DISCUSSION

RECENT GERMAN MATHEMATICS

EVER since the times of the ancient Babylonians, mathematicians have been creating a special language for their subject, and hence mathematics has made considerable progress towards the creation of a universal language for the literature in this field of knowledge. As an illustration we may refer to our common number symbols and to the wide-spread use of the letter x for an unknown quantity. These elements of a universal language have made it easier for the student of this subject to become acquainted with new discoveries published in other languages than his own, and have been appreciated more and more during recent decades in view of the fact that effective mathematical investigations are increasingly wide-spread among peoples employing different languages. The history of this subject presents an almost uninterrupted series of advances and in recent years international mathematical congresses have tended towards increasingly cordial relations between the mathematical investigators of various countries.

In view of these facts it is especially noteworthy that serious efforts have been made recently in one of the leading mathematical countries of the world to replace this tendency towards greater internationalism in mathematics by a strongly biased nationalism, and that for the first time in the history of mathematics a periodical has been started whose explicit object is the fostering of this nationalism. The title of this periodical is *Deutsche Mathematik,* and the first number is dated January, 1936. On the first page thereof there appears the significant statement, "Wer ein Volk zum Stolz erziehen will, muss ihm auch sichtbaren Anlass zum Stolz geben." It is too early to express an opinion as regards the effectiveness of this periodical, but its appearance represents a unique fact up to the present time in the long history of the science of mathematics.

It is interesting to note that on page 10 of this periodical Isaac Newton is called a Germanic investigator, and that on page 3 it is explicitly stated that other nations have an equal right to exhibit their national mathematical characteristics. The earlier efforts to exhibit national mathematical characteristics do not seem to have been very successful, since great differences appear in works of men of the same nation. Some of the earlier historical writers emphasized the arithmetical attainments of the ancient Babylonians and the geometrical proclivities of the ancient Egyptians, but more recent discoveries exhibit the fact that in both of these countries the arithmetic and the geometric work supplemented each other. It has also been emphasized in recent times that many earlier writers on the history of Greek mathematics emphasized unduly the geometric form in which many Greeks expressed their results, since the Greeks had a kind of geometric algebra and contributed also towards the development of arithmetic and algebra. The geometric form was often only superficial.

For about sixty-five years the Germans have published an international mathematical review entitled *Jahrbuch über die Fortschritte der Mathematik,* which has been sufficiently fair also in its reviews of the work done in other countries to be favorably regarded throughout the mathematical world. This review is being continued and improved so that the periodical to which we referred above represents only one side of the German mathematical activity of the present day. This periodical aims to include a biographical section giving a bibliography of German mathematics, and outlining all important German mathematical publications published after January 1, 1936. Its spirit seems to be in harmony with the efforts to replace international technical scientific terms by purely German ones. Lists of such proposed changes appeared in recent numbers of an elementary periodical entitled *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht aller Schulgattungen.*

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FOLKLORE AND SCIENCE

WHILE the person who praises every century but this and every country but his own is apt to be placed on the "list" that W. S. Gilbert refers to in "The Mikado," nevertheless it is only proper that we should appreciate the past, give credit where it is due and not scorn the base degrees by which we did ascend. May I be permitted, therefore, to draw attention to some instances where earlier knowledge than that mentioned by certain authors should be recalled?

In SCIENCE for October 11, 1935 (82: 350), Dr. C. M. McCay pointed out that in 1833 Boussingault suggested the addition of iodine to cooking salt, having found by his experiences in South America that goiter was prevalent where iodine was lacking. Dr. McCay concludes: "One can only speculate concerning the human suffering that might have been evaded if some eminent physician had noted this contribution of the French chemist at an early date." From this it might be thought that Boussingault was the discoverer of iodine therapy for goiter. The following may therefore be of interest:

Goiter was, of course, known in ancient times, and is mentioned by Pliny among others. The use of burnt sponge as a remedy was common from the latter part of the thirteenth century and was probably based on earlier folk lore. Courtois discovered iodine in 1812. In 1819 Dr. Coindret, a well-known physician

of Geneva, walked into LeRoyer's pharmacy there and asked J. B. A. Dumas (then 18 years of age) to determine for him whether sponge, especially burnt sponge, contains iodine. On receiving Dumas' report that iodine was present, "Dr. Coindret no longer hesitated to consider iodine as a specific against goiter."[1]

The *Scientific Monthly* for September, 1935 (pp. 263–5), has an article by Dr. Norman Tobias entitled "Making Malaria Work for the Doctor," in which reference is made to the work of Dr. J. Wagner-Jauregg, who received the Nobel prize in 1927 for his discovery that malarial infection may be used to combat certain nervous sequelae of syphilis. In this connection, I would draw attention to certain facts as stated in a chapter entitled "The Savage as Scientist," by Fulahn, in No. 11 of a series of books called "Tales from the Outposts," published by Blackwoods, Edinburgh.

