

The Meter Greeters

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The United States and Canada became meter greeters away back in the 1800's. The U.S. Congress passed an act in 1866 legalizing the metric system for weights and measures use, and metric units were on the law books of the Dominion of Canada in 1875. The U.S. A. was a signatory to the Treaty of the Meter¹ signed in Paris, France, in 1875, establishing the metric system as an international measurement system, but Canada did not become a signatory nation until 1907. In science, in pharmacology, and increasingly in industry, greater use is being made of the International System of Units (SI). However, official sanction to voluntarily convert from the English, or customary, system of weights and measures didn't become a reality in Canada until Parliament, in 1970, unanimously endorsed the White Paper on Metric Conversion in Canada and established the Metric Commission in Ottawa, Ontario, a year later. And it wasn't until December 23, 1975, when President Gerald Ford signed Bill S. 100 during his Christmas retreat in Vail, Colorado, that American intentions to adopt the metric system were confirmed.

In this article, I shall attempt to report on what we've done about "meter greeting" in our publications—those of the federal Department of Agriculture, that is—and I've included a mix of metric comments from some of our provincial Department of Agriculture counterparts, several of whom are AAACE members. I hope you will detect a taste of progress as we pursue our metric adventure, and, as this epistle unfurls, may it give you food for thought. You get some 'bonus' reading too, when you come to "*Along the Metric Trail*".

¹ The Convention of the Meter consists of the General Conference on Weights and Measures (CGPM) for governments and member states, the International Committee for Weights and Measures (CIPM) for specialized international bodies, and the International Bureau of Weights and Measures (BIPM) for national laboratories. There are also a number of consultative committees. The General Conference on Weights and Measures was established to conceive, develop and maintain precise international standards of measure. In 1960, the CGPM adopted a metric system founded on six units. The worldwide abbreviation for the International System of Units thus created is SI.

We first started 'going metric' in our publications in January 1972, and progress has been gradual and steady. So far, we have converted 270 of our English-language and 250 of our French-language publications to metric. Our conversion timetable calls for three stages. During the first stage (January 1972 to December 1975), we have shown the English measurement followed by the metric equivalent in brackets, and have included a metric conversion table, too, which is usually located on the inside front or back cover. Our second stage became effective January 1976, wherein the metric measurement appears first followed by the English figure in brackets. The third stage is scheduled to start January 1978—in metric only . . . plus a conversion table.

At this writing, while we have converted to metric some 520 agricultural publications, over 275 titles still await the change. Our rule is, of course, that new or revised manuscripts get the metric treatment. Although we still have a host of publications requiring no revision or updating whatsoever which we continue to reprint unconverted, it will only be a matter of time and budget planning until the 'unconverted' are gradually absorbed into the metric system.

With the establishment of the Metric Commission in June 1971, we knew the time had come to start 'greeting the meter' in our publications. So, to prove that the Publications Section of Agriculture Canada's Information Division was ready for the occasion, I met with Mr. Stevenson M. Gossage, who had just become Chairman* of the Metric Commission. With me was fellow AAACE member, Dr. Maurice L'Arrivee, Head of our Editorial Services Unit, and Paris-born and metric-educated Guy Lempereur, our Senior French Editor. Guy had brought along his manuscript—"*The Metric System for Farmers*"—and we sought Mr. Gossage's opinion. He charmed us with his knowledge of metric and he was well acquainted with the British metric experience. He approved our manuscript, suggesting only a couple of changes. Despite translation and production delays, "*The Metric System for Farmers*" appeared in late 1972. Some AAACE members are familiar with this 10-panel, 2-color, cleverly illustrated folder that opens up one meter long. To date, we've printed over a quarter million copies, including a separate French edition. At the same time, several government and nongovernment agencies have purchased duplicate sets of printing negatives with permission to reproduce their own editions.

Provincial Counterparts Comment

In the course of writing this article, I contacted a few of my counterparts in the provincial Departments of Agriculture to learn how advanced they were in metric conversion in their publications.

* Retired December 1975; successor, Clare M. Bolger, former Assistant Deputy Minister, Department of Consumer and Corporate Affairs, Ottawa, Ontario, Canada.

