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**Report of the
57th National Conference
on
Weights and Measures
1972**

**U.S.
DEPARTMENT
OF
COMMERCE**
National
Bureau
of
Standards

JUN 14 1973



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The National Bureau of Standards¹ was established by an act of Congress March 3, 1901. The Bureau's overall goal is to strengthen and advance the Nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the Nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau consists of the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, the Center for Computer Sciences and Technology, and the Office for Information Programs.

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Office of Standard Reference Data—Office of Technical Information and Publications—Library—Office of International Relations.

¹ Headquarters and Laboratories at Gaithersburg, Maryland, unless otherwise noted; mailing address Washington, D.C. 20234.

² Part of the Center for Radiation Research.

³ Located at Boulder, Colorado 80302.

⁴ Part of the Center for Building Technology.

Report of the

57th National Conference on Weight and Measures 1972

*Sponsored by the National Bureau of Standards
Attended by Officials from the Various
States, Counties, and Cities, and
Representatives from U.S. Government,
Industry, and Consumer Organizations
Washington, D.C., July 10-14, 1972*

Report Editors: Frances C. Bell
Harold F. Wollin



*United States Department of Commerce
Frederick B. Dent, Secretary*

*National Bureau of Standards
Richard W. Roberts, Director*

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Abstract

This is a report of the proceedings (edited) of the Fifty-seventh National Conference on Weights and Measures, sponsored by the National Bureau of Standards, held in Washington, D.C., July 10-14, 1972, and attended by state, county, and city weights and measures officials, the Federal Government, business, industry, and consumer organizations.

Key words: Administration; Conference; laws; procedures; regulations; requirements; technology; weights and measures.

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OFFICERS OF THE CONFERENCE

- President:** LAWRENCE M. KUSHNER, Acting Director,
National Bureau of Standards
- Executive Secretary:** H. F. WOLLIN, Assistant Chief,
Office of Weights and Measures, National Bureau of Standards
- Chairman:** E. H. BLACK, Sealer of Weights and Measures,
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E. W. BALLENTINE, Executive Assistant, Consumer
Protection Division, South Carolina Department of Agriculture
W. E. CZAIA, Supervisor, Division of Weights and Measures,
Minnesota Department of Public Service
J. H. LEWIS, Chief, Weights and Measures Section,
Washington Department of Agriculture
H. K. SHARP, Assistant Director, Marketing Division,
Oklahoma Department of Agriculture
- Treasurer:** C. C. MORGAN, Sealer of Weights and Measures,
Gary, Indiana
- Chaplain:** J. I. MOORE, Superintendent, Weights and Measures
Division, North Carolina Department of Agriculture

APPOINTED OFFICIALS

- Sergeants at Arms:**
L. H. DEGRANGE, Field Supervisor, Office of Weights and
Measures, Maryland Board of Agriculture
J. C. STEWART, Assistant Supervisor, Weights and Measures
Regulatory Section, Virginia Department of Agriculture
and Commerce
- Parliamentarian:** D. L. GRIFFITH, Director, Division of Consumer
Protection, West Virginia Department of Labor

EXECUTIVE COMMITTEE

R. W. BUCHANAN	A. J. LADD
M. DENNIS	J. L. O'NEILL
G. L. JOHNSON	W. I. THOMPSON
J. H. JOHNSON	C. WOOTEN
W. B. KELLEY	C. S. ZMUDZINSKI

(All officers of the Conference are, ex officio,
members of the Executive Committee.)

(Officers and Executive Committee members elected by the 57th National Conference to serve the 58th National Conference on Weights and Measures will be found in the report of the Nominating Committee, page 181.)

STANDING COMMITTEES

(The remaining term of office for each committee member, in years, is shown in parentheses.)

EDUCATION, ADMINISTRATION, AND CONSUMER AFFAIRS

G. E. MATTIMOE, Hawaii, Chairman (1)
D. I. OFFNER, St. Louis, Missouri (3)
E. PRIDEAUX, Colorado (2)
J. C. STEWART, Virginia
R. T. WILLIAMS, Texas (4)

(S. F. VALTRI, Philadelphia, Pennsylvania, was appointed for a five-year term to replace J. C. Stewart, whose term expired. Mr. Williams replaced Mr. Mattimoe as chairman.)

LAWS AND REGULATIONS

S. D. ANDREWS, Florida, Chairman (2)
G. L. DELANO, Montana
M. R. DETTLER, Seattle, Washington (1)
R. M. LEACH, Michigan (3)
R. L. THOMPSON, Maryland (4)

(M. DENNIS, Nebraska, was appointed for a five-year term to replace G. L. Delano, whose term expired. Mr. Andrews was reelected as chairman.)

LIAISON WITH THE FEDERAL GOVERNMENT

M. GREENSPAN, New York City, New York, Chairman (1)
L. D. HOLLOWAY, Idaho (3)
A. SANDERS, Scale Manufacturers Association (2)
W. N. SEWARD, American Petroleum Institute (4)
E. E. WOLSKI, Colgate-Palmolive Company

(J. F. SPEER, Milk Industry Foundation, was appointed for a five-year term to replace Mr. Wolski, whose term expired. Mr. Greenspan was reelected as chairman.)

SPECIFICATIONS AND TOLERANCES

D. E. KONSOER, Chairman, Wisconsin
T. F. BRINK, Vermont (2)
J. C. MAYS, Dade County, Florida (1)
K. J. SIMILA, Oregon (4)
W. S. WATSON, California (3)

(W. E. CZAIA, Minnesota, was appointed for a five-year term to replace Mr. Konsoer, whose term expired. Mr. Mays replaced Mr. Konsoer as chairman.)

ANNUAL COMMITTEES

Nominations: M. JENNINGS, Tennessee, Chairman; J. E. BOWEN, Newton, Massachusetts; J. C. BOYD, Iowa; S. H. CHRISTIE, JR., New Jersey; C. C. MORGAN, Gary, Indiana; F. D. MORGAN, Utah; J. D. WALTON, Dallas Texas.

Resolutions: N. M. ROSS, Omaha, Nebraska, Acting Chairman; J. M. CHOAMIN, Middlesex County, New Jersey; A. W. FENGER, Minnesota; L. A. GREY, Indiana; D. L. GRIFFITH, West Virginia; R. W. HORGER, Santa Clara County, California.

Auditing: R. J. SILCOCK, Vigo County, Indiana, Chairman; J. C. BLACKWOOD, Arkansas; T. A. CONSIDINE, Baltimore, Maryland.

Associate Membership: M. S. GODSMAN, Bennett Pump Incorporated, Chairman; C. W. CAMPBELL, Reliance Electric Company; L. J. MOREMEN, Single Service Institute; A. SANDERS, Scale Manufacturers Association; J. F. SPEER, Milk Industry Foundation; B. WASKO, Voland Corporation; E. F. WEHMANN, Neptune Meter Company.

REGISTRATIONS

MRS. F. C. BELL, MRS. E. M. BURNETTE, MRS. S. J. WILSON

LADIES' ARRANGEMENTS

MRS. H. F. WOLLIN

TUESDAY, JULY 11, 1972

OPEN COMMITTEE MEETINGS

Tuesday was set aside for meetings of the four Conference standing committees. Notices of these meetings were carried in the Conference Announcement booklet, in all pre-Conference publicity, and in the printed Conference program. Many delegates participated in the committee meetings, and the discussions which took place were particularly helpful to the members of each committee and played an important role in guiding the committees in their deliberation and preparation of their final reports. The final reports of the committees will be found beginning on page 131 and will reflect the discussion that took place and the actions taken by the Conference at the time the final reports were presented to the delegates.

MANUFACTURERS' EQUIPMENT DISPLAY

An informal display of new equipment by manufacturers was held on Tuesday afternoon from 5:00 to 7:00 p.m. for the education of the Conference delegates.

REPORT OF THE FIFTY-SEVENTH NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

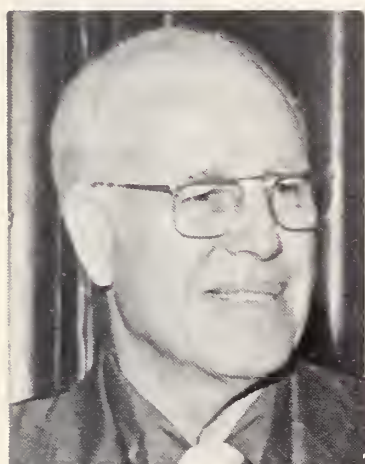
MORNING SESSION — WEDNESDAY, JULY 12, 1972

(EVERETT H. BLACK, *Chairman*, Presiding)

Mr. J. I. Moore, North Carolina, the Conference Chaplain, delivered the invocation and led the delegates in the Pledge of Allegiance.

AN AFFAIR TO REMEMBER

by E. H. BLACK, *Conference Chairman*, Director of Weights and Measures, Ventura County, California



As Chairman of the National Conference on Weights and Measures, I consider it both an honor and a privilege to be able to welcome you to our 57th National Conference on Weights and Measures. By "our" National Conference, I include each person in attendance and not just those who have done such a fine job in putting this program and the committee reports together. Together, we all, by our participation, can make this an outstanding Conference. I think last year's Chairman, Matt Jennings, said it in the best and fewest words: "Support me if you can. Oppose me if you must. But above all, participate."

"An Affair to Remember." This is the topic I am going to speak briefly about today. The event was the scheduled interim meetings of the four standing committees of the Conference, which were held the first two weeks of February of this year at the National Bureau of Standards.

(At this point Mr. Black showed slides of the four standing committees and discussed some highlights of the work of each committee.)

I hope that this has helped to give you some idea of what happens before the reports of the standing committees are acted on by this Conference.

It is through meetings of this Conference and its committees that the gas hits the carburetor with go power to the motor and pushes that beautiful body we know as the National Conference and its

shining wheels that is made up of weights and measures officials, industry representatives, and others. My regret is that we do not have an orientation program for new attendees to the National Conference, so that they might better understand the power plant under the shining body of this Conference. With such knowledge and understanding, we could all go back to our respective jurisdictions or businesses and help to make the wheels turn faster. Together, we could develop enough power to win a race rather than just keep up.

I am prompted to ask: "Are we an acting or a reacting National Conference?" Everyone directly and indirectly connected with this National Conference has done an excellent job over the years in keeping up with matters associated with the weights and measures field. But in this fast moving world in which we are living, are we some day going to wake up and find that weights and measures is no longer an identifiable arm and service of government? Have we become too complacent and settled into somewhat of a self-satisfied rut?

I believe that we must continue to look for answers to these and other questions that weights and measures officials and industry representatives have discussed with me this past year, some of which could be outlined as follows:

1. How can we better instruct weights and measures officials and industry representatives so that they will feel a part of and become active contributors in future meetings of the National Conference?

2. Do we have the framework to challenge and hold the interest of the local official as well as the interest of those who represent state jurisdictions?

3. We have a fine Conference organization and procedure. Yet shouldn't we collectively sit down and devise ways for improving communications between local, state, regional, and national organizations? Such communications should extend and feed into the standing committees of the National Conference for their deliberations and action, with appropriate feedback through the communications system.

4. Do we have adequate and proper procedures to handle proven emergencies?

5. Could the NBS Office of Weights and Measures, with additional staff, help develop and offer needed assistance concerning metric conversion as part of their ongoing field training program? Or must we rely on having each state develop its own program? We are being asked many questions about simple metric problems that people are now faced with, and we must supply the answers now, and not tomorrow.

6. Could not the Office of Weights and Measures, with additional staff and resources, take a more active role in doing things that the states are not equipped to do or capable of doing—things that will

lead to more effective and uniform weights and measures regulation and assistance throughout the nation?

These questions and comments have been presented to you solely to make you think about where we are in weights and measures and what we can do to assist our, and I emphasize "our," National Conference to become more active and less reactive in meeting the problems and issues of the future.

In closing, I would like to take this opportunity to thank all of the speakers who are to participate in our program and to congratulate those who have contributed so generously and effectively in the work of the Conference committees. I would also like to thank the staff of the Office of Weights and Measures for the outstanding job they have done throughout the year—recognizing the constraints under which they operate.

I used to enjoy a sideline of coaching the football team at our local high school. I will tell you what we used to tell the players. No team will be better than its individual members, water boy to coach. No game will be better than the individual desire, follow through, and teamwork.

ADDRESS

by the Honorable ROBERT W. CAIRNS, Deputy Assistant Secretary
for Science and Technology, U.S. Department of Commerce



My first task is to convey the good wishes of Secretary Peterson. He is sorry he could not be with you himself today, but he is under several different kinds of pressure and had to forego that pleasure. However, he is with us in spirit, and I will be quoting him at length in my talk.

Peter G. Peterson is a technologist secretary. He knows more about the role of science and technology in our national economy and in our role in the world economy than any Secretary of Commerce may have since Herbert Hoover.

Before he became Secretary he prepared a report for the President entitled "The United States in the Changing World Economy." I would like to tell you today some of the conclusions of that report and some of the implications, particularly in regard to international standardization. Today, these are very important considerations in the Department of Commerce.

As never before, America needs the best it can get from technology and from its scientists and engineers. For many years we have taken for granted our technological capabilities and our technological supremacy over all other nations. But we who are involved in

technology today, and I speak of all of us here, may well have some serious misgivings about our situation.

The truth is that the old assumptions about the superiority of the United States technology are in serious question. It is not only that the young people are shunning science and engineering in college. It is not only that consumers are rebelling about their products and about technological problems. It is not only that people are concerned about the impact of pollution and other unwelcome byproducts of a technological world. The most critical and immediate problem for technology facing us today is that the United States is losing its dominant position in the markets of the world. Our economy is really in jeopardy. Our balance of trades has turned to the minus side of the ledger for the first time in this century. American productivity in its industrial output, quality, and quantity, and in the service sector of our economy in particular is woefully weak and being challenged by a number of nations we helped put back in business after World War II. Today America is being tested in a way that makes the Sputnik challenge pale by comparison.

