summer of 1923, the object being to determine whether or not any radioactive substance occurred in food and if so its significance. Owing to unforeseen circumstances, the experimental work could not be begun at that time. In June of the present year, however, a beginning was made, the food chosen being ripe tomatoes. These were washed in distilled water and then pulped by passing the fruit through a meat grinder of household size. The pulped fruit and juice, 900 cc altogether, was tested for radioactive substance in accordance with the procedure followed at the Bureau of Standards of the United States Department of Commerce, the determinations being made by W. H. Wadleigh, of that bureau. The glass flask containing the pulp and all the other equipment used was taken from stock which had not been exposed to radioactivity. The experimental conditions were such as to prevent the concentration of the pulped fruit and juice during the experiment.

The results obtained are reported in the following table in comparison with Washington city water which was used as a check, its radioactivity being known:

OCCURRENCE OF RADIOACTIVE SUBSTANCES IN RIPE TOMATOES

		Milimicrograms per liter	
1924	Washington city water		
June 11	for comparison	1.00	
June 17	Ripe tomato pulp and juice	3.28	
June 24	do	4.20	
July 2	do	0.98	result considered unreliable
July 10	do	1.45	
July 15	do	1.14	

After the first determination for radioactivity, the tomatoes were set aside and again tested at the end of a week. This procedure was continued, five tests in all being made with the original material.

The radioactivity noted, though relatively small, was pronounced, being more than three times as great as that of city water. It is also apparent that the amount diminished as time passed.

The topics which suggest themselves for consideration in continuing the work are numerous. One of primary importance is to determine whether or not the radio-active substance is carried into the fruit by ground water taken up by the growing plant or whether it had another origin. Others have to do with the relationship, if any, between such phenomena and nutrition problems now receiving attention.

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THE METRIC SYSTEM

IN SCIENCE for September 5 there is a letter on the metric system which gives an incorrect impression as to the position of the engineering profession on this question.

The engineer necessarily uses the unit of measure that is the legal standard in the country where he is working, but it does not make any difference whether the unit used is a foot or a meter. The essential thing is that it shall be a *decimal* system, and the engineers of the world are now using a decimal system exclusively for all measurements and calculations. The unit of measure in this country is the foot, and all measurements are made in feet and decimal parts of a foot. The surveyor's chain or steel tape is 100 feet long, graduated in feet and tenths and hundredths. The leveling rod is graduated in tenths and hundredths with a vernier reading in thousandths of a foot. All measurements of every kind are made in these decimal divisions of the foot and all calculations for steel-work, track-work and earth-work, for it would be impossible to apply trigonometry to measurements expressed in feet and inches.

After the calculations are completed the engineer has to convert his decimal fractions into inches and sixteenths for the steel worker and into cubic yards for the grading contractor. Of course all mathematical handbooks for engineers contain tables for converting decimal parts of a foot into inches and sixty fourths, and all railway engineers learn the "twenty-seven times" multiplication table so that they can divide by twenty-seven as easily as most people can divide by twelve, but if manufacturers would use a decimal system also it would save the engineer a great deal of unnecessary trouble and many mistakes, for every translation from one system to the other introduces one more possibility of error.

There is no doubt that a duodecimal system would be more convenient sometimes if our system of numbers were also duodecimal, but the important thing is that our system of measures should agree with our system of numbers.

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THE letter by Mr. John Satterly regarding the use of metric weights and measures which appeared in the September 5th issue of SCIENCE is of special interest. From visits to Canada, east and west, I can state that his attitude is very unusual. The work of Dr. J. C. McLennan, of Toronto University, is important in this connection. He writes:

In the early part of 1906, at the request of the Honorable L. B. Brodeur, minister of inland revenue of the Dominion Government of Canada, I agreed to deliver

a number of lectures on the use of metric weights and measures.

Through the cooperation of the department mentioned, a schedule of the lectures was arranged and it was made known in various centers throughout Canada that my services in connection with the metric campaign would be available on certain dates for the various local societies interested in this subject.

In carrying out this rather strenuous schedule, lectures were given in Montreal, Ottawa, Toronto, Winnipeg, Regina, Vancouver and in over thirty other Canadian cities. In some places the idea of the simple metric system corresponding to decimal currency was then new to many people. Our meetings were well attended; in some cases as many as six hundred people being present. At the close of each address all present were invited to take part in the discussion of the subject. The pros and cons were propounded with the utmost frankness and in some cases with considerable vigor. Never during this lecture tour or at any other time have I heard, in so far as I can judge, a really valid argument against the general use of metric weights and measures. On the other hand the many valid reasons for their use increase as time passes.

It is highly desirable that this preliminary educational work, conducted entirely at the expense of our government, should be effectively followed up. It is chiefly for the purpose of encouraging others to do their part in securing for Canada the advantages of the use of the metric system that on April 28, 1922, I accepted the chairmanship of the Toronto Section of the Metric Association. At that time Mr. W. P. Dobson, of the Hydro-Electric Power Commission, was elected secretary, and Mr. L. Burpee, of the Canadian General Electric Company, Ltd., was elected treasurer. Our section is composed of volunteer workers who desire to see the metric campaign progress as it should. We believe that everybody can do something to help. We hope that a great many people will let Mr. Dobson know that they will help the metric movement in their own industry or line of work.

The Metric Association has a local section and a good group of members in Toronto. In the French-speaking portions of Canada the public opinion in favor of the metric system is almost unanimous.

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QUOTATIONS

SCIENTIFIC RESEARCH

THE patient technique of laboratory research does not seek the limelight of sensational discovery. For this reason the public mind does not grasp completely the significance of the work carried on by hundreds of students, up and down the country, whose investigations are bringing greater worth and purpose to the conditions of national life. The Report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1923–24 serves to remind us of the ever-increasing dependence of health, commerce and industry on the adequate opportunities afforded for scientific inquiry and accomplishment. The problem is, however, less a financial than an educational one. Money for research is there—over half a million was spent during 1923–24—but often the speed at which work can be carried out is limited—as in the case of the Fuel Research Board—"by the number of competent and trained workers available." It is to the university that we must look to give us the trained student, patient though adventurous, imaginative though cautious, cooperating without self-seeking to increase the sum of human knowledge. We have to ensure, also, that no alert and creative mind is barred from that training through lack of means to rise through the secondary school to the university. There is still too much reason to fear that reserves of ability are untapped owing to the failure of certain local education authorities to make careful provision for the poorer scholars. Last year 291 grants were made by the council to research workers and students in training, of which 244 were allowances enabling them to take advantage of facilities for training in research afforded by various universities. The grants made during the academic year 1923–24 amounted to £41,000 as compared with £49,000 during 1922–23. The transfer to university and college authorities of the responsibility for recommending rates of allowance in accordance with the needs of individual students has led to more generous help from local funds and greater local interest in these activities. Nevertheless, the powers of local authorities under section 74 of the Education Act, 1921, are not so fully utilized as they might be.

There are, however, other considerations beyond the financial which need to be taken into account in the training of students for research. Sir William McCormick, the administrative chairman of the Advisory Council, warns against too easy specialization. "Experience has taught us," he says, "to attach great importance to the student's school history, and our conviction grows that in the last two years of school life science must not be allowed to absorb the whole of the students' attention, to the exclusion of the humanities and to the detriment of his general education"; and Sir William urges further that "at a later stage, when the student has graduated and is serving his apprenticeship to research, we should like to see him encouraged to devote attention as part of his training to the historical and cultural aspects of the subject in which he is specializing." Inability to interpret contemporary social phenomena by the light of the past has been one of the causes which have often prevented expansion of method and the acceptance of