

temperatures naturally calls to mind Prof. Giglioli's most remarkable experiments with regard to the actions of poisons, both gaseous and liquid, on seeds. An account of them was given in NATURE, 1882, p. 328, and 1895, p. 544. He found that dried seeds of *Medicago sativa*, although exposed to the prolonged action of gases such as oxygen, chlorine, nitric oxide, &c., and of poisonous fluids, e.g. alcohol, corrosive alcohol, &c., retained their power of germination. In some of his experiments the time of immersion of the seeds in the poison was so prolonged (many years) that the supposition of the non-penetration appeared precluded. I have repeated Giglioli's experiments with several species, and found, as he did, that some seeds can withstand the action of poisons while others cannot. Seeds of *Medicago sativa* were exposed from 10-30 days to the action of methylated spirit, spirit saturated with mercuric chloride and with picric acid without their powers of germination being noticeably affected. Similarly, seeds of *Papaver Rhoeas*, *P. somniferum* and *Schizopetalon Walkeri* resisted the action of spirit, but were apparently killed by corrosive alcohol. *Papaver Rhoeas* germinated after two days' immersion in chloroform and two days in spirit. On the other hand, seeds of *Nicotiana Tabacum*, *Linaria reticulata*, *Gypsophila paniculata* and *Calandrina umbellatum* did not germinate after immersion in spirit.

The following experiment shows, I think, that this astonishing resistance to poisons is not due to the quiescent state or stability of the protoplasm of the seed, but to the imperviousness of the seed-coat. A large number of seeds of *Medicago sativa* were taken, and half of them were punctured with the prick of a needle. All were then desiccated, and after desiccation immersed some in spirit, some in spirit and mercuric chloride and some in spirit and picric acid. It was then found that the intact seeds germinated in large quantities even after immersion in the poisonous fluids, while the punctured seeds germinated in no case after immersion. In a control experiment it was found that the punctured seeds both before and after desiccation germinated freely. It would appear, then, that when the penetration of the poison was secured the effect was to destroy the vitality of the seed.

HENRY H. DIXON.

Botanical Laboratory, Trinity College, Dublin.

An Instance of Adaptation among the Deer.

My friend Major C. S. Cumberland has just brought from Manipur the head and hind-foot of a deer the latter of which affords an interesting instance of adaptation to environment. The deer in question is the Manipuri representative of the thamin (*Cervus eldi*) of Burma, an animal inhabiting open tree jungle. The Manipur valley is, however, a huge swamp, and the thamin of that locality have developed a peculiar modification in the foot which enables them to walk with ease in such ground. In the Burmese thamin the under surface of the hind pasterns is covered with hair in the ordinary manner, and the animal walks entirely on the main hoofs, keeping the pasterns much elevated. In the Manipuri thamin, on the other hand, the under surface of the pasterns is covered with a hard, horny, bare skin, which immediately above each hoof has almost the consistency of horn, and is practically continuous with the hoof itself. Moreover, so far as can be determined from comparison with a mounted specimen of the Burmese form, the pasterns are very considerably longer than in the latter. In walking, according to the account given by Major Cumberland, the foot is much bent, so that the animal walks on nearly the whole of the under surface of the pasterns, and thus gains a firm support on the yielding morass.

Assuming this feature to be constant (as Major Cumberland believes to be the case), the Manipuri thamin appears entitled to rank as a distinct local form, for which the name *C. eldi cornipes* will be appropriate, Major Cumberland's specimens standing as the type.

But, quite apart from this minor point, the specimens are of especial interest as showing a previously unknown mode by which ruminants may adapt themselves to a life in swamps. In the well-known instance of the sitatunga antelope of Africa a sufficiently large surface of support is afforded by a lengthening of the hoofs; in the present case the hoofs remain of the normal length, and support is obtained by the animal walking on the under surface of the pasterns, which is specially hardened. It is, in fact, an incipient instance of the reversion of a digitigrade animal to the plantigrade progression of its swamp-dwelling ancestors.