AAACE member, Mrs. Garth Ketemer, Associate Director Publications, Information Branch, Ontario Ministry of Agriculture and Food, Toronto, told me that they were "trying to stay in step with the Metric Commission with what was happening nationally and, at the same time, keep in line with metric planning in the federal department of agriculture and in agribusiness". She explained that they were showing Celsius temperatures instead of Fahrenheit, and centimeters for rainfall and snowfall instead of inches, but continued to show (F) and (inches) in brackets. She noted that their 1976 'annual crop recommendation publications' for Fruit, Vegetable, and Field Crops, and the Guide to Chemical Weed Control would continue to show only English weights and measures and a metric conversion table (except for temperatures and precipitation) until conversion in these subject areas becomes official. "We will be introducing more metric into the annuals", she said, "as information about metric 'product registration' terminology becomes available for pest control products, fertilizers, feeds and seeds."

AAACE member, Roger Younker, Information Officer, Prince Edward Island Department of Agriculture and Forestry, Charlottetown, reported that, generally, they are following Agriculture Canada's metric changeover pattern in regular publications. However, he said that in their "1976 *Field Crop Record*", only metric weights and measures are used, but a condensed metric conversion table has been included as well.

Mrs. Phyllis Thomson, Publications Editor, Manitoba Department of Agriculture, Winnipeg, reported that their "1976 *Guide to Chemical Control*" shows metric followed by English in brackets. She added that their Annual Year Book of Agricultural Statistics shows one page of tables in English measures, with the facing page in metric. This, she observed, doubled the size of the publication, increased printing cost, and proofreading time, too.

AAACE member, Roger Fry, Director of Communications, Saskatchewan Department of Agriculture, Regina, told me that "beginning with the next crop year August 1, 1976, their grain-related publications will contain metric weights and measures followed by the English in brackets, and in 1977-78 will go to total metric with possibly a conversion table." As for their publications related to the livestock, farm machinery, and other industries, he said they plan, starting in 1977, to follow the dual system of metric and English until the industry conversion dates are set; at that time they will go totally metric and include a conversion table, the latter for possible a five-year period. Regarding the conversion table, he thought "it had only limited use and eventually it became a crutch . . . and crutches cripple people."

AAACE member Scott Reid, with Alberta Agriculture's Communications Branch, Edmonton, reported that they are showing English followed

by metric in brackets. But there are exceptions, he says, such as the "1976 *Guide to Farm Practice in Alberta*" which is totally metric, but includes a conversion table. Reid told me that he sensed an increasing preference for a one-stage changeover to metric, such as they have done in their "Farm *Welding*" publication.

Ron Sera, Head, Information Branch, British Columbia Department of Agriculture, Victoria, reported that they were advocating a 'soft conversion', that is, English and (metric) as at present, but to be followed later by metric and (English). He said that their "1976 *Production Guide*" would continue to be in English weights and measures, but with a metric conversion table included.

Jean Guy Bernier, metric coordinator for the Quebec Department of Agriculture, Quebec City, says that they are continuing to show English weights and measures followed by metric in brackets. He observed that many people outside the Province of Quebec relate its inhabitants to France and consequently take it for granted that Quebecers have always used metric. But such is not the case. However, some of their technical bulletins contain metric only but, generally, they are following a go slow or soft conversion policy. "Our schools," says Jean Guy Bernier, "are going 'all out' in teaching metric to the young generation, and, while Industry is getting ready for metric, there's an older generation that doesn't want to be hurried."

4-Phase Program

The years 1972, 1973, 1974 slipped by. In the meantime, the Metric Commission's 4-Phase program—investigation (1972-74), planning (1974-75), scheduling (1975-76), implementing (1975-80)—is in full swing. Eleven steering committees have been at work, each responsible for coordinating a group of economic sectors with related interests. For example, Steering Committee No. 6 covers Food and Agriculture. The steering committees have the task of consolidating a plan for their segments of the economy. The Metric Commission and its staff coordinate all sector plans and integrate them to form the national conversion plan. At the same time, the Metric Commission has established some 60 sector committees which report to the various steering committees. Each is responsible for a particular industry or for groups of related industries or interests. For example, the Food and Agriculture Steering Committee No. 6 has four sector committees as follows: Sector 6.1—agriculture, fishing and trapping; Sector 6.2—food; Sector 6.3—beverages; and Sector 6.4—tobacco products. The provinces, of course, were consulted by the Metric Commission on how they wished to implement conversion in their areas of jurisdiction, namely, education, construction and land registration. Thus, within the framework of Councils of Provincial Ministers, interprovincial meetings are held to share common problems and develop common approaches to metric conversion.

