thus occur in pairs, which is not a fact. This theory of spiral nebulæ is therefore directly contradicted by the most obvious phenomena of the heavens.

4. In the same number of the *Astrophysical Journal* it is announced that Saturn's ninth satellite, *Phœbe,* can not now escape from the control of the planet, so, "conversely, it has never come under Saturn's control from a remote distance." Of course this interpretation of the use of Jacobi's integral is wholly unjustifiable. Under the secular action of a resisting medium such a capture is perfectly possible, and it has actually taken place, not only for the retrograde satellites, but for all of them.

5. The planets and satellites could have been formed in but one or more of the three following possible ways, and in no others whatsoever: (*a*) Detached from their central masses by acceleration of rotation, as imagined by Laplace. (*b*) Captured from the outer parts of a nebula devoid of hydrostatic pressure and thus added on from without, as announced by the writer in *A. N.,* 4308. (*c*) Formed right where they now revolve by the agglomeration of cosmical dust.

Now the possibility (*a*) is forever excluded by what I have called Babinet's criterion (*A. N.,* 4308); while (*c*) will not be seriously considered by any one of ordinary understanding. This leaves (*b*) as the only possible mode of formation.

6. Not content, however, with proving by the logical process of exclusion that the planets and satellites were captured, I have since developed a rigorous proof, based on a correct interpretation of Jacobi's integral under the physical conditions existing in actual nature, of just how the capture of satellites comes about. A series of papers on this subject is just now appearing in the *Astronomische Nachrichten,* No. 4341–42, 4343, etc.

7. It is thus proved that the planets were captured by the sun and have gradually neared that central mass under the secular action of a resisting medium. This cause and no other has given the orbits their round form. It is proved also that the satellites likewise were captured by their several planets. If Moulton and Chamberlin have reached any but negative results, I have not yet seen them, and I shall look forward with interest to their publication. Since naturally a thing has occurred in but one way, it is evident that there are in general an infinite number of ways in which *it did not occur.* Such negative results may be as numerous as the sands of the sea, or as the points in space; but they will no more nourish our minds than empty space will feed our bodies. I submit that protest against such vacant results is certainly justifiable.

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"um" and "ium" endings

The Editor of Science: A subject which has interested me for some time is the existing lack of uniformity in the ending of the names of some chemical elements. In view of the fact that nomenclature is under discussion at the present time, possibly some remarks on the above subject may not seem presumptuous.

Some of my spare moments have been employed in trying to find if there were any conclusive reasons why five of the elements should have the endings they possess rather than endings in conformity with the majority of their brothers in the list of elements. The five I refer to are glucinum, lanthanum, molybdenum, platinum and tantalum.

Using Roscoe and Schorlemmer as authority, the number of "um" and "ium" elements is forty-seven. Five of these (the above mentioned) have "i" absent in the ending. Of the latter the Oxford English Dictionary and the Century Dictionary are authorities for spelling glucinum, lanthanum, tantalum both with and without the "i." Therefore there remain but two of the elements which as far as I have been able to discover are never spelled with the "ium" ending. In fact the leading text-books on chemistry and writers on scientific subjects spell all five elements with the "um" ending. So we are justified in believing it to be common usage to leave out the "i" in the spelling of the five elements under consideration.

Yet on the other hand there seems no really good reason (other than common practise, which is recognizedly potent) for discarding the "i." I have somewhat hurriedly scanned the works of Skeat, on etymology, in search of some authority, besides that of the elements' discoverers, for the prevailing spelling. I have been unsuccessful. Some time ago I was told by an eminent philologist that the formation of modern Latin words does not always follow fixed rules. Also, an eminent Boston chemist informed me that outside of the dictionaries he knew of no authority for the present spelling of the elements under discussion. It is evident that in the beginning the authoritative spelling of the name of any element is due to its discoverer in almost all cases. For when we read of the discovery of an element and learn that its discoverer gave it a name in conformity with the names of existing elements (provided it is an "ium" element) we observe that there is a tendency toward the species of uniformity which is the subject of this note.

If we take all the "ium" and "um" elements and consider them from the standpoint of—what I may call—syllabic uniformity, we see that there are twenty-six elements of three syllables; seventeen of four; three of five, and one of six. Platinum falls into the first class, and molybdenum into the second, which two classes compose the great majority. If we add "i" to the endings of these elements, then platinum still remains in the majority class and molybdenum passes into the minority. Can it be possible that the naming of the elements with a design for syllabic uniformity had a place in the minds of the various discoverers? It would seem fair to assume that such was not the case. Therefore a possible argument in favor of the present spelling of the two above mentioned elements is eliminated.

On the other hand, the argument in favor of what may be called terminal uniformity has more to recommend it than syllabic uniformity. Aside from the very desirable property of terminal uniformity itself, the sound of the pronounced word ending in "ium" is more pleasing to the ear, and its appearance is more pleasing to the eye, than is the word with the "um" ending, which gives the sensation of dullness, and is dumpy. While by simply adding "i" the pronunciation of the word "platinium" for instance, becomes at once musical. Any one uttering the word first with one ending and then with the other will appreciate the last remark.

In conclusion, one may say that although the "um" elements have back of them the power of common usage (as did aluminum some years ago—now we almost invariably write aluminium) yet there seems to exist an unnecessary lack of harmony in the spelling of some elements. However, this discord is not at all extensive, for according to the highest authorities the only elements at present irregular are platinum and molybdenum. It is only a few years ago that it was very common to write "aluminum," now it is rarely used by scientific writers. This change has been brought about by their adoption of the more approved spelling. Why may not the contemporary scientific writers go a step farther, and whenever they find it necessary to use the names of these elements, write them glucinium, lanthanium (lantanium), molybdenium, platinium and tantalium? Should the many influential scientific men find the suggestion here offered pleasing to them and furthermore worthy of adoption, then, in a short time, there would be introduced into the spelling of the names of elements a greater uniformity than at present exists. G. B. O.

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SCIENTIFIC BOOKS

Mendel's Principles of Heredity. By W. BATESON. 396 pp., 6 colored plates, 3 portraits of Mendel and 35 figures in the text. Cambridge (England) University Press; also New York, G. P. Putnam's Sons. 1909.

This is not a new edition of the book published under the same title in 1902 by the same author and publisher, but for some time now out of print. That little book served a useful purpose in directing the attention of