A further simplification would be introduced by a method of evaluating the series P_1 or P_2 without the use of Stirling's theorem. Such a method has been given me by Mr. G. G. Berry, of Balliol College, and may be briefly described as follows:—

If in the expansion of $(p+q)^n$ we stop t terms before the greatest, the truncated series has a smaller sum than the G.P., which has the same two final terms. If t^2 is great as compared with n, the G.P. has a sum which vanishes compared with its final term multiplied by $\sqrt{n}$. But the product of the greatest term of $(p+q)^n$ and $\sqrt{n}$ is finite; for the sum of $\sqrt{n}$ terms on either side of the greatest <1, and the ratio of the greatest term to a term distant from it by $\sqrt{n}$ places is—

$$\frac{\left(1-\frac{1}{pn}\right)\left(1-\frac{2}{pn}\right)\cdots\left(1-\frac{\sqrt{n}-1}{pn}\right)}{\left(1+\frac{1}{qn}\right)\left(1+\frac{2}{qn}\right)\cdots\left(1+\frac{\sqrt{n}}{qn}\right)},$$

which has a finite limit.   J. COOK WILSON.
  Oxford.

A Tree Torn by Lightning.

I ENCLOSE two photographs of an oak tree struck by lightning, which seem of interest.

The storm, one of considerable violence, occurred on July 27, 1900, and continued for several hours. The tree stood by the side of a road which runs over the Chilterns from Ipsden, a little village about five miles from Wallingford and ten from Henley. It was standing at the western edge of a small stretch of woodland. The opposite side of the road was quite clear and sloped down to the plain.

FIG. 1.

On examination, the bark was found to be completely stripped off and flung on one side; a large branch was torn away, and the fractured end was extraordinarily splintered and smashed. So far as I saw there were no signs of charring.

The inner surface of the bark was marked longitudinally with thin wavy lines, very close-set, of which the crests were about $\frac{1}{4}$ inch apart.

The first photograph gives a general view of the tree; the second represents the lower side of the bent portion of the
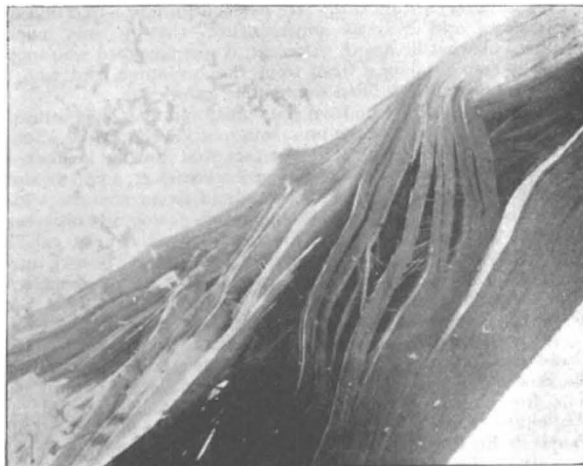

FIG. 2.

trunk, and shows very clearly the rending effect of the lightning on a fibrous tissue.

The photographs were taken about a fortnight after the tree was struck, during which time there had been much wind and rain.   PERCY E. SPIELMANN.

Adaptation of Instinct in a Trap-door Spider.

THE following extract from the *Sydney Bulletin*, January 12, sent to me by a correspondent in Western Australia, re-counts an observation sufficiently interesting, I think, to be reprinted and put on permanent record in a scientific periodical:—"A friend of mine noticed near his camp a trap-door spider run in front of him and pop into its hole, pulling the 'lid' down as it disappeared. The lid seemed so neat and perfect a circle that the man stooped to examine it, and found, to his astonishment, that it was a sixpence! There was nothing but silk thread covering the top of the coin, but underneath mud and silk thread were coated on and shaped convex (as usual). The coin had probably been swept out of the tent with rubbish."

As is well known, the doors of trap-door spiders' burrows are typically made of flattened pellets of earth stuck together with silk or other adhesive material. The unique behaviour of the spider in question showed no little discrimination on her part touching the suitability as to size, shape and weight of the object selected to fulfil the purpose for which the sixpence was used.   R. I. POCOCK.
  March 6.

Protective Markings in Cats.

IT will probably appear to many—as it does to myself—that the development of a protective mechanism in a domestic animal is not likely, and for several reasons—such as the short-ness of time at the disposal of the race, and, of course, to their large independence of stress of circumstances. Still it may be admitted that the domestic cat bears its subjugation to man more lightly than many of the other creatures which he has tamed. The particular mark above the eye to which your correspondent refers (p. 441) has also been pointed out by Mr. Wallace in the dog. It may interest those of your readers who are not aware of the fact to learn that the tiger has a largish and very bright white spot upon the back of the ear. When the ears are directed forwards this spot is exceedingly conspicuous from in front (as any one may verify upon the fine pair of tigers now in these gardens); and, in the dimness of a cave or a thicket, might conceivably produce an impression of alertness when the animal was really sleeping.

Zoological Society's Gardens.   FRANK E. BEDDARD.