The Grains Industry Example

The Grains Industry is committed to the adoption of the metric system of measurement and, consequently, the purchasing, handling and selling of Canadian grains will be conducted in metric measurements beginning February 1, 1977. As a matter of fact, it lays claim to being the first industry to indicate, on a national basis, that it would convert to metric.

By now, our first promotional metric folder—“*The Metric System for Farmers*”—had proven very popular. Meanwhile, Guy Lempereur, our prolific French editor-writer, was assigned the task of preparing another manuscript to explain metric to the Grain Trade. Consequently, in April 1975, at the request of the Canada Grains Council, we devoted an issue of our bilingual *FARM LETTER* to “*Metric and the Grain Trade*”. Incidentally, *FARM LETTER*, which won an AAACE Blue Ribbon Award last year, has a directmail circulation of 350,000 copies. All farmers in Canada receive it, as does the agribusiness world and the media.

At this writing, I can further report that another edition of *FARM LETTER* has come off the press and its title reads: “*5 Days to Metric*”. Pleased with the earlier issue, the Canada Grains Council wanted a teaching-aid type of publication as a companion to the others. Guy Lempereur’s manuscript—“*5 Days to Metric*” (which we also translated from his original French)—was accepted. It is an enthusiastic treatise on learning metric, spiced with ‘pep talk’ exercises and tables; it reminds one of the multiplication and other tables that adorned the back covers of our school scribblers.

Metric Committee Responsibilities

The Canadian Grains Industry Metric Committee studied sector models provided by the federal Metric Commission to determine the major metric activity areas and responsibilities applicable to Grains.

These brought to light the responsibility of identifying the customary measurement units in use, and of developing a metric practice guide for publication; the responsibility of identifying measurement sensitive legislation; the responsibility of good employer/employee communication in the matter of investigating possible labor contract changes. Some other responsibilities—to list a few—include establishing general parameters for equipment conversion, ensuring that manufacturers are aware of the Grains Industry requirements, identifying areas of difficulty, conflict and delay, and attempting to resolve differences; in the area of business survey statistics, there would always be the responsibility to identify statistics to be changed, and there must be assistance available in establishing metric statistics techniques; and in the area of “producer/public awareness” assistance would be needed in developing information packages for distribution to producers through government departments of agriculture, associations and individual companies. It has been in the area of

“producer/public awareness” that our three metric promotional/educational publications have been meeting and will continue to meet a producer/public need.

Metric Units for Trade Purposes

The metric units which will be used for the purposes of trade in the Grains Industry have their foundation in the International System of Units, commonly called SI. This International System is built up from two fundamental kinds of units known as “Base Units” and “Derived Units” plus the systematic use of “Prefixes” to designate decimal multiples and sub-multiples of the base and derived units.

The rationalization of SI Base Units, SI Derived Units, Multiples of SI Units and Permitted Units resulted in the “metric practice units” which will be used in the purchasing, handling and selling of Canadian grains. Lengthy deliberation and strenuous debate over the course of a year went into the fabric of the metric practice units, and it has been observed that they can serve as a useful guide not only for Canadian use, but internationally as well.

The following metric practice units will be the base units used by the Canadian Grains Industry in their business transactions beginning February 1, 1977:

Physical Quantity	Metric Practice Unit	Symbol	See Note
Weight (mass)	kilogram	kg	(a)
Unit of Trade	tonne	t	(b)
Length	meter	m	(c)
Area	hectare	ha	(c)
Yield	kilograms per hectare	kg/ha	(d)
Quota	kilograms per hectare	kg/ha	(d)
Total Production	tonne	t	(d)
Licensed Capacity	tonne	t	(e)
Test Weight	kilograms per hectoliter	kg/hl	(e)
Volume	cubic meter	m ³	(f)

- (a) The weight of grain will be measured in tonnes to three decimal places, which is equivalent to measurement in kilograms.
- (b) Unit of trade will be the tonne and grain will be purchased, handled and sold in dollars and cents per tonne.
- (c) Area will be calculated in square meters and recorded in hectares. 10 000 square meters are equal to one hectare.
- (d) Yield and quota will be calculated in kilograms per hectare. These units will be used for record keeping statistical purposes and the administration of the Quota System. However, for a period of time following the introduction of metric measurement a dual system of bushels per acre and kilograms and/or tonnes per hectare will be published.