In the report I cited earlier Mr. Peterson set forth what has become the basis for President Nixon's new economic policy with regard to foreign trade and America's industrial development—in short, our response to this serious deterioration in America's technological and economic position. Dr. Peterson concluded that, if we are to provide answers which will assure the economic future of this nation, we must make large investments of America's financial capital and America's technological talent, both public and private.

Let me direct your attention to some of the problems as Secretary Peterson outlined them in his Changing World Economy Report. First, it becomes obvious that over the past two decades the United States share of the world's gross national product has been shrinking—from nearly 40 percent in 1950 to only slightly more than 30 percent in 1970. Those are relative values, because the absolute value shows the overall gross national product for the world rising from \$700 billion in 1950 to \$3.2 trillion in 1970. If we make that comparison, it might be concluded that we are not in bad shape. Obviously, our total rose more than fourfold in twenty years; besides, it was good that the total world wealth was being more uniformly distributed.

Such superficial analysis bolstered our convictions over the years that the United States was and remained dominant both in size and competitiveness in the international economy, and that practices, institutions, and rules governing international trade and payments were structured to fit that fact. But the Peterson Report concluded that we as a nation were too slow to realize that basic structural and competitive changes were occurring. The fact of the matter is that the United States was being challenged in the world marketplace, a challenge symbolized by a net deficit in the balance of trade.

Whereas the average annual growth rate in imports exceeded the growth rate in exports only slightly in the early 1960's, by 1971 the growth rate of imports had climbed to triple the growth rate in exports. While U.S. manufacturing productivity rose 32 percent from 1960 to 1970, Japanese productivity almost tripled. While U.S. exports of manufactured goods rose 110 percent, Japanese exports quadrupled.

Overall, the United States Industry still performs and uses its R & D better than any nation in the world, but there is an interesting disparity in foreign trade for two important classes of manufactured products. Imports of so-called nontechnology intensive manufactured goods have climbed drastically since 1958, when imports equalled exports. This could be referred to as the year in which the Marshall Plan nations achieved competitiveness in the world market. Exports in these products are again on the decline.

Incidentally, the nontechnology intensive products are materials that are basic in nature, particularly raw materials and the like. The technology intensive products include manufactured products like scientific and communications equipment, and other types of products which have a lot of technology in them.

The technology intensive products show a different pattern. The United States still exports more than it imports, although the gap is narrowing. It is obvious that if you compare the negative situation on the nontechnology intensive products and the positive situation, you will get a net picture, which is diminishing and has become negative.

So effectively did Mr. Peterson present his case to the White House that the application of technology is vital to industry, to society, and to the wealth and welfare of our citizens in the world economy, that the President sent to the Congress on March 16 of this year the first presidential message ever on science and technology. The main thrusts of that message are:

1. While U.S. excellence in science and technology leads the world, we have been deficient in obtaining maximum economic and social benefits from our national R & D investment. Therefore, we must target better on research and development to achieve the national benefits that we want.

2. A new partnership between the Federal Government and the private sector must be obtained which will produce a favorable climate for research, development, invention, innovation, and entrepreneurship.

The message asserts that only through the fullest utilization of our national scientific and technological potential can we provide the economic health necessary to sustain our national aspirations.

But a favorable balance of trade is only one of the measures that would help the economy. Our rate of productivity has also been falling over the whole of the last century. A rising living standard with

controlled inflation must rest on raising our productivity, and the new demands being placed on the economy by the pursuit of an improved quality of life for our citizens increases this challenge.

The President has made it clear that, if we do not begin to solve the productivity problem, we cannot achieve our objectives of higher real wages for our workers, or of higher profits to attract and spend the capital needed to provide the record number of new jobs, up to 20 million this decade.

In the last five years of the 1960's, the United States had the worst record of productivity of any major power. Our total productivity increased only 10 percent, at the same time that Europe's productivity rose 40 to 50 percent, and Japan's 90 percent. Yet, with 60 percent of the labor force now engaged in the service sector of our economy, where productivity rose only four-tenths of one percent per year during the last four or five years, it is clear that manufacturing alone cannot carry the burden of overall productivity improvement.

We at the Department of Commerce, and specifically at the National Bureau of Standards, are taking a hard look at new ways to help U.S. industries enhance their productivity and competitiveness on a broad front. We are taking our course from the President's lead. He feels that is appropriate for the Federal Government to encourage private research and development to the extent that the normal operation of the market mechanisms is not effective in bringing needed innovations into use. He has mobilized many segments of the Government to search for initiatives which can enhance United States industry's efforts to improve its productivity and reestablish America's position in the world marketplace.

He specifically asked the Department of Commerce to conduct continuing studies of the competitiveness and technological condition of all parts of the United States industry and to be the focus in the Federal Government for the development of policy regarding industrial research and development.

How well we accomplish that task may have great impact on this country's position in the world market in years to come. America's ability to produce the necessities and the luxuries of life and to keep our people gainfully employed depends on our industrial ability to mass produce products for large markets. Producing products for more than two hundred million citizens in a coherent national market—that is the basis of our economic health.

We are not alone in understanding this principle. The nations of the Common Market and European Free Trade Association are trying to put together a market of 235 million people in Western Europe. To do this, they must harmonize their measurement language and develop common engineering standards so that they may exchange goods freely among all of these nations.

Until quite recently, differences in measurement systems and

engineering standards did not have a major impact on world trade, in that they were less important than other factors, like price, reputation, reliability of the manufacturer, superior technology, and quality of the product.

Now, however, differences of engineering standards are taking on a new importance, because the countries abroad are agreeing on quality standards and certification programs. The agreements provide that, when products are certified by the producing country as meeting the agreed engineering standards, they will be accepted without further inspection or tests by all the other countries adhering to the agreement. This mechanism will increasingly serve to facilitate trade among the agreeing countries and can inhibit imports from all other countries.

The urgent need now, if this potential nontariff barrier to trade is not to have a major impact on our exports, is for our much greater participation in the development of international engineering standards and our access to certification programs.

This subject of international standardization was a major topic in the Metric Study about which you have heard much in the last couple of Conferences. I will not go over the conclusions of that study again, but our measurement usage will have an impact on our effectiveness in international standards. It would be a grave mistake to think that we must totally give up our own accepted engineering standards when we participate, even though the international standards will be written in metric measurement units. Many U.S. engineering standards are so technically superior to those of other nations that they are used abroad, even though these may not be formally adopted as national standards of those countries.

In addition, there are established procedures for nations to get together and write engineering standards acceptable to all. In these deliberations through the International Organization for Standardization (ISO) and the International Electro-Technical Commission (IEC) we have every reason to expect that U.S. technology will receive the recognition it is due if we participate vigorously in the negotiations.

Today only about 2,500 international standards and recommendations have been adopted by ISO and IEC. The world needs somewhere between 20,000 and 30,000 standards to function effectively. The industrial pressure to rationalize dimensions into metric units will either force conversion to metric on a product-by-product basis, or will drastically increase the expense U.S. manufacturers will have to bear in keeping double inventories.

In view of these considerations, we must say that the most rational stand we can take is vigorous participation in international standardization as proponents of U.S. engineering practice, combined with a planned, voluntary conversion to metric usage in this country. This

is the point of view that the Department of Commerce and the National Bureau of Standards have taken before the Congress.

We are supporting before the Congress legislation to improve U.S. participation in international standardization and, of course, legislation to facilitate U.S. conversion to the metric system of measurement. On February 29 the Department of Commerce sent to the Congress legislation which would create a National Metric Conversion Board to plan and coordinate a voluntary conversion process in which metric units would become the most common units of measure in America. The Board, to be made up of 25 representatives of all sectors of our society, including industry, labor, trade associations, citizens groups, and government, appointed by the President and four members of Congress, would assist industry and the public in adjusting to the use of metric measurement units.

The legislation introduced by members of both political parties in the House and in the Senate declares that the policy of this nation shall be to facilitate and encourage the substitution of the metric system of weights and measures in place of the customary current measurement units in education, trade, commerce, and all other sectors of the economy. It is intended that metric units would become the predominant, although not exclusive, language of measurement within a period of ten years from the date of enactment.

To assist American industry in the international standards effort, the Department of Commerce is supporting the International Voluntary Standards Cooperation Act, also now before Congress. This Act assigns to the Secretary of Commerce the principal responsibility within the Government for promoting international standardization activities. Among the things that the bill envisions the Department doing are the following:

First, identify international standardization activities which affect substantially the foreign commerce of the United States, and determine where the participation by domestic organizations is insufficient to assure that the interests of the United States are adequately protected.

Second, provide for appropriate participation by private and governmental units of the United States in these standardization activities.

Third, encourage the use of international voluntary standards and international systems within the United States.

In short, we are talking here about having greater government participation and a point of contact (namely, the Secretary of Commerce in this case) for an overall view of the U.S. international standards activity and for doing something positive to improve our performance. We have never really had such an asset before in our international standards activities.

This, then, is something of an overview of our current thinking on

the U.S. role in the world market. As you can see, the Department of Commerce is both concerned about the present situation and is doing something positive about it. As people involved every day in technology, I know you will be interested in the future of some of these issues I have discussed. We at the Department will take care to keep you informed. We welcome your interest, and, of course, your support.

ADDRESS OF THE CONFERENCE PRESIDENT

by DR. LAWRENCE M. KUSHNER, Acting Director,
National Bureau of Standards



Speaking to the National Conference is easy in one way: I can eliminate the introduction to my speech because I don't have to impress you with the importance of measurement. In another respect, though, it is always difficult to talk to people who are in the same field as you are. You had better tell them something new or risk boring them half to death.

Fortunately, a lot of new things have been happening on the frontiers of measurement, and I thought I would round up some of them this morning. Together, these new developments give a picture of measurement as a dynamic and fascinating science—and, of course, I think that is a very accurate and precise picture.

On the surface the science of measurement is far from exciting. Although we make billions of measurements every day, the entire system of physical measurement can be traced back through its family tree to just a few base units, such as the meter and kilogram. It seems very simple, and very fixed. Dig a little deeper, though, beyond the myths of ivory-tower, dusty-archive metrology, and a dynamic, challenging branch of science comes to light.

Consider length, for example. Although the French founders of the metric system sensibly decided to base the meter on an invariant natural quantity, the earth's quadrant—made visible as a platinum-iridium bar—served as the standard of length until 1960. At that time, by International agreement, a wavelength definition of length was chosen, based on the light from ^{86}Kr lamp. The meter is now defined as 1,650,763.73 wavelengths of orange-red light from ^{86}Kr . Even this definition is far from perfect. The accuracy of measurements with the Kr line is about a part in ten million, and the Krypton light can produce interference over only about 50 cm. But the laser was born around 1960, and now a stabilized He-Ne laser offers the

possibility of a vastly improved definition of length—at least one hundred times the accuracy, and the ability to produce interference fringes over several hundred meters. So metrology is not static, and it does not always follow other scientific advancements—it often leads.

As metrologists pursue that next decimal place of accuracy, some unexpected and very exciting opportunities come their way. And these opportunities, if followed far enough, often lead in a circular way back to the quest for new knowledge and further accuracy. A beautiful example of this interaction is unfolding at the NBS Boulder Laboratories. Some years ago a project was started to determine the speed of light with high accuracy. The speed of light, of course, is an extremely important quantity, entering into many calculations and having important theoretical implications. The approach used at Boulder involved sophisticated measurements of several wavelengths in a long-path optical system, an experiment requiring a super-stable environment. The apparatus was installed in an abandoned gold mine a few miles from Boulder. The mine provided a steady temperature and freedom from man-made vibration. Here, in these quiet surroundings, instabilities in the laser light source severely limited the accuracy that could be attained. So the project team went back to the laboratory and after a few years of hard work developed a super-stable He-Ne laser. This was done by locking the laser light to the natural vibrations of methane molecules in a glass cell.

The methane stabilized laser provides a much more accurate method of realizing the meter than ^{86}Kr , and the laser may well replace ^{86}Kr as the International Length Standard.

Once stabilized, the laser was taken back to the gold-mine experiment. It proved to be so stable a light source, in fact, that in a 30 meter interferometer anchored to bed rock the investigators began to see tiny motions of the earth produced by solar and lunar tides and earthquake tremors. This “laser seismometer” can detect vibrations as small as 20 trillionths of an inch. This is equivalent to detecting changes of 1/100 of an inch in the distance from the earth to the sun.

So you see how the quest for measurement accuracy leads down strange, unexpected, but very useful paths. Who knows now how this “laser seismometer,” which—remember—started out to be a measurement of the speed of light, might aid us in forecasting earthquakes.

Another example of the complexities and interrelationships of modern science occurs in the measurement of time. From the dawn of history man has been concerned with time measurement, progressing from sundials to pendulum clocks to balance wheel watches to today's cesium beam atomic clock accurate to 1 second in 30,000 years. The atomic clock is used to control the precise time and frequency broadcasts from the NBS stations WWV, WWVH, WWVL, and WWVB. This fantastic ability to measure time, coupled with that

versatile new light source, the laser, has led to a complex project to measure the distance from the moon to the earth. In July of 1969, Apollo 11 astronauts Armstrong and Aldrin placed an array of retroreflectors on the moon. This package contains 100 so-called corner reflectors that have the property of returning a beam of light back to its source without alignment being a critical factor. NBS scientists were involved in the design of the reflector package, and in making measurements with the array. In essence, what is being done on a continuing basis is to shine the beam of a ruby laser from the earth to the reflector, measuring very accurately the time required for the laser light to make a round trip. The original measurements were made with the Lick Observatory 120 inch telescope. Measurements are continuing at the NASA Goddard Space facilities, with stations planned in Japan, France, Russia, and other countries.

