

be inferred, an indication of the presence of some physical cause tending to increase the rainfall in years of minimum and diminish it in years of maximum solar maculation.

Bankipore, Patna

E. D. ARCHIBALD

The Australian Monotremes

IT is certainly news to me, and I believe to most other European naturalists, that *Tachyglossus* and *Ornithorhynchus* occur in Northern Queensland. Perhaps W. E. A. will kindly state, for our information, the exact spots where they have been discovered and their extreme northern limit, so far as this has been ascertained.

W. E. A. speaks of an adult female *Echidna* (*sive Tachyglossus*) having "a fine healthy young one in the pouch." Is there not some error here, as the monotremes have, strictly speaking, no marsupial pouch?

P. L. S.

WITH reference to the existence of *Tachyglossus* (*olim Echidna*) in North Australia, and the recent discovery of one (or possibly two) species in New Guinea, the following account, which I lighted on a few evenings ago, when looking over an old volume of the *Field*, seems to be of sufficient interest to warrant its transfer to the pages of NATURE. The account in question occurs in an article "A Week at Plain Creek, Queensland," by Mr. E. B. Kennedy, which appeared in the issue of that journal for September 20, 1873. It runs as follows:—" . . . Whilst so engaged we heard our dogs making a tremendous noise, high up the bank in the scrub, and upon going to ascertain the cause found them scratching, yelling, and pulling at a porcupine which was half imbedded in a hole; we were at least ten minutes digging him out with sharp-pointed sticks, such was his tenacity in holding on and burrowing. The quills were not nearly so long as the Cape of Good Hope species (of course a true *Hystrix*), and he differed from that quadruped in having a sort of beak instead of a regular jaw." It is to be regretted that Mr. Kennedy did not preserve his specimen, which was ultimately cooked and eaten! I should have mentioned that Plain Creek lies in 21 lat. S., so that this is certainly the northernmost locality on the Australian continent, where we have certain knowledge that the *Echidna* occurs. As we now know that many North Australian species of birds range also into southern New Guinea, it would hardly be surprising if the *Tachyglossus* of the Fly River and south New Guinea were nothing more than the well-known *Tachyglossus hystrix*. It is to be hoped that this point may soon be solved by the arrival of specimens from both localities.

W. A. FORBES

English Names of Wild Flowers and Plants

To all who are interested in the history of the English language the derivations proposed for the vernacular names of many plants in the Rev. W. Tuckwell's lecture (see NATURE, vol. xvi. p. 385) will be highly appreciated. And even in the few cases where the etymologist may feel doubtful as to the verisimilitude of the suggested pedigree it will for the most part be difficult to propose another with any great confidence.

There is, however, one of these doubtful cases, the derivation of woodruff from wood-roue, in lieu of which I have to offer a conjecture which appears to need no lengthy argument to insure its acceptance.

Is not the ruff of woodruff identical with the riff of sherriff? Is not, in short, the woodruff the wood-reeve, just as the sherriff is the shire-reeve? That the German wald-meister has the same connotation and is applied to the same plant is evidently a striking confirmation of this view, and it would be interesting to know whether the word wald-graf (*i.e.*, wald-ge-raf = wood-y-reeve), or any equivalent form, is to be met with in high or low German literature.

I used to be told by a school-fellow that the way to spell woodruff was—

Double U, double O, double D, E,
Double R, double O, double F, E.

Even under the disguise of woodderrooffe, however, the origin of the word is perceptible.

As regards the main purpose of the Rev. W. Tuckwell's paper, I feel strongly that scientific accuracy is compatible with a much freer use of vernacular words than is customary amongst us, and that their adoption by science teachers would remove a great stumbling-block from the path of learners.