- (e) Elevator licensed capacity will be published in tonne equivalent of wheat at 75 kilograms per hectoliter. Therefore, the tonne capacity for any licensed facility will be 75% of its volume. The formula for determining capacity is:

$$t_c = 0.75V \quad \text{where } t_c = \text{licensed capacity in tonne equivalent of wheat.}$$

$$V = \text{volume in cubic meters (m}^3\text{).}$$

To determine the tonne capacity for other grains simply apply the test weight relationship. The nominal test weight for wheat is 75 kilograms per hectoliter.

Representative test weight values for other grains are:

Oats	47 kg/hl	Sunflower Seed	31 kg/hl
Barley	62 kg/hl	Buckwheat	61 kg/hl
Rapeseed	64 kg/hl	Mustard Seed	64 kg/hl
Flaxseed	65 kg/hl	Soybeans	77 kg/hl
Corn	70 kg/hl	Beans	77 kg/hl
Rye	73 kg/hl	Peas	77 kg/hl

The formula for calculating the tonne capacity for other grains is:

$$t = \frac{t_c T_w}{75} \quad \text{where } t = \text{tonne capacity for a particular grain.}$$

$$t_c = \text{licensed capacity in tonne equivalent of wheat.}$$

$$T_w = \text{test weight for a particular grain.}$$

For example, the test weight relationship between Wheat and Barley is approximately 5 to 4 (75:62), therefore, an elevator with a 100 000 tonne licensed capacity will hold roughly 80 000 tonnes of Barley.

- (f) Volume will be determined in cubic meters. The tonne quantity of any grain for a specific volume can be determined from the following formula:

$$t = \frac{Vd}{1\,000} \quad \text{where } V = \text{volume in cubic meters (m}^3\text{).}$$

$$d = \text{density in kilograms per cubic meter (kg/m}^3\text{).}$$

But a cubic meter is equal to ten hectoliters, therefore, density of any grain is ten times its measured test weight, or $d = 10T_w$.

Along the Metric Trail

Target date for shipment of metric lumber products is September, 1979. To help facilitate a smoother changeover to metric construction, our Canada Plan Service (a group of federal and provincial agricultural engineers) has developed an experimental metric farm building plan to illustrate procedural possibilities.

Consumer product metric conversion is on schedule. Coke and Pepsi can now be bought in liter-size bottles; some packaged pet foods are in metric sizes as are some wines, flours, sugar and potato chips. In fact, more

metric-sized packages are appearing on supermarket shelves every week. To the average consumer, this phenomenon may be worth a passing glance—but what it, in fact, represents is a well coordinated and planned effort by all manufacturers (of soups to nuts) to ensure that metric conversion of foodstuffs proceeds smoothly and with as little difficulty for the consumer as possible.

The Consumers' Association of Canada, a non-profit organization, has been actively involved in Canada's metric conversion program for three years with metric chairmen across the country. The CAC has endeavored to foster a favorable public attitude toward metric conversion. In addition, the association has carried out surveys to determine public awareness of conversion. In their submission to the federal government, they reported that costs incurred by industry for metric conversion are not always as high as anticipated. They are often offset by significant savings in production and inventory costs. Conversion, the brief pointed out, should not be used as an excuse to raise prices. Raising prices or talking about doing so will only increase public apprehension and resistance. Unit pricing would permit consumers to monitor prices during conversion. However, government should encourage development of a standard for unit pricing. The Canadian Metric Commission intends to rely on consumer protest and media coverage to ensure that retailers do not profit from conversion to metric units.

At time of writing, my local supermarket had signs attached to its shelves advising customers that a metric-size package for a certain product was in effect. For example: **“Coming Soon—Ice Cream in Liters . . . By early March 1976, Loblaw's shoppers will begin to buy ice cream in metric units. The former pint, quart, half gallon and gallon sizes will be replaced by 500 milliliters, 1, 2 and 4 liter size packages. Loblaw's assures you that the per dollar value of ice cream will not change due to metric conversion.”**

The store manager assured me that they try to check incoming shipments closely for metric size packages. At the same time, he said, the supplier had a responsibility in giving the retailer advance advice concerning products to be packaged in metric sizes.

While I'm in the consumer area of this article, I should mention that we recently issued a promotional-educational publication for Mrs. Consumer . . . *“Come On Into the Metric Kitchen”*. It is a colorful 8-pager that helps one to “think metric” by tasty illustrations and brief text. In its foreword, one reads: “Do you tremble at the mere thought of grams and milliliters? . . . Well, there's no need to let the changeover to metric get you down . . . Metric conversion is not difficult; it just requires a bit of practice . . . etc.”