Pulses returning from the moon, a round trip of 2-1/2 seconds, are timed to within 2 ns, giving an earth-moon distance accurate to within 1 foot.

Data obtained with continuing measurements will:

- * more accurately define the moon's motion
- * perhaps reveal continental drift here on earth
- * test the constancy of gravity as the universe expands.

Back on earth we also have been working on a system to distribute time signals very accurately on commercial TV broadcasts. With very minor modification, home TV receivers could be made to display time of day on the screen when desired. Or the incoming signal could be used to control a clock at the receiver. In cooperation with TV networks and the Department of Health, Education and Welfare, we have also shown the feasibility of using the same technology to put captions on the screen, a technique that would be of great help to people with impaired hearing yet need not interfere with the viewing pleasure of others.

NBS work to establish an accurate basis for x-ray wavelength measurements also shows promise in an unrelated area. First let me describe the x-ray wavelength experiment, which is of vast importance to crystallographers, solid state physicists, and theoreticians. In essence, what is being done is to pass an x-ray beam through several parallel, near-perfect silicon crystals. An x-ray interference pattern is formed on the far side of the crystals. When one of the crystals is moved relative to the others, a series of x-ray fringes is produced and recorded. The atomic planes of the silicon crystals act as a "picket fence," and the individual layers of atoms can be counted as they move past the observing apparatus.

At the same time, a delicate measurement is made of the distance the crystal has been moved. The number of atomic layers per unit distance is then easily determined.

Such accurate knowledge of interatomic distances in crystals is leading to some interesting experimentation—and speculation—concerning a mass standard. For almost 100 years the standard of mass has been an artifact, a cylinder of platinum-iridium. Over the years numerous proposals have been made to base the kilogram on some natural foundation, but none has come close to replacing the present standard. But a possibility does exist. Since the spacing of planes of silicon atoms in crystals has been accurately measured, and since silicon crystals can be grown that are nearly perfect, the number of atoms per unit volume can readily be calculated. If the density of silicon is known with sufficient accuracy, then the weight of a single atom of silicon can be calculated to high accuracy. What is needed is a technique to determine exactly how many silicon atoms are in a particular crystal. While we know how many atoms exist in a unit volume, we cannot count all the atoms in a crystal. Once this next step is taken, it will be possible to create any number of equally accurate mass standards from highly perfect crystals.

One of the more fascinating aspects of science is its tendency to provide us with solutions to questions which have not necessarily been asked yet. The laser, for example, started as virtually a laboratory curiosity. One of the first practical uses, incidentally, was demonstrated at NBS when we showed that the laser could be used to measure length over long distances. Within a short time both new uses for lasers, and the number of lasers in use, multiplied in rabby fashion. Recently, a photographer from *Fortune* magazine did a picture story on measurement at NBS. He was instructed by his editors to include only one or two laser pictures. After touring NBS for a day, the photographer complained that looking for a laboratory which had no laser was like looking for a laboratory which had no electricity. He won a dispensation from the editor, and the story contained photos of quite a few working lasers.

A much newer device which is showing much the same multiplication tendencies is the low temperature superconducting, solid state device known as the Josephson junction. This device produces a high frequency radio-like signal when an electrical voltage is applied to it, or conversely, produces an electrical voltage when a high frequency signal—microwaves, for example—is applied to it. The relationship between the frequency and the voltage is very accurately computable. This is an interesting relationship, because frequency is one of the most precise measurements man is capable of making. We see the possibility of carrying some of that accuracy along into basic electrical measurements. Also, because the Josephson effect ties dc voltages to radio and other frequencies, it brings superconductivity solidly into electronic technology.

One of the Bureau's main activities with the Josephson junction is in voltage measurement. A junction is installed in a waveguide, as you

see here, and microwaves are used to generate a voltage. As I've said, we can measure frequency so accurately that the output voltage can be computed very accurately and used as a standard or for calibration. We have just recently used the Josephson junction to replace the standard electrical cells which have traditionally been the basis for our voltage measurements.

The potentialities of Josephson devices have generated a great deal of activity in the voltage measurement field. One of the limiting factors in intercomparing results among various laboratories has been the lack of agreement on the precise value of their voltage standards. Now agreement need only be reached on frequency—a much more feasible task.

Because the Josephson devices are so sensitive to radio and magnetic fields, they are coming into use as very sensitive probes in a variety of applications. They show promise as temperature measuring instruments in the very cold regions—down to less than 5 thousandths of a degree above absolute zero.

Another group of Josephson instruments goes under the name superconducting quantum-mechanical interference device, or SQUID. We are developing SQUIDS to measure various radio and magnetic fields. Among the more interesting applications is one device developed at our Boulder laboratories to record magnetically the human heartbeat. The result of monitoring magnetic signals from the heart is a magnetocardiogram which looks like and gives much the same information as an electrocardiogram. The advantage of the magnetic device is that it is battery-operated and portable and requires no complicated connections like an electrocardiograph. For the magnetic examination, the patient need not even undress. The technique also has some drawbacks at this early stage of development. Stray magnetic fields can wash out the readings. We are testing the instrument in an abandoned mine shaft in Colorado for that reason. This is a poor location for a doctor's office, and until technology is developed to get above ground you probably will not be having a magnetocardiogram in your physician's office.

The quest for more accurate measurements keeps the metrologist working at the leading edges of physical knowledge. New theories, newly discovered phenomena, and new equipment all have potential for improving our ability to measure. In turn, the quest for better measurements often leads in a circular way to knowledge that can be applied to many fields. Working in the field of measurement is exciting, challenging and rewarding. To paraphrase a popular beer commercial, I think metrology can safely be called "the unexpected pleasure."

Now let me close by experiencing an expected pleasure—to announce the appointment of those who will serve on the Conference standing committees.

As you all know, the work of this Conference is largely carried on by these committees. Thus, the extent to which the Conference is effective is very dependent on the committee members—their dedication and their industry. Thus, in making these new appointments, I would like simultaneously to recognize the outgoing members and to thank them for their loyal service.

Appointments to standing committees, National Conference on Weights and Measures, are as follows:

Committee on Laws and Regulations:

Mr. Mike Dennis, Supervisor of Weights and Measures, Department of Agriculture, Nebraska, is appointed for a five-year term to replace Mr. Gary Delano, Montana, whose term is expiring.

Committee on Specifications and Tolerances:

Mr. Warren E. Czaia, Supervisor, Division of Weights and Measures, Minnesota, is appointed for a five-year term to replace Mr. Don Konsoer, Wisconsin, whose term is expiring.

Committee on Education, Administration, and Consumer Affairs:

Mr. Sam Valtri, Chief, Bureau of Weights and Measures, Philadelphia, Pennsylvania, is appointed for a five-year term to replace Mr. James C. Stewart, Virginia, whose term is expiring.

Committee on Liaison with the Federal Government:

Mr. John Speer, Executive Assistant, Milk Industry Foundation, Washington, D.C., is appointed for a five-year term to replace Mr. Edward E. Wolski, Colgate-Palmolive Company, whose term is expiring.

PRESENTATION OF HONOR AWARDS

Dr. Kushner presented Honor Awards to members of the Conference who, by attending the 56th Conference in 1971, reached one of the five attendance categories for which recognition is made—attendance at 10, 15, 20, 25, or 30 meetings.

Award Recipients

25 Years

A. SANDERS	Scale Manufacturers Association
R. W. SEARLES	Medina County, Ohio

20 Years

R. W. FOSTER	Single Service Institute
B. D. MILLER	Byron Miller & Associates

15 Years

W. J. KEHOE	Paterson, New Jersey
F. L. MCINTYRE	John J. McIntyre Sons
H. E. SIEBOLD	Liquid Controls Corporation
C. W. SILVER	Revere Corporation of America
R. H. TOLSON	Texaco, Inc.
O. H. WATSON	Scales and Weighing
H. L. ZUPP	Neptune Meter Company

10 Years

R. W. GLENDENNING	Maryland
L. A. GREY	Indiana
E. T. HUNTER	Glen Cove, New York
J. L. LITTLEFIELD	Gerber Products Company
R. E. NIX	Gilbarco, Inc.
J. POLLOCK	Kearny, New Jersey
J. R. SHAEFFER	Thurman Scale Company
H. K. SHARP	Oklahoma
L. W. VEZINA	Alexandria, Virginia
C. S. ZMUDZINSKI	St. Joseph County, Indiana

AWARDS OF APPRECIATION TO MRS. FRANCES C. BELL



Mrs. Bell, Secretary, NBS Office of Weights and Measures, was presented two awards for her many years of valuable service to the National Conference on Weights and Measures. She retired from active duty with the Bureau of Standards after 24 years of government service.

Photo left: Dr. Kushner presents Mrs. Bell with a silver tray that was engraved with the following inscription:

To Frances C. Bell
In sincere appreciation for many years of dedicated service to
the National Conference on Weights and Measures
July 12, 1972

Photo right: Chairman Black presents Mrs. Bell with a Certificate of Appreciation on behalf of the Conference membership.

THE FUTURE IS NOW

by H. F. WOLLIN, Executive Secretary, National Conference on Weights and Measures



It is a privilege for me to take this opportunity to speak to you this morning about the future of weights and measures—a future that I predict will challenge our ambitions, cause a change in our modus operandi, and threaten the security of those who adhere to the status quo. This prediction is not intended to create alarm but rather to stimulate your thoughts now on what you may be confronted with in the future. The views I express are generally my own, which have been conditioned

by some eighteen years of experience in the field.

Let me begin by commenting on the immediate future; that is, some of the events of this week during the 57th National Conference.

I believe it is important for you to understand that the work of this Conference began immediately following the adjournment of the 56th National Conference last July. Such effort involved the activity of many people over the year to establish the framework and direction for what is to be accomplished during, and as a result of, this annual meeting. Thus, I hope you will accept the fact that the National Conference on Weights and Measures is not a one-week affair; nor is it the instrument of a select group. It is truly a national conference for all governments, industries, and the nation. Those who have responsibility and contribute to its plan and conduct do so with the utmost desire and dedication to serve the best interests of all concerned.

I feel the importance of the work by the several Conference standing committees over the year should be fully recognized and the diligence of committee members should be applauded. Their task is not a simple one as evidenced yesterday during the discussion on the Committees' tentative reports and later when each committee tackled the preparation of its final report. So let us remember this week, and in the future, that each committee strives to solve problems and offer guidance on the many complexities that are encountered in weights and measures—and in a way that fulfills the will of the majority. Obviously, differences of opinion between and among government and industry people will always exist, and the special interests of some will and must go unserved.

Looking ahead to the remainder of the Conference this week, I hope you will find the program that follows to be interesting and informative. As you know by now, a somewhat new and different ap-

proach in programming has been arranged. The new format of open forum sessions was selected in order to increase delegate participation and the exchange of information on a variety of topics and issues. We have been most fortunate in arranging for the participation of many qualified representatives of government, industry, and consumer organizations during the forum sessions.

The procedural ground rules for each forum will be basically the same and shall include brief opening statements by the forum moderator and speakers followed by questions from the floor. Obviously, the success of each forum will depend on audience participation and the dialogue that develops with the speakers. It should be mentioned, however, that time for discussion must be limited due to the number of people involved and subject matter to be covered. Thus, it is suggested that you be mindful of the time problem and assist us in the orderly functioning of the forum program. I am sure that some of you would prefer to spend several hours discussing a topic of particular interest to you, but to do so would require the elimination of some topics that are equally important to others. With your understanding and cooperation, I am looking forward to the open forum sessions starting this afternoon and to the questions and answers that will be generated to help serve and guide us in the future.

Now, I would like to comment on matters that relate generally to this year's Conference theme, "Weights and Measures—The Consumers' Affair." Is there anyone here today who questions the fact that weights and measures is the consumer's affair? I doubt it, and I especially hope not. Why then was this theme selected and what are some of its implications?

Very simply, the theme draws attention to the fact that weights and measures activities are an integral part of this nation's growing concern and effort to serve the interests of consumers. Specifically, the Conference program this year was planned in such a way as to include developments and subject matter that would reflect our involvement in consumer affairs. Admittedly, not everything we will talk about and take action on this week will seem to relate to the consumer protection movement, but we know that it will, either directly or indirectly. And these subjects will range from railroad cars and packets of flower seeds to computer systems and international standardization. Of course, we must accept the fact that most everyone nowadays wants a "piece of the action" and to be identified as serving the consumer's cause. We are only a small part of a very large group of people and forces who provide services and assistance to meet the needs of consumers. The list is endless and includes Virginia Knauer, Ralph Nader, government agencies, politicians, associations, lawyers, businessmen, and, yes, even smoke stack inspectors and dog catchers. No one can deny that the role of each is important, but the magnitude of effort by each group is what needs to

be understood and measured. In this regard, I feel the weights and measures effort should clearly stand out in importance from the efforts of many others.

Let me briefly explain why I feel this way and comment on some problems that have had an influence on weights and measures programs.

Weights and measures administration is vital to the economic welfare and to the integrity of measurements in commerce throughout the United States. It is a service of government that protects not only consumers but all parties involved in commercial quantity determinations and transactions, including manufacturers, businesses, and industries.

The weights and measures effort is carried out by approximately three thousand state and local regulatory officials. Federal involvement and assistance rests primarily with the Office of Weights and Measures of the National Bureau of Standards. Its contributions over the years—including sponsorship of this National Conference—have been instrumental in achieving a high level of nationwide uniformity and effectiveness at the state and local levels.

The magnitude of the weights and measures effort can best be appreciated when one understands that the value of all goods and services measured commercially in the United States is \$710 billion annually. The economic impact and benefits of this segment of the nation's commerce by weights and measures regulatory control is tremendous. A loss of only one percent through inaccurate measurement would represent a \$7.1 billion loss in commercial transactions.

