Five grams of riboflavin, suspended in 10 ml water, was cooled to 0° C in an ice-salt mixture, and 50 ml concentrated sulfuric acid was added dropwise with stirring at such a rate that the temperature remained between −5° and +10° C. After stirring for 30 min, the solution was poured on 500 g ice and brought to pH 2 with solid barium hydroxide. Sodium bicarbonate was added to pH 7 and the solution was concentrated *in vacuo* to 50 ml. A sodium salt of the riboflavin ester was precipitated by addition of 500 ml anhydrous ethanol and 200 ml acetone. A yellow, very water-soluble powder was obtained.

A solution of this product containing the equivalent of 6 mg riboflavin per milliliter had a microbiological activity of 0.25 mg riboflavin per mill liter, an activity of about 4%. This compares with an activity of 1.5% for Stone's product. Under the conditions of our experiment, it is probable that mainly the primary hydroxyl group of riboflavin has been esterified (Swern, D., *et al. Oil and Soap,* 1943, **20**, 224). As in the case of tri- and tetrasuccinates (Furter, M. F., Haas, G. T., and Rubin, S. H. *J. biol. Chem.,* 1945, **160**, 295), the sulfate is biologically active only after previous hydrolysis by autoclaving. In contrast to this behavior, our methylol derivatives are active biologically without previous hydrolysis, and autoclaving does not increase their activity.

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Erratum

In our paper "Pantothenic Acid in Copper Deficiency in Rats" (*Science,* 1950, **111**, 472), in the last sentence of the second paragraph on page 473, the daily administered dose mentioned should be "0.1 μg of copper" and not "1.1 μg" as printed.

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Foreign Publications in the Field of Organic Chemistry

I have read with great interest the article by F. S. Boig on domestic and foreign periodicals in the field of organic chemistry (*Science,* 1949, **110**, 107). Boig tabulated (see Table 2, page 108) the number of organic chemical publications in various countries in the years 1937 and 1947, measuring the organic chemical research in these countries by the volume of organic chemical publications and drawing certain conclusions from the results.

One arrives at even more interesting conclusions if one does not simply compare on this basis such very large countries as the United States and Russia with such very small countries as Holland, Finland, Sweden, and Switzerland, but instead computes the ratio of the number of inhabitants to the number of organic chemical papers in these countries.

TABLE 1

	Country*	Year	No. of inhabitants for each organic chemical publication	Rank
I.	Switzerland	1937 1947	42,000 22,000	1
II.	Germany	1937	112,000	2
	Finland	1947	125,000	3
	U.S.A.	1947	135,000	4
	British Isles	1947	139,000	5
	Holland	1947	150,000	6
	France	1947	168,000	7
	Sweden	1947	179,000	8
III.	Italy	1937	275,000	9
	Austria	1937	350,000	10
	Japan	1937	390,000	11
	U.S.S.R.	1937	440,000	12

* Category I: less than 50,000 inhabitants per publication.
" II: 100,000–200,000 " " "
" III: 300,000–500,000 " " "

Thus the countries are grouped here in Table 1 in a somewhat different manner than in Boig's table. Switzerland now achieves a unique position, far ahead of the other categories.

For several of the countries I have chosen the number of papers from the year 1937 instead of 1947, since it is certainly not logical to take for comparison the strongly war-exhausted countries like Germany and others with the greatly reduced production of the year 1947. It is perhaps also of interest to point out further that, for the time of the organic chemical *Hochkonjunktur* in Germany about 1910, this country would fall in category I.

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Use of Dried Hemoglobin in the Assay of Pepsin

A recent communication in *Science* (Orringer, D., Lauber, F. U., and Hollander, F. *Science,* 1950, **111**, 88) demonstrates the feasibility of substituting lyophilized bovine hemoglobin powder (Armour) for hemoglobin prepared from fresh blood in the assay of pepsin and trypsin by the well-known method of Anson and Mirsky (Anson, M. L., and Mirsky, A. E. *J. gen. Physiol.,* 1932, **16**, 59). The author many years ago demonstrated that dried hemoglobin "scales," as available commercially, could be used in a very simple assay of pepsin by a very slight modification of the original method which improved its accuracy (Steinhardt, J. *Kg. Danske Videnskab. Selskab., Math-fys. Medd.,* 1937, **14**, No. 11, 1; *J. biol. Chem.,* 1939, **129**, 135).

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