon society, and he enjoyed the esteem and personal friendship of successive governors. He became a Fellow of the Linnean Society in 1854, and of the Royal Society in 1865; and in 1878 the Crown conferred upon him the Companionship of St. Michael and St. George, in recognition of his long services. Two years afterwards he retired, and took up his abode near Kandy, being unable to persuade himself to leave the island where so much of his life had been continuously spent. He died on September 11, and was followed to the grave on the following day by a large assemblage and the members of the Peradeniya Garden Staff, including the coolie labourers.

W. T. T. D.

ELEVATION OF THE SIERRA MADRE MOUNTAINS

DURING the past summer, in travelling across the Sierra Madre Mountains from Parral in the southern part of the State of Chihuahua, Mexico, to the mining town of Guadalupe y Calvo, on the Pacific slope about one hundred and fifty miles from the Gulf of California, some observations were taken with a small pocket aneroid barometer with thermometer attached, which may be of interest to the readers of NATURE. Both barometer and thermometer had been carefully compared with the standard instruments in Vanderbilt University and the proper corrections made.

Starting from Parral, or Hidalgo as it is generally named on the maps, the road leads in a south-westwardly direction to the small mining town of Santa Barbara, at the foot of the Sierra Madre range. From this point there is no road, but merely a trail running westwardly through the small villages of Providentia, Cerro Prieta, and Piedra Larga—the two former in Durango—to the old mining town of Guadalupe y Calvo, a distance of about eighty Mexican leagues or two hundred English miles. The journey can only be made on mules, or horses accustomed to mountain travel, as there are no roads, and the trail passes over several precipitous mountains. The distances, as near as could be ascertained, are about as follows:—

	Leagues.
Parral to Santa Barbara	7
Santa Barbara to Providentia	7
Providentia to Cerro Prieta	18
Cerro Prieta to Piedra Larga	26
Piedra Larga to Guadalupe y Calvo	22

The heights going westward as determined by the barometer at the several stations mentioned, are as follows:—

	Feet.
Parral	5,880
Santa Barbara	6,490
1st Mountain	8,670
Providentia	6,850
2nd Mountain	10,220
Cerro Prieta	6,720
3rd Mountain	8,760
Cave	9,270
Valley of Rio Verde	9,110
4th Mountain	9,440
5th ,, ...	9,350
Piedra Larga	8,010
6th Mountain	9,470
7th ,, ...	9,260
Guadalupe y Calvo	7,500

The temperature in the mountains—July 10 to 31—ranged from 58° to 85°. During five days in Guadalupe y Calvo—July 20 to 25—the temperature was taken at 6 a.m., 12 a.m., and 6 p.m., and found to range from 59° to 68°. On two days—July 21 and 22—it was 65° at the time of each observation. The rainy season begins about the middle of June and extends to the 1st or middle of September. The amount of rain that falls increases towards the west. The mountains run generally S.S.E. and N.N.W., and are covered with fine timber, consisting mainly of yellow pine.

Outside of the villages mentioned there are no inhabitants except a few Indians, descendants of the Aztecs, who live chiefly in caves and cultivate small patches of corn, beans, and pepper, and have small herds of cattle. These Indians are peaceable. The Apaches once roamed through these mountains, but of late years their depredations are confined to Middle and Northern Chihuahua and Sonova.

N. T. LUPTON

Vanderbilt University, Nashville, Tenn., October 3

NOTES

MR. M. A. LAWSON, M.A., F.L.S., having been appointed Superintendent of the Government Cinchona Plantations (Madras), the Professorship of Botany at Oxford will shortly be vacant.

ALTHOUGH they have M. Cochery as their common president, the two Electrical Congresses now sitting in Paris have separate sittings, as well as separate ends. The greater number of Governments have appointed separate delegates for each. The programme for the Congress on Electric Units was already published at the end of the session of the Congress of Electricians, and adopted by them. The consequence is that the committees were established beforehand, and that some Governments, as Belgium and Italy, appointed special delegates for each committee. The total number of delegates is sixty-two. The German Empire, having the exclusive right of representing the central Government in foreign parts, no delegate has been appointed either by Bavaria or Saxony; but amongst the five German delegates we find the name of Dr. Kohlrausch, Professor at the Bavarian University of Wurzburg. After having appointed M. Cochery as president, the Congress appointed a secretariat composed of two French officials; four others, belonging to the French Administration, have been appointed as *secrétaires rédacteurs*. The records of the Congress will be published under their authority. The members of each of the several committees have appointed their president or a president and secretary, and will communicate the results of their work at general meetings. It is probable that scientific committees will be established, and that the Congress will dissolve after having appointed them, or possibly adjourn to a future occasion. The