Darwin's "claw", not "paw"!

SIR—On 29 January 1697, Isaac Newton received from Johann Bernouilli two challenge problems designed to humiliate him, and to demonstrate the superiority of Leibnitz's approach to the calculus[1]. Newton received the two problems, in particular the famous problem of the Brachystrochrone — the curve of quickest descent between two arbitrary points — at 4 P.M. after a hard day at the Tower of London where, as Warden of the Mint, he had for 18 months been supervising the great recoinage. Newton evidently saw the problems as a direct challenge to his prowess as a mathematician and his claim to independent, if not prior, discovery of the calculus; as they were in fact intended, for Bernouilli had strongly implied elsewhere that Newton had borrowed significantly from Leibnitz.

Newton did not go to bed until he had solved the problems, at 4 in the morning. His solutions were despatched, anonymously, the next day. On receiving them, Bernouilli made his famous reputed remark, passed down to generations of British schoolboys as "I recognize the lion by his paw!".

Wishing recently to refresh my memory on this for a college core course lecture, I discovered to my astonishment that Bernouilli's Latin has been badly translated. When corrected, a completely different image emerges than that conventionally implied.

Westfall[1], describing Bernouilli's response, reports his remark differently: "Disabused on Newton's skill in mathematics, Bernouilli recognized the author in the authority the paper displayed — 'as the lion is recognized from his print', in his classic phrase.[108]" Footnote 108 reads: "In Latin, of course: 'tanquam ex ungue leonem'. It is indicative of Newton's pride in his solution that he believed l'Hôpital did not succeed without help."

While paws can indeed leave prints, they are obviously not the same word, so the question naturally arises whether Westfall's translation, "print", is to be preferred to the time-honoured "paw". A hint that Westfall's translation is suspect is already contained in the fact that he has implicitly changed the voice in translation as "leonem" is in the accusative.

The English language has served to confuse the meaning to be attributed to "ungue", in words ultimately derived from that root. For *Webster's Dictionary* tells us that, while the unguiculata are mammals possessing nails or claws, the ungulata are hoofed mammals as distinct from the preceding; yet, in heraldry, unguled means having hoofs *or* claws of a heraldic tincture different from that of the body.

It is however clear that lions do not have hoofs; and the straightforward meaning of the word unguis (ungue being the ablative) is "claw or nail", as confirmed by many Latin dictionaries. My colleague Professor M.K. Gamel informs me that the text would require pede (from "pes") had "paw" been intended, while Westfall's "print" would require "vestigio" (from "vestigium").

Thus we see that Bernouilli did not 'recognize the lion by his *paw*' but rather by his *claw*. The problem, designed to taunt the old British lion in his den at the Mint, where he had been thought to be out of action for some time, had been raked over by Newton's claws and tossed back, imperiously and disdainfully. This seems much more in keeping with the kind of surprised reaction Bernouilli must have had (considering the intent behind the problem), than the almost unbelievably noble sentiments implied by the long-transmitted translation.

That would be the end of the matter but for a rather telling use of the word unguem in Lewis and Short's *Latin Dictionary*[2]. Unguem appears in many proverbial phrases, several involving references to fine work. However, under this heading they also include "Cum medium ostenderet unguem, i.e. *showed utmost derision, the greatest contempt* (because the middle finger was regarded as indecent)". Could it be that, given the way the problem was almost contemptuously tossed back to him, Bernouilli felt, as expressed in the modern American idiom, "My God, the old lion has given me the finger!" (tanquam)? This interpretation suggests that, just as much of Shakespeare's earthy and bawdy language was once watered down for later consumption by youthful audiences, so some of the visceral feelings with which these great mathematicians sometimes confronted one another have been sanitized for posterity.

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An ethical dilemma

SIR—You recently published a letter[1] in which I argued that progress in AIDS research is being delayed because the present system of funding is inhibiting collaboration between researchers. I reported that after I had responded positively to requests for samples of my cDNA recombinants from various US laboratories engaged in AIDS-related research, my research grant applications were rejected by three major funding organizations (US and Canadian). Specifically, a Canadian organization gave as a major reason for refusing funding the fact that I had shared my recombinants.

I now have the official summary statement from the National Institute of Health (NIH), giving reasons why that organization rejected my application. One of the criteria used to assess applications from foreign laboratories is whether there is anything unique about the laboratory that could not be duplicated in the United States. The summary answers this by stating: "The special opportunities that exist in Dr Forsdyke's laboratory may be those of his identification and possession of unique cDNA clones; however, these clones are apparently now available to the investigators in the United States".

The lesson from this is very clear. If foreign investigators intend to submit grant applications to the NIH, they should not respond to requests from US laboratories for unique research materials.

But does the left hand know what the right is doing? NIH have recently reissued their 1984 policy statement on the "Distribution of Newly Developed Materials", which says: "Restricted availability of these materials can impede the advancement of basic research and the delivery of medical care to the nation's sick".

The present system of research funding appears to be based on the premise that aggressive competition between researchers advances medical progress optimally. This is manifestly wrong[2]. Suggestions for reform that would decrease competition and enhance collaboration between researchers[3-5] have been ignored. If research administrators will not put their own house in order, then such order should be legislated.

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3. Osmond, D.H. *J. Neurobiol* **14**, 95–112 (1983).
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Wrong bird

SIR—The wagtail depicted feeding a young cuckoo (*Nature* **331**, 19; 1988) may be considered unfortunate enough to be lumbered with this unwholesome 'offspring'. To further mislabel this grey wagtail (*Motacilla cinerea*) as a yellow could cause a serious identity crisis. The cuckoo, admittedly, does not look too bothered about the confusion.

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