Fortunately, such a loss is not likely to occur, for through the years weights and measures officials have provided the necessary control over commercial measurement and their effort has maintained "equity in the marketplace." But what would be the situation if weights and measures enforcement was discontinued or weakened to a point of ineffectiveness? Could this happen and would not the economic loss to this nation be chaotic? You know the answer to these questions as well as I.

What some of you may not know is that we have approached a dangerous crossroads at the Federal, state, and local levels. Many organizations and programs have been or are being severely curtailed through reorganizations or budget reductions. In my opinion, this is due primarily to the fact that weights and measures people and programs have been generally taken for granted by the public and top officials in government. The growing and politically popular area of consumer affairs has surprisingly contributed to the crisis. Although the weights and measures effort should be recognized as a fundamental part of consumer interest programs, such has not been the case throughout the nation generally.

I am glad to say there are some exceptions. In a few states and metropolitan jurisdictions, programs have been broadened and strengthened because of their recognition and involvement with the consumer movement. However, a major problem exists in those areas where programs are being ignored, reduced, or taken over by a new breed of consumer advocates and their newly formed organizations. In these areas, weights and measures suffers from the stigma that it is somewhat out of date, provides limited protection, and is generally an unknown service of government in the eyes of those who profess to be serving the cause of consumers, yet who undoubtedly are looking for something that is more glamorous politically. This general apathy towards weights and measures sometimes causes me to wonder—are we failing? Is the value of our work so insignificant? Or, is it the price one pays in government for doing a job well, over a long period of time, with little or no fanfare?

Some will argue that the very name of our profession—weights and measures—is the cause for our dilemma, and that it should be changed to something that clearly identifies who we are, what we do, and whom we serve—in modern terminology so to speak. I personally find it difficult to accept the reasoning or justification for such a change. Weights and measures has a historical and worldwide meaning and can be traced back through the pages of history to the beginning of civilization. In my opinion, the solution lies not in changing terminology but rests with those of us who can and want to educate people on the full meaning and mission of weights and measures.

Let us keep our name—weights and measures—and call upon our friends in the consumer movement, agencies of government, legislatures, and industry to assist in this educational effort. In this regard, and accepting the fact that tradition is sometimes indefensible, I contend that it would be more advantageous for present weights and measures bureaus, divisions, offices, and the like to continue to be so called and to operate as a separate identifiable organizational unit of whatever larger department it now falls or may be part of in the future. For example, a Division of Weights and Measures, Department of Consumer Affairs, would be a logical setup and one that gives cognizance to the many diversified activities and the factors with which we are involved, such as: laws, regulations, standards, measurement, technology, inspections, device testing, package control, education, and enforcement. In addition, by being a part of a consumer affairs organization, weights and measures activities should receive the recognition and support that they justifiably desire.

In the final analysis then, I see weights and measures as being the consumers' affair—and we want it that way. But let us not overlook the fact that weights and measures is also the nation's affair—

transcending in some respects those things of interest only to consumers. By the same token, there is much involved in the consumer movement that has no relationship to weights and measures and this is as it should be. The challenge we face is to establish the proper relationships with others in the consumer movement and to work with them as allies while at the same time maintaining our historic governmental role of providing impartial protection and assistance to all who sell and buy goods and services in the marketplace.

I am confident that officials throughout the United States are ready and willing to extend the boundaries of their programs and to accept whatever changes are necessary to meet the needs and goals of the future. A number of you have already experienced organizational changes and broadened program objectives. Many of you are here this week to find the answer to questions and receive guidance on how best to cope with the consumer issues. Hopefully, you will not go home disappointed, for in addition to the program we have planned and the speakers you will hear, you may have an opportunity to meet with representatives of consumer organizations from throughout the United States. I mention this because invitations were sent to every consumer organization we could locate in America inviting their attendance at this Conference. To our consumer friends in the audience, I say welcome aboard. We look forward to your participation this week, and to a closer working relationship with you in the future.

This concludes my comments on matters relating generally to the 57th National Conference. The remainder of my remarks will be devoted to a brief summary of those things that I view will be important factors and considerations in the months and years ahead. Some of what I cover will be discussed in greater detail during the forums of this Conference. In fact, I would encourage discussion on these points with the experts who will be appearing on the program for this is the time and place to explore and construct the path to our future. My views are offered in no particular order of importance or priority and will begin with several points that have already been mentioned but which I feel need to be stressed.

1. It is time for weights and measures administration to be duly recognized and adequately supported at all levels of government—Federal, state, and local—and by the public at large.

2. It is time for a reevaluation of priorities in consumer affairs and for weights and measures programs to be placed near the top—not the bottom—of the consumer movement spectrum.

3. It is time for those weights and measures officials who prefer the status quo to understand that they will find it difficult, if not impossible, to justify the maintenance of their programs on the basis of accomplishment in the past.

4. The weights and measures organization of the future will find it necessary to develop new approaches to keep pace with advances in technology, commerce, and socio-economic changes in the nation. Weights and measures officials must be prepared to get involved in new programs in which their measurement expertise and enforcement qualifications can be put to effective use to achieve new goals and to meet the growing need for more efficient and equitable measurement control in commerce.

It will be our responsibility to ensure positive disclosure of all quantifiable material factors influencing value comparisons in the exchange of goods and services. This will mean that weights and measures programs may branch out into new areas of measurement that involve declarations of quality as well as our traditional concern with quantity. Among our new concerns may be such things as warranties, guarantees, and claims of durability on various consumer type products where these claims are based on measurements. Going one step further, I can see our involvement in those public protection programs that are measurement sensitive and oriented such as environment, health, and safety programs. As a matter of fact, this view is more than mere speculation, for weights and measures officials have already been approached to render technical aid in the monitoring of pollution devices and the testing of air tower accuracy in service stations.

5. The enormous growth of the population in the United States coupled with parallel increases in the economy has brought about demands on government to provide better services and a higher standard of living. To meet these demands successfully, weights and measures officials should realize the importance of developing wise fiscal programs that will be responsive to public needs but at a minimal cost. The significance of this is that we must develop and apply better management techniques in order to make the best possible use of our resources. Additionally, and probably more important, we have got to be able to prove that we are using dollars wisely and to show the benefits of our effort. Providing assistance and guidance to state and local jurisdictions in this area will be given high priority by the NBS Office of Weights and Measures. The use of the computer will help accomplish this task and has already been utilized in developing the initial parameters and guidelines for such a program.

6. Weights and measures technology will continue to take on greater sophistication and require the development of new test equipment and methodology. There is a critical demand for engineering research and studies in several areas and these demands will grow in number and intensity. Major attention must be given to improving and strengthening the technical capability of officials through specialized training and stepped up educational opportunities.

The specifications, tolerances, and other technical requirements as published in NBS Handbook 44 will continue to serve as the legal basis and criteria in the determination of device accuracy and acceptability. I would be the first to admit that Handbook 44 is not a panacea for all the technical situations and problems in our field. It is, however, the best set of rules that we, and our predecessors, have been able to develop and the search for improvements is never ending. The door is open to anyone who desires to offer recommendations on improving Handbook 44. I emphasize "recommendations" for whatever is published in Handbook 44 must first be approved by the voting membership of this Conference and then it must also undergo promulgation by the states to be officially accepted. Forty-eight states have taken such action on Handbook 44 and the other 2 states are guided by its provisions.

To wrap up my comments on this item, I suggest that we be careful not to impede innovations in weights and measures technology with regulations that place undue constraints on new ideas and designs. The emphasis of Handbook 44 should be on the performance of devices and include only such design and user requirements that have a significant bearing on performance. In my way of thinking, the end results that are obtained from weighing and measuring devices should be the prime concern of weights and measures officials—and not necessarily how one arrives at these results.

7. In our desire to serve the cause of consumers, we should not forget that all of the nation's businesses and industries that are involved in some way with commerce have a large stake in the affairs of weights and measures administration. It is business and industry who are regulated and they rightfully demand that weights and measures requirements and activities be fair, technically competent, and uniformly administered. It is not surprising, therefore, that the staunchest supporters, other than the regulatory officials themselves, for sound enforcement programs are the representatives of business and industry for they recognize that such enforcement is for their benefit as well as for their regulation. This is a very unique situation and is perhaps unparalleled in any other governmental program.

But what of the future? Can we look to the continuation of cooperation with business and industry? I believe we can, but I also see a new trend developing that could cause somewhat of a change in our relationship with business and industry. This trend involves the transfer of responsibility for compliance with weights and measures laws and regulations from regulatory officials to the industrial and business communities. In other words, the weights and measures activity is changing from its traditional service mode to that of regulatory supervision and surveillance.

It will be up to the manufacturer and businessman to know and comply with existing weights and measures laws and regulations at

all times. As in other fields of law enforcement, ignorance of the law is no defense and violators will be cited as circumstances require. Of course, the responsibility of business and industry to adhere to weights and measures requirements has always existed but some apparently are not aware of, or have been lax in assuming, their responsibility.

This leads me to my last point, which has to do with some future activities of the National Conference on Weights and Measures.

8. The entire membership of this Conference—government, industry, and consumers—should accept the opportunity, if not the responsibility, to inform people throughout the nation on the meaning and significance of weights and measures administration. In my opinion, this is not a Utopian scheme and the benefits to all would be immeasurable. So let's get started and begin by encouraging more organizations and people to get involved in the affairs of the National Conference, recognizing the fact that the present representation is excellent. In line with this, I would like to recognize the valuable contributions that are made to the Conference by the Southern, Western, and Northwest States Regional Associations. The input from these associations represents a major part of the work of this Conference. Their recommendations and assistance provide us with the "grass roots" information and field experience that is so important to our activities and deliberations.

There is a move afoot to establish a Northeastern Regional Association encompassing those states that are not now a member of a regional association. I heartily endorse this action for when this takes place we will have achieved a most desirable network of national, regional, state, and local weights and measures associations and conferences.

Moving on, I see the National Conference continuing to serve as a national forum for the discussion of all matters relating to weights and measures and to providing the means for the development of model laws and regulations, test methods, enforcement procedures, and administrative guidelines. But is this really all that needs to be done to achieve nationwide uniformity and standardization? The answer to this question is obviously no. We must not overlook the fact that models need to be adopted and methods followed to reach our ultimate goal. Thus, the acceptance of what the Conference produces is what really counts in the long run. This will require a promotional and educational program—telling people what, why, and how. Equally important will be the evaluation of what we do and the results we obtain. When all of this has been accomplished, we will be able to measure and document the effectiveness and benefits of our effort.

The last remaining task is to prepare ourselves for any new developments that could cause a heavy impact on our profession. There are two on the horizon—a metric America is one, and U.S. membership in the International Organization of Legal Metrology is

the other. Our readiness to cope with these developments is important for weights and measures involvement will be significant. But have no fear, for I know that weights and measures people can and will meet the challenge.

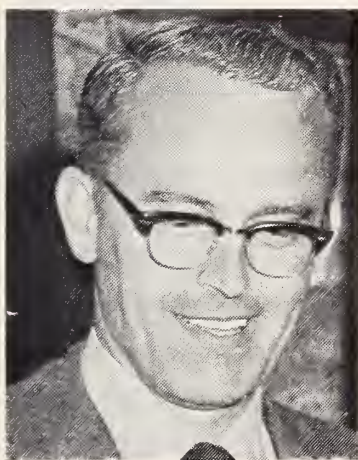
So much for now. The road ahead in weights and measures looks interesting. We can expect some rough spots and detours as we travel along, but we have this Conference to guide us in the future.

AFTERNOON SESSION—WEDNESDAY, JULY 12, 1972

(HALBERT K. SHARP, *Vice Chairman*, Presiding)

FORUM ON LIAISON FOR THE BENEFIT OF CLIENTS AND CONSUMERS

T. M. STABLER, Office of Weights and Measures, *Moderator*



As the title for this forum suggests, liaison or communication will be the underlying theme of this afternoon's presentation. Although all eight participants will not be treating this subject specifically, the very presence of these leaders from the Government, from the Association of American Railroads, American Railway Engineering Association, Scale Manufacturers Association, Interstate Commerce Commission, Council of Better Business Bureaus, and General Services

Administration provides a means for improved communication and understanding in government, industry, and weights and measures.

The topics and issues being discussed in this forum relate to our programs of enforcement, the manufacture of weighing and measuring devices, and the packaging of commodities. We have with us today outstanding educators, administrators, and engineers. They will make brief presentations and will then respond to your questions.

I would like now to introduce Dr. F. Karl Willenbrock, the Director of the Institute for Applied Technology at the National Bureau of Standards.

NBS—THE VIEW AHEAD

by F. K. WILLENBROCK, Director, Institute for Applied Technology,
National Bureau of Standards



The thing I would like to talk to you about, since this is a question that I know has come up with many people in the weights and measures community, is how we at NBS make some of the tough decisions about what sort of resources are available to the Office of Weights and Measures and how they get those resources, and how we decide whether these resources are enough. We use a system which is characteristic of many government agencies, and certainly is characteristic of the way things

happen at the National Bureau of Standards.

First of all, all NBS organizational units such as the Office of Weights and Measures are reviewed both internally and externally on a systematic basis usually at least annually, and in some cases more often than that. The internal review procedure really is the responsibility of the chief of the office and the members of his staff, who have to look at their programs, decide which ones they think need to be strengthened, which ones need to be terminated, and which ones need to be redirected.

An example of redirection is the recent interest of OWM in examining the possibility of dynamic measurements on railway track scales and actually reprogramming away some of the resources they had previously used for static testing. This is an example of an internal area where OWM decides going toward in-motion weighing systems rather than spending as much effort as they have in the past on static weighing systems.

The external reviews are carried out by a series of agencies, usually starting with my own operation, and then proceeding to the NBS Director and his staff, and then the Department of Commerce. Finally, there is a group called the Congress, who have a lot to say about this whole process. I am sure that the Weights and Measures staff, along with practically all the other staffs at NBS, think that there are an infinite number of people who ask some semi-infinite number of questions and who want their answers immediately.

