of men, and it is possible that even in daylight the stars may be an aid. Also, their sense of terrain is probably better than that of all save the most experienced humans. There seems to be little reason to throw overboard the simple elements of navigation which are already known.

It is well to consider the opinions of experienced biologists and physiologists and to reflect on how much is taken for granted which has not been confirmed by facts. A recent paper by Griffin and Hock (*Science*, April 2, pp. 347–349) gives results of observations from an airplane on the flight of gannets released from a point over 200 miles inland from their nests near Gaspé, P. Q., and over 100 miles from the nearest salt water. The observed flight paths spread out from the release point in what appeared to be random directions, and the results suggest that the gannets were exploring until they could pick up a familiar coastline on the west side of the Gulf of St. Lawrence. When it comes to migratory flights at the appointed season, there comes to mind the fall flight of woodcocks, which crowd into the western part of Nova Scotia before taking off over the Bay of Fundy to New England on a flight of some 200 miles. Still more remarkable are the migrations of hummingbirds, possibly over the same route. In both cases nothing is apparently known as to the directness of their flight over a long sea distance. More facts are obviously needed. From Dr. Yeagley's curves showing the geomagnetic and geographical latitudes over the North American Continent, it is tempting to assume that the well-known migratory paths of geese, brant, and ducks in the East and in the West follow lines along which the two latitudes cut at the greatest angle. Here again an alternative and simpler explanation lies in topographical recognition. If scientists are to avoid taking refuge in the term "instinct" as a way of saying that they do not know, it is clear that more experimental evidence is needed.

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Microbiological Assay or Bacterimetry?

Within the last few years there has originated a new branch of analytical chemistry generally referred to as "microbiological assay" or "microbioassay." With regard to convenience and descriptiveness, these terms seem poorly suited. Through long usage the parent term "biological assay" has been linked to the concepts of drug and potency and tends toward a semiquantitative connotation. According to Hackh (*Chemical dictionary*, 1944), biological assay is "the determination of the active principles of a drug by determining the smallest quantity which will produce certain symptoms in animals," and a similar definition is found in the 1946 edition of Webster's dictionary. This definition, modified in accordance with the prefix micro-, seems hardly adequate to cover a system of methods which, in principle, can determine any substance affecting the growth of a microorganism as a nutrient or otherwise, and which already today, at an early developmental stage, does so in selected cases with an accuracy superior to that of nonbiological methods. In writing and speaking, the current terms are cumbersome, because of length and lack of flexibility in the formation of adjectives or adverbs. It would seem from more than one point of view that a simpler term, and one that is not encumbered by pre-empted connotations, would fill a need. Perhaps even a family of terms, to cover both the general and the specific aspects of the new field, would be useful.

Established branches of analytical chemistry are gravimetry, colorimetry, acidimetry, oxidimetry, iodimetry, etc. Many other analogous terms have gained usage, e.g. calorimetry, chlorimetry, fluorimetry, polarimetry, turbidimetry, or amperometry, conductometry, dilatometry, or manometry. The choice between the -imetry and -ometry endings seems to be fluid in many cases (iodimetry and iodometry, saccharimetry and saccharometry, etc.), while in other instances it seems to be based on etymology (conductometry, dilatometry, spectrometry) or perhaps euphony. However, a tendency, as yet uncodified, seems to exist to use the two endings for purposes of distinction, *i.e.* an "-ometer" seems to be preferentially an instrument for the determination of a property or substance, the corresponding "-ometry" being devoted to these measurements in their own right, while an "-imeter" and "-imetry" deal with a property merely as a means to a general analytical end. Perhaps "saccharometry" and "colorimetry" serve well to exemplify this distinction. It may serve the ends of clarity and consistency to follow the existing trend, in giving preference to the "-imeter" and "-imetry" endings in connection with the analytical *tool*. As to possible conflicting claims of etymology and systematics, the latter have often before been given preference in matters of chemical terminology.

The writer would like to propose the term "bacterimetry," analogous to gravimetry, colorimetry, etc., to replace "bacterial microbiological assay." Most of the microbiological analytical methods now in use employ bacteria. If, in the future, methods based on true fungi or protozoa should be broadly developed, "fungimetry" and "protozoimetry" may be added to the practical biochemical dictionary. As a more comprehensive term for the new branch of analytical chemistry, "bionimetry" or "biotimetry" may be considered, the writer tending to prefer the former because of its placing the accent on the means of analysis (bions) rather than on its objects (biotics). In line with the suggested considerations, "isotopimetry" could serve to label another newcomer in analytical chemistry, viz., the isotope dilution method. Growth in science demands a growing vocabulary.

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