Manningham, September 10

J. WILLIS

Some of the Troubles of John O'Toole respecting Potential Energy

"IT is the people's right to demand of their teachers that the information given them shall be, at least, definite and accurate as far as it goes," and "whenever there appears to be a confusion about fundamental principles it is the duty of a scientific man to endeavour by all means in his power to remove it." These are the words of one of the teachers.¹ I am one of the people—as indeed, my name testifies, Toole (*Tuathal*) being the Irish equivalent of the Latin *Publius*—and I would now, on behalf of myself and every brother *Publius*, assert our above "right" in respect of the matter now in hand, and demand the performance by the doctors of their corresponding "duty." Now there is much "confusion about the fundamental principles" of physical Energy in the minds of the public who care about such things; and it is principally, though I admit not entirely,² the doctors who are to blame for this. Their own ideas on the subject being so clear and correct they are superior to the phraseology they use respecting it, and they are not injuriously affected thereby; but those who are dependent on that phraseology for their knowledge are in very different case. Let me, as one of the latter, point out some of the perplexities under which we labour from no fault of our own, and which we should be spared if our teachers would only condescend to use their words discreetly and consistently. It may be well to premise that we know the definition of physical Energy, which is—"the power or capacity of performing work;" and that we are not now making any confusion between Energy and force.

The word "potential" has two very different meanings—(1) Of, or belonging to, potency or power; (2) Existing *in posse*, or in possibility, as opposed to existing *in esse*, or in actuality; and the expression, "potential Energy," can have no less than three references or meanings, which we shall mark with A, B, and C; and each meaning has its own proper inconveniences independent of the perplexities arising from their mutual relations.

A.—Potential E., as meaning "Energy existing in posse."

The phrase "potential E." is in the first place very generally intended to mean E. existing *in posse*, according to one proper signification of the word "potential." The phrase was first used by Rankine,³ and apparently in this sense; he contrasted "potential" and "actual" E. This antithesis is still very generally implied and sometimes expressed. Clerk Maxwell tells us⁴ (the statement being repeated only last year⁵) that "potential E." "signifies the E. which a system has not in actual possession, but only has the power to acquire." Wornell says⁶—"It has been aptly called possible or potential E., because it represents the power the body has of acquiring actual or kinetic E." Many of our doctors use the phrase "potential E." without explaining it, and of course, unless there be some particular reason to the contrary, such must be understood to give it, as one of its significations, at least, the original meaning intended by its proposer (or if not they are guilty of a very misleading omission, *utrum horum mavis accipere*): and this is especially undeniable in the case of those who apply the title "actual" to the other type of E. Balfour Stewart, though he seems to have quietly dropped the name "potential,"⁷ has really retained the idea implied thereby, for he still habitually calls the other type of E., that of motion, "actual E.," as its *distinguishing* title. Moreover, this idea is involved in other statements, &c., of our teachers. For instance, we occasionally find language used which seems to imply that potential E. must first emerge as actual E. before it can produce work, as by Deschanel,⁸ by Dunbar Heath,⁹ and by Balfour Stewart.¹⁰ Observe, also, the expression "E. of actual motion," which is frequently used by the last-mentioned doctor,¹¹ and accepted at least by Tait.¹² "E.

¹ Tait Evening lecture during meeting of Brit. Assoc. at Glasgow in 1876. NATURE, Sept. 21, 1876.

² That brother *Publius* who wrote the article on Tyndall's "Heat," in *Blackwood's Mag.*, December, 1863, was partly responsible for his own confusion about Energy.

³ *Phil. Mag.*, February, 1853. He says: "All conceivable forms of E. may be distinguished into two kinds, actual or sensible, and potential or latent."

⁴ "Theory of Heat," p. 91, 1871.

⁵ "Matter and Motion," p. 81, 1876.

⁶ "Dynamics," p. 185.

⁷ At least it never occurs in his "Conserv. of Energy," 1874, though frequently in "Elem. Physics," 1870.

⁸ "Nat. Phil.," p. 78, edition of 1870.

⁹ "Energy," p. 64. ¹⁰ "Elem. Physics," pp. 104-106. But see p. 360.

¹¹ "Conserv. of Energy," p. 25, and elsewhere.

¹² "Unseen Univ." (last edition), p. 109, twice.