Kinga, who was one of the most famous chiefs and rain-doctors in East Africa, refused to be moved from his kraal at Mandi on the Daua Plateau down to Sekenke in the Wembare Plains, as medicine-man Mgendu urged; and Mgendu came to ask advice of the writer, who was then administrative officer in charge of the Iramba tribe. [Kinga was suffering from general paralysis.]

Said Mgendu: "The *vidudu* of paralysis must fight with the *pilintu* of malaria so that the *pilintu* may be devoured: then must Kinga eat of the *nzizi chungu* (bitter roots), and he will be strengthened." . . . *Vidudu* are mysterious insect-like things; a *pilintu* is a strange unknown worm-like thing . . . that half-naked savage doctor was prescribing the most up-to-date medical treatment for paralysis based on the most recent discoveries of medical science. . . . Sekenke is one of the worst malarial districts in all Africa. . . .

Many tribes, not only the Masai and Nandi of Kenya, knew the cause of malaria. The Somalis knew, for a British traveller in their country was told by Somali tribesmen thirteen years before Ross's discovery, that the *kan'ad* or mosquito was a bad insect, biting a man and making his blood boil with fever. Chief Kitandu of the Iramba tribe knew four centuries ago, for his minstrels sang to the twang of the *lusembi*, a primitive calabash guitar, "*Ni aza kusengila pana nu imbu; nu imbu mbii masaka masenkila!*" (Do not build huts where mosquitoes live; for mosquitoes are evil, and make your blood hot!). And that song, with others full of savage wisdom, is to be heard to this day in the kraals of Tanganyika.

I wonder whether any reader of SCIENCE can say where the statement occurs that the early British explorers, Speke and Burton, commented on what seemed to them a silly superstition among the natives of the Congo, that the African "sleeping-sickness" was associated with the coming of the tsetse fly. I remember having read of this as a boy, but can not recall where.

[1] A. W. von Hofmann, *Berichte*, 1884, 17, 637, referate.

In an address on "Biochemistry and the Manufacture of Fine Chemicals,"[2] Dr. F. H. Carr said that real scientific medicine, in so far as concerns biochemical aspects, began forty-one years ago, "when the use of thyroid gland in the treatment of myxoedema was discovered." In a paper on "The Contributions of China to the Science and Art of Medicine,"[3] Dr. Edward H. Hume, then of the College of Medicine (Yale-in-China) at Changsha, China, stated (p. 349): "Organotherapy is described as early as the 6th century, A.D., when sheep's thyroids were used for cretinism. The practice is familiar to housewives throughout the land."

In a preceding paragraph, Dr. Hume said: "Inoculation against small-pox was practised early, records being available of the transfer of virus from person to person in the 7th century, though the routine use of the method was not common until the 11th. A century before Jenner, the standard materia medica mentions the use of cow fleas for the prevention of small-pox." (Note that insect transmission is involved).

Professor J. J. Abel's isolation of bufagin and an adrenaline-like substance from the skins of toads, and our wide use of ephedrine from Ma Huang, are further instances of the fact that science very often explains or rediscovers practices long ago established.

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THE MEANING OF "MASKING"

THOMPSON[1] has recently objected to Davis and Derbyshire's[2] use of the term "masking" to designate the phenomenon that occurs when one sound obliterates another, stating that "to call this 'masking' introduces confusion into the literature, 'masking' having already been preempted to designate a central phenomenon, postulated by Robert[3] and demonstrated (we think) by us." Thompson's experiment shows that electrical excitation of the radial nerve masks the sensation resulting from deep pressure applied to the ulnar nerve and that the mechanism of this masking is in the central nervous system.

This contention of Thompson's can not be permitted to pass unchallenged, since the term "masking" had already been in general use to designate the auditory effect for some years before it was preempted by him. Wegel and Lane[4] used the term in reporting their study on the dynamics of the ear in 1924, and defined it on the phenomenological level.

Minton,[5] in discussing an auditory experiment re-

[2] *Chemistry and Industry*, 53: 123, 1934.
[3] SCIENCE, April 18, 1924.
[1] I. M. Thompson, SCIENCE, 82: 221, 1935.
[2] H. Davis and A. J. Derbyshire, *Am. Jour. Physiol.*, 113: 34, 1935.
[3] Robert, *L'Union Médicale*, 12: 487, 1858.
[4] R. L. Wegel and C. E. Lane, *Phys. Rev.*, 23: 272, 1924.
[5] J. P. Minton, *Phys. Rev.*, 22: 506, 1923.