However, I have found that, if you take a look at the successful operations in the most successful groups in this process of review, you will find that these groups are those who have done a series of things and have clearly identified the users of the services that they are performing. It is very important to have an identified group of people, or identified constituency if you will, of users who are interested in the services you are offering or performing.

I think the Office of Weights and Measures is in a much better position than many other areas of the Bureau in having a well defined group of people with whom it interacts and whom it serves. That is the weights and measures community and the people that are associated with it—the officials and the members of the industry. Through the National Conference and its various activities, there is a good structure, a communication structure by means of which this community can let the Office of Weights and Measures know the services it needs as they vary in time, as they certainly will.

I think we have, through the National Conference on Weights and Measures, what is effectively a wide band and relatively noise-free communications channel, and we are in a very fortunate position here. I think I would like to emphasize again the very important role the Conference plays to us as we go through this annual ritual of resource allocation.

At the present time we are undertaking a very systematic review of all the activities of the Office of Weights and Measures and are trying to analyze them thoroughly and to document the needs of the weights and measures jurisdictions. In the process of this review which we have been carrying on for several months, I think it has been clearly demonstrated that there are unmet needs which exist in the area of training, for example, and also in the areas of resource allocation models and strategies and in engineering evaluation. The documentation of these needs has been very strong and very convincing to me, and I hope that the others who are in the chain that have to approve new resource allocations will also be as convinced as I am that increased resources are needed and should be made available to carry out expanded programs in these areas.

The resource allocation models which I understand were reported to you two years ago at this Conference have had very significant developments since then. They seem to offer a very worthwhile approach to the problem of maximizing the effectiveness of your inspection programs under the constraint of limited resources and limited numbers of inspectors and available inspector time. We hope to expand this and other management information systems in an effort to help you to do an even more effective job than you have done in your own jurisdictions. We think this is a very important area in which we can provide a service to weights and measures officials.

We also feel that, in the area of engineering evaluation, there is room for a somewhat similar approach to what we have utilized in the past. Over the years the Office of Weights and Measures has received a large variety of engineering evaluation requests from the states. You are undoubtedly familiar with some of these, such as timing devices, liquid fertilizer metering, many types of liquid and gas-measuring devices, moisture meters, and so forth.

Since no one group has sufficient expertise to evaluate the variety of requests this sampling indicates, we plan to enlist the aid of other NBS engineering and measurement groups, and perhaps some engineering and measurement groups outside of NBS. By involving these people, we feel we can insure that the highest quality engineering evaluations at the present state of the art will be available to you, and that we will be able to reduce the processing time for these requests. We are working very hard to make our systems more effective in this area, and to develop good, sound working relationships with other divisions of NBS where particular expertise lies.

Associated with these engineering evaluations are also requests from states planning on expanding their own metrological measurement and testing programs. We plan to continue to assist the states in these measurement areas, and we want to help them in any way that is appropriate. Here again, I see a very close interaction with some of the basic measurements and standards activities, particularly the Institute of Basic Standards, within NBS; and we can take advantage of the very significant developments that they have had in what they call their measurement assurance program.

This is a program which NBS has been working on for some time and which has been a means by which the measurement capabilities have been extended in a most systematic way to other laboratories. It is one that can be of great benefit to the weights and measures officials. It is a program which is designed to insure the continuous credibility of measurements in mass, volume, and other quantities in laboratories of users of high accuracy measurements.

We hope to be able to provide the states, on their request, with the information required regarding the technical aspects of performing measurements in new areas, the standards requirements, the environmental control requirements, the alternatives to NBS for calibration services, so that the states can make an informed judgment as to which services they wish to inaugurate and how to get other ones they will need.

We find that some of these services are so demanding in capital investments and operators' skills that it may not be cost beneficial for the states to supply them, depending rather upon industries closely coupled to the national measurement system via the measurement assurance program of NBS.

As I have already mentioned, the task of developing analyses and justifications for programs is a difficult and lengthy one. If we consider the theme of this Conference, "Weights and Measures—The Consumers' Affair," and ask ourselves what new services OWM should provide the weights and measures community, it is immediately apparent that we need all the help we can get and that you can provide us in this way. We are very dependent upon the feedback, the interaction we have. As you know, many members of the NBS staff are here during this Conference because it is such a valuable

means of communicating with the very diverse community represented by the weights and measures officials and related industries.

We know that the citizens in your areas have been asking that you provide more consumer-oriented programs. We need their inputs, and we think one of the most appropriate ways to get their inputs is through you, so we can develop new programs and new services which will be responsive to the needs that you are aware of.

As an example of that, I think our fair packaging and labeling activities have been helpful to you in meeting some of the consumer requests in the area of packaging. I am sure there are other areas in which we should be doing some thinking and planning, such as warranties, measurements associated with quality in addition to quantity, and so on. What sort of new programs should we be thinking about in these areas?

So I would like to end my very brief comments here by calling upon all weights and measures officials to let the Office of Weights and Measures know through all the means of communication you have what areas we should be looking at, so that we can continue to do a job which is as responsive as it can be within the resources we have available to us.

DISCUSSION

MR. V.H. FREYGANG (C&O/B&O Railroad): What steps have been taken to formulate the program of evaluating motion weighing?

MR. STABLER: What we have at the present time is a committee of representatives from the railroad and weighing industries. This committee was originally formed to evaluate a proposal for a study of electronic in-motion weighers, railroad weighers. However, the committee deemed the proposal inappropriate because of the funding levels and other technical matters associated with handling of test equipment, such as test cars and test weights. So we have taken another look at the problem.

We have now a tentative study outline. The NBS Office of Weights and Measures has met with various experts at the Bureau of Standards in another attempt to put together a proposal that will result in a test program to develop test procedures and specifications for railway in-motion weighers. This would be a performance specification to be included in Handbook 44.

So this is where we stand at the present time. It has been a long road of frustration because of the complexity of the problem. It is a very, very large undertaking to evaluate the present state of the art, to evaluate each of the different kinds of in-motion weighers that are presently installed and which would be installed in the near future. So

the original attempt has been scuttled in favor of this new approach, which we hope will be successful and which will employ the full talents of the Bureau, railroads, and scale industry.

MR. G.L. JOHNSON (Kentucky): Does engineering evaluation mean about the same as engineering research? Also, will we have a higher priority on engineering research in the field of liquid fertilizer and moisture meters than in the past few years?

DR. WILLENBROCK: To me, engineering evaluation in some cases involves research. We use the word research in a somewhat different fashion. On the other hand, it requires an engineering analysis, and in some cases this is not within the present state of the art and research is needed.

We are hoping that we can do a better job than we have in the past on some of the problems that you refer to. We hope we can, with the additional resources requested, be able to get a shorter turn-around time and actually get out some of the engineering evaluations and results that you need in a shorter time. So the answer to the latter is yes.

MR. N. DI MARCO (Cumberland County, N.J.): Is the Office of Weights and Measures participating in a program of exchange personnel where there is an exchange of personnel between the Office of Weights and Measures and other jurisdictions throughout the country?

DR. WILLENBROCK: We have not had as many exchanges in that area as I would like. We would like to move into an area where weights and measures officials could spend an extended period of time at NBS.

MR. E. PRIDEAUX (Colorado): Will you condone the railroads privilege of using in-motion weighing commercially while the evaluation program continues for possibly as long as five years?

MR. STABLER: The NBS Office of Weights and Measures has no regulatory authority in this area. We cannot either condone or reject or in any way prohibit railroads from weighing in-motion or in any other way. I think the recommendation of OWM would be to grant a temporary permission to use these devices commercially until such time when there is a test procedure and a Handbook 44 specification covering them.

Of course, the weights and measures official has the complete authority to take whatever option he likes. The authority is in his hands. However, I think the best analogy would be the approach recommended at the time we were considering conveyor-belt scale codes, where conveyor-belt scales were in existence and in commercial use long before weights and measures officials had test procedures or specifications on which to base an approval or a rejection.

MR. K. SIMILA (Oregon): My first question relates to the status of the OWM budget for fiscal years '72, '73, and '74. My second question

has to do with other activities in the Institute for Applied Technology and what percentage of the Institute budget is allocated to OWM.

DR. WILLENBROCK: Tom Stabler can give you the figure for FY '72 better than I can. We have only half the information for FY '73. All we can say for FY '74 is that we have made requests for additional funds. The best way to answer your second question would be to send you a booklet describing our activities. To answer a question about the relative sizes is a pretty complicated one. A lot of the funding that we get in the Institute comes from other agencies who ask us to do work for them. For example, the Department of Housing and Urban Development funds many millions of dollars of research in our Building Research Division, so therefore those funds are in some ways within the Institute and in some ways are not within the Institute. So this is a rather complex question.

MR. C. WOOTEN (Florida): We are going to do our best to implement the program in railway testing, and have decided to give a temporary type of approval from the State of Florida provided the scales meet all the requirements applicable today and provided the weight agreement bureaus and the railroad inspectors are all in agreement.

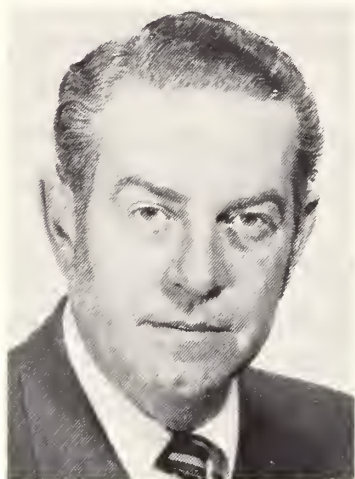
MR. STABLER: That sounds like a very good recommendation. There are many other references upon which to base your judgment. The AREA has a handbook referred to by Mr. Day as their "Brown Book." I think this will continue to be a very important reference even when there is an H-44 code for in-motion weighers. Scale companies also have material and data concerning the performance of in-motion weighers. I believe that most weights and measures officials would take the same stance that you have taken.

MR. WOOTEN: The industry is definitely going to request this of us, I believe.

MR. STABLER: The next panel participant is another NBS employee, Mr. William E. Andrus, who is Program Manager for Engineering and Information Processing Standards in IAT. Bill will discuss the "OIML, International Organization for Legal Metrology—Under Congressional Consideration."

OIML—UNDER CONGRESSIONAL CONSIDERATION

by W.E. ANDRUS, Program Manager for Engineering and Information Processing Standards, Institute for Applied Technology



I would like to talk to you this afternoon about the International Organization for Legal Metrology, the OIML, to tell you what it is, how it relates to U.S. interests, and where we stand on U.S. membership today.

By way of a little background, the OIML is a treaty organization not under the United Nations, but one concerned for the most part with standards for instruments and measurement techniques involved in legal determinations of quantity and quality. OIML was organized in 1955, and today has 35 members and seven corresponding members. The membership is predominantly European, with a few countries from outside Europe as members. OIML is relatively small and, as a result, has a small staff and a modest budget, a budget of \$109,000 for 1972. The major expenditures for this are for the staff and other costs, including operations, printing, the cost of convening meetings, and so forth. If the United States were a member of OIML today, its share for this year's budget would be \$15,000. This is based on the fact that each member state is assigned to one of four classes, taking into account primarily population and adjustments for the extent of use of measuring instruments.

The function of OIML can best be understood by considering the concept of the word metrology in general and the words legal metrology in particular. Metrology is a collective term recognized over the world for all problems of measurement. It comprises, first, the measuring units and their standards, second, the measuring instruments, and third, the methods of measurement.

Legal metrology enters the picture when the public authorities influence the treatment of measuring problems through legal regulations. It is generally recognized that public authorities have the obligation to insure that correct measurements be effected on a uniform basis. National regulations have developed in the various nations independent of each other, and they have, therefore, differed widely. With rapidly advancing technology and increased international economic activity, the compatibility of both standards and the legal aspects of standards (that is, the legislation and regulations

which may affect them) has become increasingly significant. The unification of legal metrology is then the function of OIML.

To paraphrase the stated purpose of OIML, it is to form a center of documentation and information in the field of legal metrology. It is to establish close relations with respective national weights and measures services and other services in charge of legal metrology, and to furnish advisory assistance to the interested states—states, in this case, being countries. Also, OIML determines the general principles of legal metrology, issues uniform international recommendations of legal requirements for measuring instruments with respect to their use and control; in particular, sets up a code of specifications and tolerances with which measuring instruments must comply in order to acquire international approval. Additionally, OIML promulgates model laws and regulations in the fields of legal metrology, for instance on the establishment of a national weights and measures service and on the necessary control and supervisory activities.

The decisions of the organization have the character of recommendations, not the force of law. However, members of the organization are morally obligated to implement these decisions as far as possible.

OIML consists of the International Conference on Legal Metrology, the International Committee of Legal Metrology, and the International Bureau of Legal Metrology.

The Conference consists of delegates from member states. Where it used to meet every six years, it now meets every four years. It submits its decisions to the member states for information, consideration, and recommendation.

The Committee, on the other hand, consists of one delegate from each state, and it meets every two years. The technical work of OIML is conducted by working groups within the framework of this Committee.

The Bureau itself constitutes the Secretariat of the Organization; and, interestingly, it is forbidden by the Convention from carrying out any experimental research or laboratory work.

To date, 19 OIML international recommendations have been published covering standards for a wide range of measuring instruments and equipment. Other publications include a vocabulary of metrological terms, numerous proposed recommendations and committee reports, and literature on the OIML organization and procedures. The documents are prepared in French. Arrangements have been made with the United Kingdom to have international recommendations as well as some working documents translated into English.

The U.S. did not join OIML at its inception in 1955 because the United States, in order to curb the proliferation of new international organizations, preferred at that time to see international activities carried out under the aegis of the United Nations. In this case, this

policy did not deter the formation of OIML. However, after much discussion over the years, finally on April 11, 1972, President Nixon requested the Senate to give its advice and consent to accession to the convention establishing an OIML.