U.S. Metric Bill

Since I'm writing mainly to an American audience, I thought it appropriate to draw this article to a close on a note pretty close to home. On

December 23, 1975, the U.S. National Bureau of Standards issued a press release announcing President Gerald Ford's signing of legislation that would place the United States on a course towards voluntary conversion to the metric system. NBS Acting Director, Dr. Ernest Ambler, stated in the release that the signing marked the "beginning of a new era that will affect every citizen of the United States".

The release noted that the metric system of weights and measures was made legal for use in the United States by an Act of Congress in 1866, and, nine years later, the U.S.A. was a signatory to the *Treaty of the Meter* which provided international sanction to the metric system.

"But until December 23, 1975, there had been no policy to place the United States on a course towards metrication," Dr. Ambler said.

He pointed out that this action brought the United States in step with most nations of the world that have either converted to the metric system or are in the process of converting. The only countries that have not established a policy of conversion are Brunei, Burma, Liberia and Yemen.

"By establishing a policy of voluntary metric conversion," Dr. Ambler stated, "the United States industrial and commercial communities will be encouraged to export products made to metric dimensions, thus meeting the needs of foreign purchasers. This should stimulate additional international trade and have a positive effect on the United States' balance of payments".

Dr. Ambler explained that the new Metric Act provides for the creation of a 17-member United States Metric Board "to coordinate the voluntary conversion to the metric system". The Board is charged with devising and carrying out "a broad program of planning, coordination, and public education, consistent with other national policy and interests, with the aim of implementing the policy set forth in the Act".

Until now the National Bureau of Standards has had primary responsibility for providing metric information when requested by the public. This function will be assumed by the new Board, although the Bureau will continue to provide international metric coordination through the General Conference on Weights and Measures. The Bureau will also retain responsibility for maintaining the national measurement system, coordinating metrication with State weights and measures officials and, through its interaction with consumer, business and scientific groups, assist the nation in the changeover to metric.

As more and more industries and firms convert their products to metric specifications and dimensions, the American public will be coming into contact with metric daily, Dr. Ambler said. School systems throughout the nation have taken the lead in preparing students for the growing use of metric. He also noted that every State school department has underway some metric activity.

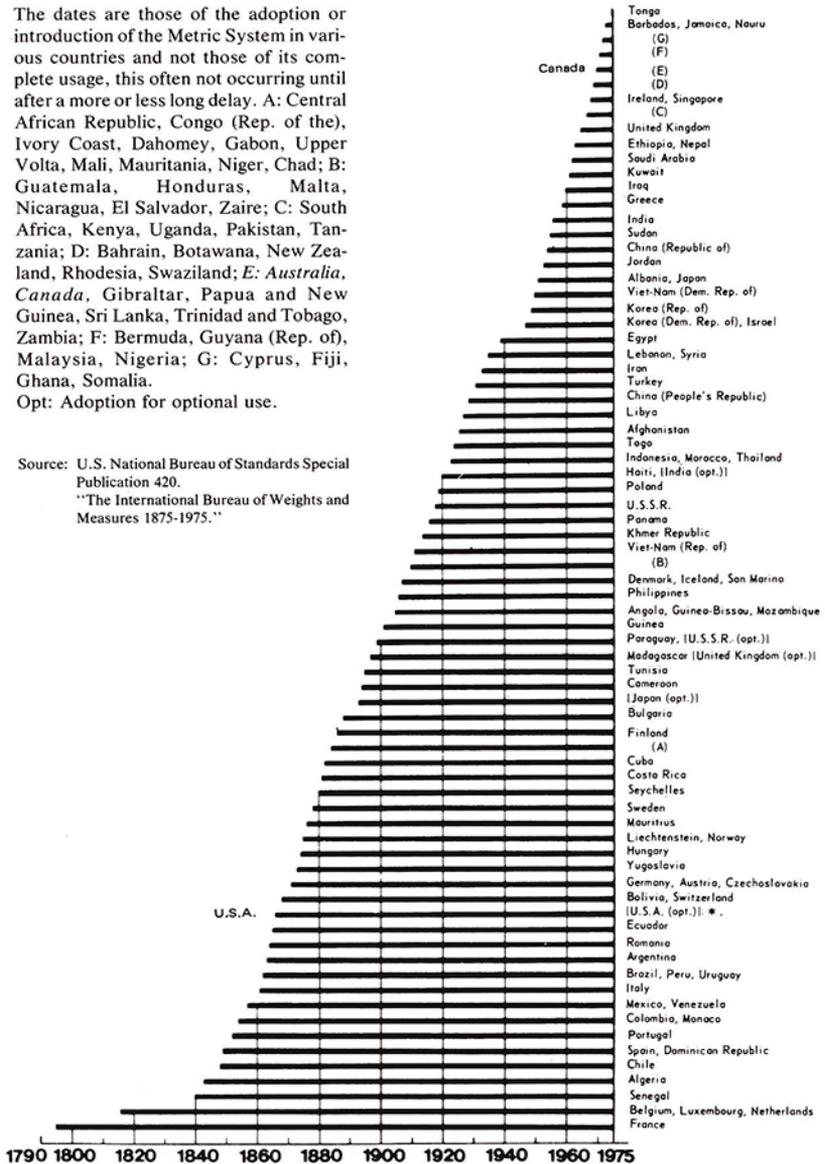
“Because of the actions by Congress and the President,” Dr. Ambler continued, “the day is fast approaching when we will purchase our gasoline by the liter, our meat by the kilogram, and our carpeting by the meter. I urge Americans to begin to familiarize themselves with the metric system.”