R. LYDEKKER.

Snow Conditions in the Antarctic.

THE meteorologist of my expedition has unfortunately given a somewhat incorrect idea about the snow conditions at Cape Adare. He reports, namely, that there is a very small snow fall at the sea-level. This is, in my opinion, not the case. But his mistake is excusable and easily explicable; of course, being a young Tasmanian and not previously having seen ice and snow, a devotee to his instrument, took down in his note book the evidence of a usual snow gauge. Snow seldom or never fell in the Antarctic except during heavy gales, and it must be clear to anybody familiar with snow that a snow gauge of the ordinary type is worse than useless during heavy gales. Although Cape Adare itself and the peninsula on which we lived were almost free of snow in the open, we had more than ten feet of snow to the leeward of our hut at Camp Ridley, and undoubtedly there would have been still more had the huts been higher. This indicates, of course, that much snow fell, but it was blown away as well from the promontory at Cape Adare as from the unfortunate snow gauge. In my opinion a very heavy snow fall takes place within the Antarctic circle. And I believe that the strong gales within the Antarctic circle generally are local and that these snow bared dark promontories are the very homes of the Antarctic gales, while those places where no dark land is to be seen probably are unmolested by great atmospheric disturbances and are therefore covered in heavy snow. From time to time in the pack ice I have passed through distances where the ice was covered in several yards of loose snow. This I noticed as well on my first voyage in 1894 as during my last expedition. I will therefore use the opportunity to warn the coming expeditions from not providing against the difficulties which a very heavy snow fall incurs for sledge parties within the Antarctic circle.

C. E. BORCHGREVINK.
(Commander British Antarctic Expedition, 1898-1900.)

Douglas Lodge, Bromley, Kent, July 6.

PHOTOGRAPHIC AND PHOTOMETRIC SURVEYS OF THE STARS.¹

EVERYONE will naturally wish to offer words of hearty congratulation to Sir David Gill and his able coadjutor, Prof. Kapteyn, on the completion of the Cape Durchmusterung, of which the third and last volume has recently appeared. Some twenty years since, when the capacity of celestial photography was practically an unknown factor, Sir David Gill proposed to himself to complete a survey of the southern hemisphere by means of photographic star maps. The original conception was a tolerably modest one. Sir David Gill's idea was simply to prepare from these maps a working catalogue of stars to facilitate the meridian zone observations, after the programme of the Astronomische Gesellschaft, but "to avoid the repetition of such an arduous undertaking as Argelander's Durchmusterung as a preliminary step." How the original plan was extended and grew, till the results fill three bulky volumes, exceeding Argelander's work both in number of stars and in accuracy of observation, he has himself told in the introduction to the first part, to which we have already referred (NATURE, vol. lvii. p. 513). Very rapidly has the work gone on once all preliminary difficulties were removed, and now the astronomers of the Cape and of Groningen see their work completed on a uniform plan within a moderate space of time, with an accuracy which approaches that attaching to the older so-called "Precision Catalogues," together with the means existing for the determination in special instances of star places with even greater accuracy. For though we have spoken of the completion of the work,

¹ "The Cape Photographic Durchmusterung for the Equinox 1875." By David Gill, C.B., LL.D., F.R.S., &c., His Majesty's Astronomer at the Cape, and J. C. Kapteyn, Sc.D., &c., Professor of Astronomy at Groningen. Part iii. Zones -53° to -89° . Pp. 88+671. (Edinburgh: Neill and Co., 1900.)

² "A Photometric Durchmusterung, including all Stars of the Magnitude 7.5 and brighter North of Declination -40° , obtained with the Meridian Photometer during the Years 1895-98." By Edward C. Pickering, Director of the Harvard College Observatory. Pp. 330. (Cambridge, U.S.A., 1901.)