In his letter to the Senate recommending accession he said: "The U.S. has in the past been an interested observer in the Organization's work, and I believe that accession to the convention would now be of clear advantage to the United States. As the world's largest trading nation and as a world leader in the standards field, we would better be able to assume a positive role in the setting of international standards for measurement and, in so doing, to expand our international trade."

The reasons for joining OIML are scientific as well as economic. While scientific considerations alone would furnish a valid basis for joining the organization, there are other very pressing reasons for doing so, not the least of which is the deteriorating balance of payments situation of our country.

The Department of Commerce has mounted a number of programs to attack this problem, including a greatly reinvigorated international standardization program. Standards are assuming an ever more important role in the international scene, especially in the trading sector which is so vital to our balance of payments position. They can act either as a lubricant in the trade machinery or as a source of friction to trade. Many instances can be cited as examples of such friction, and a number of them have become serious trade policy problems.

It is not only the experience of individual firms or industries that concerns us, but rather the total export-import outlook for the future as it relates to the U.S. balance of payments problem and the role of standardization. The Department of Commerce a short time ago completed a study of the prospects for U.S. export-import trade over a five-year period. This study finds that U.S. export growth is likely to slow down in the coming years if export expansion measures are not taken, and that import growth is not likely to recede to levels that would provide a significant trade surplus. Either a diminishing surplus or a deficit, particularly in the context of an uncertain balance of payments situation, might endanger the continuance of the liberal trade policy which has contributed materially to the economic growth of the United States and its principal trading partners. This would, of course, adversely affect the international political relations of the United States.

The report urges that the United States take positive measures to increase exports rather than adopt a trade contracting policy of restricting imports. The report makes a number of major recommendations for positive measures to increase exports, one of which is to strengthen U.S. participation in international standards making.

Joining OIML is just one of the actions required in the international standardization field, but an important one. While no one can say

precisely what the effects of not doing it might be, we can get a good idea by examining the scope of OIML's work and the importance of U.S. trade in those products on which OIML might make recommendations not compatible with U.S. interest and concerning which the U.S. as a non-member would have no influence. An analysis of U.S. exports as related to the work of OIML committees shows a significant volume of U.S. trade which could be affected by the decisions of OIML on the items included in the Organization's work program. Whether or not the effects would be adverse would depend, of course, on the kinds of decisions made. We do know, however, that as a nonmember we would have no influence on these decisions.

Closely related, but of a longer-run nature, is the potential importance of the markets in the developing countries in the light of OIML programs concerning them. OIML is now moving into the area of metrology standards for the developing countries. Last year they distributed a questionnaire to developing countries and to its 36 members for the purpose of obtaining advice on the need for technical and administrative assistance in setting up departments of legal metrology in the developing countries. Such departments have responsibility for the metrology of measuring instruments regulated by law for use in commerce and industry and in the field of public health. The implications of this for future opportunities in the fields of trade and direct investments in these countries cannot be overestimated.

This is a long-term program and, as a nonmember, the influence of the United States will be severely limited in its formulation and implementations. Our faith that these countries will develop into economically viable states with potential markets has been backed up by the billions of dollars the U.S. has poured into their development efforts. The extent to which the U.S. can expect to share in these markets depends, among other things, on their developing standards systems, which, if not wholly consistent with the U.S. standards, are at least compatible insofar as trade relations are concerned. Experience has shown that, for such relationship to exist, the U.S. must participate. We must be able to help in the formulation and implementation of standards and standards policies.

Despite the importance of the balance of payments aspect of our nonmembership in OIML, we should not let this overshadow the seriousness, from a scientific point of view, of our absence. So far, we have simply opted out of an important decision-making body in the field of metrology, which is, in effect, the legal counterpart of the International Committee of Weights and Measures (the CIPM), in which the U.S. has been an active member since its inception in 1875. Legal questions were almost always on the agenda of CIPM, and at one point consideration was given to establishing within the scope of CIPM a consultative committee of practical metrology which should deal with problems of legal metrology. If this had happened, the U.S.

would now be participating in the deliberations regarding the legal aspects of metrology. It did not, and OIML was formed, and the U.S. has little influence in this major sector of international standards activity. In fact, it is difficult, as a nonmember, to keep adequately informed on OIML's activities.

Were the U.S. a member of OIML, we would be able to bring scientific and legal talents to bear in influencing internationally adopted measurement techniques in favor of methods which, if not advantageous to American procedures, would at least not present major disadvantages. As a matter of fact, the Western countries continually urge the U.S. to join OIML. They want the technical competence which the U.S. can bring to the organization, and they want the influence of the U.S. They say that the organization is now being dominated more and more by the Eastern countries, and that they need the U.S. in order to bring more balance from the Western point of view. They are confident that the U.S. can influence the character of the organization, and some of our European friends even predict that the U.S. would soon be elected to a vice presidency of the organization.

Be that as it may, it is not in the interest of the U.S. to remain a nonmember. Industry has supported and urged U.S. membership in OIML for years. The Scientific Apparatus Manufacturers Association (SAMA) makes a point that, as the world becomes more and more dependent on science and technology, it becomes more dependent upon scientific instruments, the tools of the research laboratory, the hospital, the classroom, the defense plant, and the general manufacturing facility. In the U.S. we have an investment of some \$25 billion in measurement instruments, and this is increasing rapidly. Therefore, the need for a legal basis for instrument compatibility becomes greater. The Association believes that we cannot maintain our leadership in this field or our position in world markets unless we strengthen our participation in the international standards making activities. SAMA joins the scale manufacturers and APL in supporting U.S. membership in OIML.

The American National Standards Institute (ANSI), which undertakes the primary responsibility for United States participation in international voluntary standards making organizations, says that nonmembership in OIML is a serious deterrent to participation in the development of standards related to metering devices, scales, and other measuring instruments. ANSI points out that OIML is in a unique position in that it is composed of the weights and measures officials of the various countries, many of whom are responsible for the development of regulations and laws.

So you can see that there are many advantages to the U.S. in joining the OIML. It has a direct interest, the results would be tangible, and the cost would be minimal.

But where do we stand today? As I indicated earlier, in April of this year President Nixon submitted to the Senate a request for their advice and consent for accession to the conventions of OIML. This request comes before the Senate Foreign Relations Committee; and Senator Fulbright, its chairman, has recently requested and received additional information on the makeup, the purposes, and accomplishments of OIML, as well as further justification for U.S. membership. When hearings will be held on this request is unknown at the present time. In this election year and with the priority and lack of urgency associated with this legislation, we are not hopeful for early action.

It has been our hope that the U.S. would be a member in time to participate as a member of the meeting of the International Conference of Legal Metrology which will be held the last week of October in London. This conference used to meet every six years, now every four. It is the session where OIML recommendations receive final approval and where major actions on organization and programs take place. Of particular importance this year is the proposal of the Russian delegation to initiate a program of standard reference materials within OIML with the secretariat to be held by the Soviet Union. We question the need for such a program, particularly under the auspices of OIML. A few years ago it was suggested that a program of this nature be initiated by the International Conference of Weights and Measures, which we supported, but it was rejected by the Soviet Union and the Conference. The initiation now of such a program needs in-depth discussion and the active involvement of the United States as the world leader in the development and promulgation of standard reference materials.

In conclusion, I would like to say we are over the first hurdle. We have come to an agreement within the Executive Branch of the Government that U.S. membership in OIML is desired and needed. The next hurdle is that of obtaining Senate approval, and early action on this is dependent upon the sense of urgency associated with this legislation.

DISCUSSION

MR. M. GREENSPAN (New York City, N.Y.): If the National Conference passed a resolution addressed to the Senate urging their action on the United States joining OIML, would that in any way be helpful in getting any action?

MR. ANDRUS: Whether it would be helpful or not depends a lot on this election year, but I would say that it would not do any harm.

MR. A. SANDERS' (Sales Manufacturers Association): I believe we were at least one of the first to endorse our participation in OIML for very practical reasons. OIML is setting standards and specifications

and tolerances for scales and weighing devices in Europe and Latin America and elsewhere. Not only can we not participate, but we cannot even find out what they are. They are all in French and nobody has them. If the United States is permitted by the Senate to participate, who would handle it?

MR. ANDRUS: The official participation, such as the naming of delegates, has to be under the authorization of the Department of State. The coordination of U.S. participation would undoubtedly be handled by the Department of Commerce, namely the National Bureau of Standards. The coordination of participation in the technical working groups, of which there are some 60-odd, now functioning in OIML, would be handled probably by my office with the in-depth involvement of OWM and the Institute for Basic Standards, which does a great deal of work in the basic measurement area.

MR. SANDERS: To my way of thinking, this thing is ultimately going to fall on OWM, because they are the technical experts on weights and measures.

MR. ANDRUS: A great deal of the work, yes.

MR. SANDERS: We have a very awkward system of weights and measures administration in the United States, with 50 states entitled to set their own laws and regulations. Granted that OWM has a great deal of influence through the National Conference on Weights and Measures, still how can we morally obligate ourselves to adopt what is adopted by OIML?

MR. ANDRUS: I would visualize the National Conference as playing a very active and influential role in the entire discussions and activities of OIML. Since in this country the responsibility for weights and measures is a state responsibility, this forum of the Conference should play a very active role, particularly in recommendations of the U.S.

MR. SANDERS: Is there a possibility of getting OIML to revise its constitution somewhat concerning this moral obligation?

MR. ANDRUS: This moral obligation is really nothing new. We have a moral obligation, when we vote in favor of standards adopted by ISO and IEC, to try to see them implemented. It is not binding. And I feel that any actions that we take in OIML would be in the interests of what we could adopt within this country, or we would have to take a position in opposition to it.

MR. J.I. BIRD (New Jersey): If the Conference is going to have participation in OIML, will this participation involve the standing committees that we now have, or will a new standing committee be formulated to be in charge of this type of work?

MR. STABLER: At this point we do not know the answer to that. The United States will have to become a member first, and then we will have something on which to base the involvement of the Department of Commerce, NBS, OWM, and the National Conference.

MR. S.J. DARSEY (Florida): We have trouble with imported goods that are not marked according to FPLA or any state regulations. The Committee on Liaison with the Federal Government has recommended that this problem can best be solved by initiating direct representation in the International Organization of Legal Metrology to effectively confront weights and measures officials representing the exporting countries. Since we do not belong to this organization, what would be the best route to take at this time to see that imported goods meet FPLA?

MR. ANDRUS: In general, there is a great deal of legislation which imposes standards on products that are marketed in the United States. These same standards apply to products that are imported for those same markets. These include not only quantity accuracy measurements, but also fireproofing of fabrics, the safety of building devices, safety in toys, and, as further legislation is enacted, there will be more regulations.

MR. STABLER: So far as FPLA is concerned, this is strictly an enforcement problem. Commodities shipped into New York City from foreign countries are subject to Federal requirements, such as those of the Food and Drug Administration of HEW, or the Federal Trade Commission. They are certainly subject to the weights and measures laws of New York State. I do not know of any easy solution to this, looking from the outside in, through OIML.

MR. ANDRUS: In general terms, I think we are approaching very rapidly a national and, ultimately, an international certification system with which we have reciprocal agreements among other countries that standards are certified as meeting certain standards, particularly in the area of safety, before they are ever exported, let alone imported. But this is long term. It will be a long time before this really comes into being. There is a system under consideration now by IEC for electrical products, and ISO is considering a system which covers other areas of products. They have had systems of this nature operating in Europe for a number of years under CEE. They have had a system for electrical appliances, in which products certified in one country and verified in a second country then are acceptable to all of the countries who are members of CEE. So in the long term, I think it is an international certification system which will meet a lot of these problems. In the matter of measurements, I think we would have fewer problems if we were guaranteed that the products arriving on our docks from overseas were under the same measurement systems and the same standards that we have here in this country.

MR. STABLER: I would like to ask Bill Keindel to what extent Canada has participated in OIML.

MR. W.A. KEINDEL (Dept. of Consumer & Corporate Affairs, Ottawa, Canada): So far as I know right now, we have not participated other than the attendance at the conferences. We did convene the Coding

Committee in Canada the early part of June, but I cannot tell you what the results were in international coding.

MR. W.N. SEWARD (American Petroleum Institute): I believe there is some confusion here. To my knowledge, Canada is not a member of OIML and, therefore, is not qualified to have a meeting of either its working groups or plenary sessions in Canada. My best estimate, however, is that ISO has, in fact, had meetings in Canada, and there were some scheduled in June.

In the case of OIML, the meetings have almost traditionally been held in Western Europe with a few exceptions, notably in India, and in one or two other countries in the underdeveloped category who have stressed interest in a particular project undertaken by OIML.

One thing that is missing in our discussion is the proposal for the United States to accept a code of conduct under the general agreement on tariffs and trade. Would you care to comment on its potential impact on weights and measures as it applies to OIML?

MR. ANDRUS: The Code of Conduct on standards is designed basically to eliminate the nontariff trade barrier aspect of standards in which a standard is imposed upon imports but not imposed upon products that are manufactured locally. Basically, the code states that the same standards must apply to all products. Its impact on the weights and measures activity or the work of OIML is that the same systems of measurements—that is, uniformity—would be applied to the products that are imported as well as those manufactured locally. In doing so, it is very obvious that the import of the OIML recommendations will be much greater than they are perhaps even today.

AAR + AREA + SMA + ICC

KEEPING ON THE RIGHT TRACK

MR. STABLER: In the next part of the program we have representatives from AAR, AREA, and SMA. Mr. John Robinson is Executive Director of the Operating Transportation Division, Association of American Railroads. Mr. Fred Day is Systems Engineer of Bridge and Building Maintenance, Penn Central Railroad. He also serves as Chairman of Committee 14 of the American Railway Engineering Association. Mr. Robert Brumbaugh is President of the Streeter-Amet Division of Mangood Corporation and Vice President of the Scale Manufacturers Association. I would also like to ask the Honorable Rupert L. Murphy, Commissioner of Interstate Commerce Commission, to join our panel members, as I understand that he does have a scheduling problem.