Expansion of the Metric System throughout the world since its creation in 1795.

The dates are those of the adoption or introduction of the Metric System in various countries and not those of its complete usage, this often not occurring until after a more or less long delay. A: Central African Republic, Congo (Rep. of), Ivory Coast, Dahomey, Gabon, Upper Volta, Mali, Mauritania, Niger, Chad; B: Guatemala, Honduras, Malta, Nicaragua, El Salvador, Zaire; C: South Africa, Kenya, Uganda, Pakistan, Tanzania; D: Bahrain, Botswana, New Zealand, Rhodesia, Swaziland; E: Australia, Canada, Gibraltar, Papua and New Guinea, Sri Lanka, Trinidad and Tobago, Zambia; F: Bermuda, Guyana (Rep. of), Malaysia, Nigeria; G: Cyprus, Fiji, Ghana, Somalia.

Opt: Adoption for optional use.

Source: U.S. National Bureau of Standards Special Publication 420.
 “The International Bureau of Weights and Measures 1875-1975.”



*Note: U.S.A. Metric Bill S. 100 signed by President Gerald Ford on December 23, 1975.

World Metric Picture

The accompanying chart shows the expansion of the metric system throughout the world since its creation in 1795. The dates are those of the adoption or introduction of the metric system in various countries and not those of its complete usage, this often not occurring until after a more or less long delay.

On the chart (15th line from bottom), the United States reads: "(U.S.A. opt.)" which is meant to be interpreted as "adoption for optional use". Since the chart was prepared, of course, President Ford has signed legislation confirming American intentions to adopt the metric system. Canada, on the other hand, has been grouped under (E), near the top of the chart, with Australia, Gibraltar, Papua and New Guinea, Sri Lanka, Trinidad and Tobago, and Zambia. The other countries similarly grouped on the chart are: (A)—Central African Republic, Congo (Rep. of the), Ivory Coast, Dahomey, Gabon, Upper Volta, Mali, Mauritania, Niger, Chad; (B)—Guatemala, Honduras, Malta, Nicaragua, El Salvador, Zaire; (C)—South Africa, Kenya, Uganda, Pakistan, Tanzania; (D)—Bahrain, Botswana, New Zealand, Rhodesia, Swaziland; (E)—already noted; (F)—Bermuda, Guyana (Rep. of), Malaysia, Nigeria; and (G)—Cyprus, Fiji, Ghana and Somalia.

By way of conclusion, permit me to wind-up on a Parisien note: "Au revoir, fellow-AAACE'rs . . . and prospective meter greeters!"

Acknowledgments

I wish to acknowledge the following sources of information, namely, "*Metric Organization in the Canadian Grain Industry*", published by the Metric Committee of the Canada Grains Council, 400-177 Lombard Avenue, Winnipeg, Manitoba, R3B OW5, October 1975; "*The Metric Monitor*", published monthly by the Canadian Metric Commission, Box 4000, Ottawa, Ontario, K1S 5G8; and the United States Department of COMMERCE NEWS, issued on December 23, 1975, by the National Bureau of Standards, Washington, D.C. The chart showing the world metric picture was taken from "*The International Bureau of Weights and Measures 1875-1975*", special publication 420, National Bureau of Standards, U.S. Department of Commerce.

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A metric-minded blonde known as Sal,
Met an Ag-Communicator named Hal;
He was so glad to meter
And play follow the liter . . .
She turned out to be quite a gal!