Mr. Robinson, how is the Association of American Railroads serving the interests of weights and measures officials?

REMARKS BY MR. J. J. ROBINSON



We are, of course, a nonprofit trade association, and we share a lot of the same problems or advantages of the Bureau of Standards, whichever way you want to look at it. We are governed primarily by the policy of our members, the member railroads. We do not set policy. We do attempt to carry out their wishes. We represent them on practically every aspect of railroad operations.

The AAR was organized a number of years ago primarily to insure smooth and expeditious interchange of freight cars between the carriers. But our role has expanded, and now we cover just about every aspect. We perform a limited staff function on our own. We get into very detailed investigations. We invariably call upon our members for information and assistance.

AAR's role of assisting the weights and measures officials has in the past been fairly limited. It has grown quite rapidly just in the past couple of years, and this growth has centered almost entirely upon the joint program with the National Bureau of Standards on the railway track scale testing program. A great deal of credit goes to Dick Smith for his efforts and for his cooperation in this. This program has been very successful, and we anticipate it will expand even more in the future as the states become more interested and more active in this area.

At the present time, in conjunction with the Bureau of Standards we issue a tentative itinerary for the movement of the two NBS test cars, with which you are familiar. We also intervene from time to time directly with the railroads whenever scheduling problems arise or a specific movement is required for these cars. We work very closely in conjunction with the AREA, on which Mr. Day will have more comments in the next few minutes, on the actual testing of the scales and the maintenance of the specifications and tolerances. We work jointly with the Bureau of Standards and also the Interstate Commerce Commission on the investigation of the fair weight problems which have come to the fore in recent months, and we have also worked very closely with the Bureau of Standards on in-motion testing, which is planned for the very near future. The railroads' contribution in this area primarily is in the form of transportation and also making facilities available.

Again, I want to stress that our participation in the past has been limited, not by choice, just merely by circumstances. We look forward to a greater role in the future.

MR. STABLER: Mr. Day, what technical developments in railroad weighing and practices can we watch for in the future?

REMARKS BY MR. F. D. DAY



I am sure you are all aware after yesterday's session and from other discussions that the scale weighing business, so far as the railroads are concerned, is undergoing a continuing change, and there has been a rapid change in the last fifteen years. The AREA spent a great many years coding and detailing very specifically how to build track scales for weighing railroad cars. The cars are big, they are heavier, they are pretty nearly the heaviest things that are weighed. We handle atomic reactors that weigh a million and one-half pounds, and they get scaled occasionally. Of course, they have many axles, so it is sometimes not as great a load as you may think.

With the change in the method of handling railroad cars, there has been a big change in the method in which we weigh the railroad cars. In the first place, we do not weigh the cars very much any more. We used to weigh every car. Back in 1900, when all the tariffs were set, every car was weighed. The light weight was recorded, painted on the side of the car. We had lots of weighmasters. We had lots of scales. Every commodity was weighed, and the tariff was collected by the railroad for handling each kind of commodity. Different commodities had different rates. In addition to that, the railroad guaranteed through its scale that the weight in that car was what it said.

With the new method of weighing that is coming about rapidly, we are weighing cars nowadays in unit trains. The unit train business, as you probably all realize from reading about them, consists of 100 cars. Sometimes we have them 250 cars long. Most of the work done with unit trains has to do with coal for fire plants. The fire plant is interested in how much coal they get. We are interested in how much revenue we get.

We have found that the small electronic, coupled, in-motion scales (not the great big scales that we have all over the railroad) can very rapidly, without anybody being there, pick up every car that goes by and weigh every axle or every set of axles that goes by, and send the information to the centralized computers. In some cases, we even have tare weights in the computer that will give us the net weight and make up the weight bill, and nobody even sees the cars.

I foresee in the future that, along with the car reporting, many, many more automatic scales—electronic, unattended scales, with the labels that are now on 85 percent of the cars—will report where all the cars are every day. They will report how much the cars weigh every day.

Now, we have a big problem with this light weight business. I found, on checking cars on the Penn Central, that most of the cars

that were light-weighted that were wrong had things that had not been removed. I would like to be sure that anybody who wants to challenge light weights on cars (and they are open to challenge, and many of them are not precisely correct) makes certain before sending in any data that the cars are absolutely clean. Many cars are not perfectly cleaned, and shippers and receivers are supposed to clean them under the ICC regulation, but they do not always do it.

As to how the scales will be built, these are all technical problems, electronic problems. We have gone from radio tubes to transistors. We are now in the integrated circuit state. There is a great deal of effort being made to get amorphous crystals. We have all kinds of electronic technology available, and you can be sure that the railroads, through all the various engineering departments and scale people who are interested in this subject, are taking every advantage of it, and the manufacturers are also interested to bring as precise a product to this new method of weighing as can possibly be done.

MR. STABLER: Mr. Brumbaugh, what problems face the scale industry in conforming to weights and measures requirements for railroad scales?

REMARKS BY MR. R. T. BRUMBAUGH



This question was asked of the industry, and I did not really feel that I could speak for the industry, so I took the liberty of contacting a number of companies which are currently producing railroad track scales. The answers received varied from manufacturer to manufacturer, and I will try to do my best to give you a summary of the replies without any intentional editorializing.

From several manufacturers, the response was quite simple. There is no problem in meeting weights and measures requirements where they are properly defined. The example used here was the area of static scales and static scale testing. In these areas, Handbook 44 is explicit and, consequently, compliance is simple.

However, the majority of the new scales being installed are not of the static type, and that is where the "no problem" reply falls apart. The fact of life is today that the economics of static weighing of cars is prohibitive to the railroads. Of course, we could look at it this way. If in-motion weighing were prohibited on the railroads, soon there would be either no railroad weighing or no railroads. But that really would not provide us with a solution. So if in-motion weighing and coupled in-motion weighing are to be practiced, then resolving the

specifications problem is necessary. This is the task that is currently being undertaken and should be resolved.

Another response received, although not really in answer to the question set by Tom, was the desire to set forth the difference between testing and weighing. Since testing to determine conformity to weights and measures requirements is a means to an end and not an end in itself, it would appear illogical to perform a satisfactory controlled test and then put the scale in operation under conditions that do not permit conformity. Testing must be objective and representative of actual operating conditions. Railroad track scales are not installed to weigh test cars, but rather to weigh the rolling stock moved by the railroad.

Therefore, realistic criteria must be adopted as well as common testing principles, so that varying requirements do not exist from test to test. This will go a long way in minimizing the industry problem in meeting weights and measures requirements.

Along these lines, another respondent asked a question rather than provide an answer. The question was, "What are the real accuracies that result from day-to-day operation of currently approved static scales? What is the distribution of error as attributable to different weighmasters, weighmaster techniques, and just plain human error?" None of these factors exist in scale testing, but they do exist in everyday weighing. A comparison of error distribution obtained from this sort of a test could be very interesting when compared to the error distribution which you find in couple motion weighing.

In summary, it would appear that the scale manufacturers do not feel that there is a problem in meeting weights and measures requirements for railroad scales. There is, however, a problem in conforming in those areas that are not well defined and may vary in individual interpretations. It is sincerely hoped that the studies currently contemplated will result in a weights and measures requirement that will in itself avoid any problems of conformity.

MR. STABLER: Commissioner Murphy, what steps can be taken to establish a closer working relationship between Interstate Commerce Commission (ICC) and weights and measures officials?

REMARKS BY MR. R. L. MURPHY



The National Bureau of Standards and ICC under present statute must adopt rules and regulations and administer them at all times in the best interest of the public. We are both interested in promoting uniformity of requirements and methods among weights and measures jurisdictions. Too many times a government agency will overlook the functions of another and how those functions could enhance the value of its own responsibilities.

Years ago the Commission did institute an investigation back in 1913, and I think it would be of interest to read some of the excerpts from the report of the Commission:

Assuming that in some form the government must exercise authority over installing and the testing of track scales, should this be done by the state or by the nation? It is evident that this duty is eminently local in its character. So far as the states see fit to undertake this work, it can perhaps better be done in that way than through the exercise of federal authority, and the different states should be encouraged to assume and exercise an actual jurisdiction in this particular situation.

The Commission at that time did not recognize that there has to be some control over the states to insure uniformity. "In our opinion," it stated, "some federal tribunal, perhaps this Commission, should be given authority in the following respects: To fix the points at which scales shall be installed; to describe the standards of such scales and their installation; to test or supervise the testing of such scales; and to supervise their operation."

The report further said that the federal authority should not actually test all scales nor provide all the necessary apparatus for testing, claiming that the statute should require the carriers themselves to install proper scales, properly maintain and test them, and should invest the federal tribunal with authority to make the necessary rules and regulations to assure the same.

In my opinion, our Commission was never given authority over requirements and testing of scales or the light weighing of equipment. Rather, evidence points to the Bureau of Standards as the agency having control of standards of scale maintenance. The Commission did adopt the American Railway Association's rules governing the weighing and reweighing of carload freight in May 1914. But these rules do not specify anything pertaining to the periodic testing of scales or the light weighing of equipment.

In this report of 1914 concerning the light weighing of cars, the Commission had this to say:

We have seen that one of the most specific sources of error is the wrong stenciling of the tare weights of cars. A car may vary somewhat in weight from week to week, according to the climatic conditions, and therefore the car should be weighed both light and loaded at that end of the route at which the weight is

governed. This, however, in the great majority of instances, is impossible. The stencil tare weights must be accepted, and it is extremely important that the weights should be as accurate as is possible. While the stencil tare weight never can be made absolute, there is no excuse for the wide element of error which now exists.

If the scales are located at proper places which are tested and operated by government officials, there would seem to be no reason why the tare weights of cars might not be corrected upon the scales, and in this event it would be comparatively easy to test the tare weight of every car at least once in every two years.

They concluded this report by saying, "In our opinion the following rules should be adopted: Reweigh every car within one year from the date when it is put into service; reweigh every car after it undergoes substantial repairs; reweigh every car at least once in two years."

Now, unfortunately, the carriers over the years revised these recommended rules of the Commission, whereas of this date they specify no period for reweighing or restenciling.

A few months ago I became quite interested in the stenciled weight of freight cars, and I requested our Bureau of Operations to conduct a study to determine the accuracy of such stenciled weights. This investigation proved beyond a doubt that immediate action is essential to protect the shippers' interests. The discrepancies found between the stenciled weight and the actual weight were astounding. We must find a reason—if carelessness in the stenciling of freight cars is it, or if it is inaccuracies in the scales themselves.

Accurate weights are important to the carrier, the shipper, the receiver, and the ultimate consumer in the final analysis, who pays the freight bill. The weight of a shipment is a vital factor in the determination of the freight charges, and the inaccuracies in weighing result in the imposition of unreasonable charges and in discrimination between shippers, just as readily as do differences in the weight of the freight in itself.

There are many ways to illustrate the importance of correct weights to the shipping public and consumers. One of the most important ways, however, is to recite the legal implications involved. Carrier rates are for the most part published on a per hundred weight or per ton basis. If incorrect weights are utilized, the carrier will not receive a proper return for services rendered, or shippers will be penalized by overcharges. Shippers and receivers should be equally concerned that all weights used for the assessment of freight charges are true and correct, since they too are charged with knowledge of both the Interstate Commerce Act and the Elkins Act, and since any over or under charges directly affect the economy of each commercial transaction represented by the shipment of merchandise.

Thus, all factors being equal, actual weights on freight shipments would tend to assure all interested parties of a fair and reasonable cost. The importance of correctness in weights extends to almost every phase of the Commission's work. As pointed out, weight plays an important part in the assessment of the freight charges. An

element of consumer interest is the movement of household goods. While the Commission has taken steps to correct the many irregularities involved in the movement of household goods through the institution of rule-making proceedings and subsequent revision of the regulations, the method by which weights are obtained is a mighty important factor in the cost to the public for the movement of his household goods.

DISCUSSION

MR. C. WOOTEN (Florida): We will be working with the railroads, using the railroad's equipment. How do we get the test car back to a privately owned scale after it has been repaired following removal from service?

MR. ROBINSON: That will depend somewhat on the carrier and the number of test weights they have. I can assure you that the railroads will cooperate with the state to get the test weight cars back just as soon as possible. If you run into problems in this area, if you will contact us, we will definitely try to work with the railroad. But I think you have a very good relationship with most of the carriers in your territory, and I am sure they will get the test weight car back just as soon as possible.

MR. C.E. JOYCE (Pillsbury Company): Mr. Day, it has been my experience with railroad track scales that we do not have too many inaccuracies in actual weighing. The heart of this whole problem is the inaccuracy in the marked or stenciled tare. You hit the nail on the head when you said it is the material that is left in the car. Now, would you tell me where that material is that is left in the car?

MR. DAY: Quite often grain is caught behind the bulkheads in the cars.

MR. JOYCE: The truth of the matter here is that it is behind your endliners and between your top and open bottom liners. Tare weight changes constantly, and that builds up. The only way to remove it is for the shipper who orders the car fit for the safe carriage of the commodity to tear those linings out. But he cannot do that. In other words, the cars are not properly built.

MR. DAY: Don't forget that many of the cars are old and many of the cars are new. Many of the grain people are now shipping in covered bulk hoppers, brand new cars.

MR. JOYCE: When you have a double-wall car and you permit the stuff to get in there and to rot, mold, and increase the weight of that car, the shipper, the receiver, and the carrier lose, because you are billing basically with an incorrect weight. I just want to clarify the point as to who leaves the material in the car.

MR. DAY: Under grain rules, most grain is weighed as it goes in the car and then it is weighed as it comes out of the car.

MR. JOYCE: You are talking about a big elevator with scales. We are talking about that poor guy out in the country with the country elevator. He has to take a gross weight and a tare weight.

MR. I.M. HAWVER (Santa Fe Railway): We do not have any trouble with the Big Johns. But when we bring a box car out of the shop with a new lining and the first customer loads it with a fork lift, the lining gets smashed. If the next shipper ships some kind of granule product such as grain or wheat, which may contain some moisture, some of this may stay behind the liner. We have an agent at every station, and all the shipper has to do is to tell him that the lining is bad. We will get the car number and get the car in the shop. None of the shippers say, "You have a bad tare weight." If they let us know, we will take care of it.

MR. E. PRIDEAUX (Colorado): Mr. Murphy, some state jurisdictions will not allow either in-motion coupled weighing or in-motion uncoupled weighing. The railroads have to be protected, but there are inequities that have to be corrected. How will ICC react to this new method of weighing if complaints are made by the railroads?

MR. MURPHY: Perhaps the Commission may institute an investigation of rule making. Primarily what the Commission is concerned with is the correct or the nearest correct tare weight that can be used. I do not think any rule could require the railroads to change over from one type of weighing to another, but our purpose primarily will be to get some accuracy in the weights which are not there today.

MR. STABLER: I should hope that the National Conference could perform effectively in this area and develop a code and test procedures.

MR. MURPHY: I might add that we are trying to work with you to that extent.

MR. PRIDEAUX: Are we going to have action on this?

MR. MURPHY: I hope we get action on it. We previously had very few complaints, but the complaints have pyramided in the last few years. The number of cars is dwindling each year, so, with the improvement and modernization of methods of weighing, I do not see that the number of cars is a real problem. Some of the cars have not been weighed in years, and the variance in the weights that we had from spot checks would astound anyone who saw it now.

MR. PRIDEAUX: This thing cannot stay dormant for any length of time and we must have progress reports. State jurisdictions and industry are going to require this. Would you agree with this?

MR. STABLER: I agree with that.

MR. DAY: I think we have to be careful not to confuse too many different things in the same pot. One thing we are talking about is tare weights. The stencils are put on the car on somebody's railroad by the mechanical department of some car shop. Whenever a new car is built, it is weighed by either the manufacturer or by the railroad if it is built in the railroad's own shop.

The other subject relates to the scales that are used to weigh the cars when they are brand new and absolutely clean. I don't think that any scale that is used to put the stencil on the side of the car is going to be inaccurate. Some manufacturers have been using electronic in-motion scales, but they do not weigh them coupled in-motion when they do any stenciling. In-motion, uncoupled weighing, whether it is done by axle or by truck or by the complete car, has been found by the AREA testing committees to be just as accurate as weighing by static scales.

We have prepared in the AREA recently, and it should be adopted before the end of the year, a method for testing a scale for motion weighing cars that we feel can be used and should be adopted by the AAR. It includes uncoupled in-motion and coupled in-motion.

Due to the jiggles and joggles occurring in coupled in-motion weighing, no one at this stage can guarantee positively that any single car can stay down in the range that static weighing can produce. This means that a new approach has to be taken.

We are servicing the same customers that you people in the states are servicing. On the Penn Central we have more electronic scales on the property of customers than we have on our own property. The customers insist that we test them, and they insist that you test them to see that we test them right. We are not, as an industry, trying to force coupled in-weighing onto the states. We are having it demanded of us by the customers.

MR. STABLER: Mr. Brumbaugh, you stated that the costs were so much greater in statically weighing a car versus in-motion. Do you have an approximate cost figure?

MR. BRUMBAUGH: Actually this depends on a lot of factors, but figures have been published by AREA to show that a static weighing will cost upwards of twelve to thirteen dollars. A coupled in-motion will be about 45 cents per car. It is sort of interesting that everybody is getting excited about this new technique of motion weighing. The first in-motion railroad track scale was installed in 1902, coupled in-motion weighing in 1907, and multidraft motion weighing in 1940.

MR. C.G. JOHNSON (Western Weighing and Inspection Bureau): Ninety percent of the traffic moving on my western railroads does not require weighing on the railroad. It is moving under weight agreement. Under these circumstances, the tare weight on the side of the car means little or nothing. Grain movement in and out of the Pillsbury elevators can be weighed through hopper scales and nothing has to be related to the tare weight on the side of the car.

In behalf of the weight bureaus—the Western, the Eastern, the Southern, and the two Transcontinental Inspection Bureaus—we are in the business of providing the best possible weights not only for the railroads, but also for the patrons of the railroads. When the industry has its own scale, we make sure that it is used properly. We have the weighmasters on the western railroads under oath. When people talk

about human error, I must rise in defense of these weighmasters, because I know a lot of good weighmasters.

I would think that railroad weighing, the maintenance of railroad track scales, and the use of these scales by our weighmasters is not this dreary, dismal picture that has been painted. I think it is quite a thing to be proud of in American industry.

MR. STABLER: Mr. Johnson, would you please describe to us what a weight agreement is?

MR. JOHNSON: Mr. Murphy made reference to the National Code of Weighing Rules that was written in 1913. We had weight agreements before the National Code. But in the National Code they give a national form of weight agreement whereby the shipper or the receiver, as the case may be, will enter into a weight agreement with the inspection bureau on behalf of the railroad serving his terminal. Under the terms of this weight agreement, he by various means assists us in the determination of the net weight of the car. If we are shipping bags of flour, we will bill him at 100 pounds or 101 pounds, whatever the gross weight is on this bag of flour. He will certify in this bill of lading that he has put in a thousand cases of canned goods in the car and he has the privilege of billing that car on that weight. We will then come and verify this traffic moving on a weight agreement.

This is provided for by tariff. This is not something that someone dreamed up and a privilege being given to the bureau to perpetuate the Western Weighing and Inspection Bureau. It is in Western Trunkline 335, the tariff on weighing and reweighing under which I live. Now that is a weight agreement. It takes various forms. I can have a track scale on a weight agreement. I can have a hopper scale on a weight agreement. I can have a dormant scale in my warehouse. I can have anything to determine this weight. I can bill by theoretical weights. This is a new facet in this business of determining weights for weight agreement purposes. But it has one intent—to eliminate track scaling—and we have in our territory eliminated 90 percent roughly of all weighing of the traffic moving under our jurisdiction.

MR. STABLER: Why do we want to eliminate 90 percent of the track scale weighing?

MR. DAY: Because the customers want it eliminated. It takes too long, and there is too much delay in moving the cars and getting them to their destination. People do not want their goods stored in the yard for two days so that the car can be weighed on a track scale. This is the reason that these weight agreements are made and that scaling is eliminated.

MR. STABLER: I did detect one comment that Cliff made that will interest weights and measures people I am sure. That is the "theoretical weight." Now this is something that I am sure we are going to discuss and hear more about at the Conference next year.

MR. MURPHY: I am familiar with your weight agreements and the purposes of it, but you still miss the point to which I made reference.

The gentleman from Pillsbury has a problem there that we are familiar with. We do not intend to become dormant. We expect to have regular reports. The matter is of such significance that we are going to follow through with it.

MR. JOYCE: Mr. Johnson is right on the package weight agreements, but we are not talking about package freight or about the bulk freight that goes over the big elevator scales. We are talking about the country elevator scale, where we have to use the marked tares. And those tares are not right because the material is trapped in those linings. It is not a question of broken linings. It is a question of accumulation. If you want to check weights, don't check the railroad track scales. There is very little wrong with them. Just compare and check the light weight of those cars versus the marked tare, and that is where you are going to find the whole crux of the situation.

MR. J.L. FINNELL (Louisville and Nashville Railroad): Mr. Wooten was complaining about not getting a test car back to the scale that needed to be put back in service. On my railroad we have four scale inspectors that service 13 states. Once we move a scale tester out of the district, it is pretty hard to get it back, and one of the main reasons is that these cars move under a speed restriction. We can only move them on certain trains. Our scale inspectors have itineraries that they have to adhere to. We do not mean to hold the state people up in putting the scales back in service. I know you have a 30-day restriction on this, but you will have to work with us.

BBB + GSA — GETTING TO KNOW YOU

MR. STABLER: We have with us Mr. Dean W. Determan, Vice President, Government and Legal Affairs, Council of Better Business Bureaus, and Mr. Reuben T. Morgan, Director, Standardization Division, Federal Supply Service, Government Services Administration.

Mr. Determan, my question for you is, "How can weights and measures officials assist better business bureaus in consumer affairs activities?"



I think over the years there has been a degree of cooperation between the various state and local weights and measures people and many of our bureaus. I have been told that some years back there was a concerted effort to get some standardization in the air conditioning industry in the use of BTU's and that this was an area where the bureaus were very active and worked very closely with weights and measures people. There are other ways in which this can be done.

I have been told that weights and measures people across the country are facing an identity crisis. I do not know if that is a fair comment. It is certainly a fair comment when it is applied to better business bureaus. The whole era of consumerism in the past decade has caught up with and passed up better business bureaus across the country. For the past two years we have been in very much of an identity crisis. We have operated in the marketplace much like the weights and measures people operate. You do not pat yourself on the back. You go out and take your tests and inspections, and you do not really get any publicity for it.

The same is true with the better business bureaus. They handle complaints and take care of faulty advertising. We really cannot go out and say, "That company is falsely advertising," because we won't get their cooperation the next time we find a false ad.

We have been taking a whole new look at ourselves, and we have been in the past year undertaking a very ambitious program. This program encompasses many new activities for better business bureaus. In at least two of these activities, perhaps three, I can see involvement of weights and measures people.

One of these activities, the one that I am partial to since it falls under my direct supervision, is the establishment of consumer arbitration programs throughout the country. Our goal is to have 120 cities under consumer arbitration programs by next May. Right now we have some 76. Now, in these consumer arbitration programs, often issues pertaining to the weight of a product or a measure or an advertisement may be at issue, and we are looking for expertise, independent, neutral expertise to assist the arbitrator in arriving at a good decision. In this area weights and measures people, I think, would be invaluable as technicians, as experts.

A second area has been our establishment of the National Advertising Review Board. This is a Board established directly under the Council which is reviewing and monitoring national advertising. As you well know, questions arise there, too, which involve the weight of a product, the measure of a product.

The third area is our expanded consumer education program. Again, this relates to many labeling questions. How to make the consumer a wise consumer is another area where, again, you have a great deal of expertise. So I expect we will be working much more closely with you. We have certainly urged our bureaus to work more closely with you and with all governmental agencies. Many people who have problems in the marketplace are being referred to weights and measures people in the local areas when they come to better business bureaus with their problems.

MR. STABLER: Mr. Morgan, are weights and measures requirements considered in the development of federal specifications for products?

REMARKS BY MR. R. T. MORGAN



I did not realize until recently that weights and measures requirements played a part in the development of federal specifications. It has been pointed out to me by the National Bureau of Standards that in some cases gross weight is accepted under federal specifications and, in other cases, net weight.

Really, we have not thought too much about what we meant other than that we needed a pound, a gross, or a ton of an item. Since sitting in on this Conference, I think we have to take another look at the whole program, because maybe we are missing something so far as a procurement program in the federal government of GSA is concerned.

I do not know how we could help the weights and measures people, but I think that we can use them a great deal, because we are just customers in the marketplace like everyone else. Greater attention will be given in the future to weights and measures requirements when federal specifications are written.

DISCUSSION

Mr. J.F. LYLES (Virginia): Mr. Morgan, your taking another look at the federal standards and how you purchase will mean a great deal to weights and measures people, because many times the first comment that we get is, "We are purchasing these according to federal standards, so why should you be concerned?" In other words, we hear the argument that, if the federal people are buying on gross weight, then it is all right for everyone else to trade on gross weight.

MR. D.L. OFFNER (St. Louis, Missouri): I suggest that, when you review your specifications, you also take into account the method of sale of a product. Where a product is customarily sold by weight, we

are sometimes told, "I sell it to the federal government by liquid measure."

MR. MORGAN: We have a program going right now. We are making a concerted effort to review all of our specifications and we are coordinating them with the industries to be sure that we are doing just this.

MR. STABLER: Mr. Determan, one thing that concerns weights and measures officials, particularly in regard to the Conference topic this year, is the criteria you would use to follow up a consumer-type complaint. You are the Better Business Bureau, and you obviously cannot become the consumer advocate.

MR. DETERMAN: Interestingly enough, our national business members are saying to us that we have to become more of a consumer advocate and become more efficient and effective in the handling of complaints than in the past. We are right now in the process of setting up a uniform complaint handling process that will be instituted in 150 bureaus coast to coast. We are now going to all of the businesses in the community and saying, "Identify the one individual in your shop who handles complaints." In many of our bureau cities it is a prerequisite for a business to become a member of the Better Business Bureau, and they have to identify the individual who is going to handle the complaints and precommit the business to arbitration if they want to be a member.

MR. OFFNER: In St. Louis we have had functioning, under the auspices of the Better Business Bureau, for about two years, a consumer protection board which has monthly meetings to which all people are invited who have enforcement activities of interest to the consumer. In this way the Better Business Bureau gets a better idea about what referrals should be made, and it also helps the enforcement people to get to know one another, and helps interdepartmental relationships that may not even involve the Better Business Bureau.

MR. DETERMAN: We have a pilot program going on in Buffalo, New York, called a clearinghouse, where all the federal, state, and local agencies have combined and set up a single telephone number for every type of consumer complaint, whether it involves advertising, faulty weights and measures, or any other consumer complaint. That number happens to be the number of the Better Business Bureau, who then refers the cases to the appropriate agencies. We have a committee of all the federal, state, and local officials, which serves as a monitoring committee to make sure we are doing the job right.

MR. J.L. JONES (Pennsylvania): I think it is important that those in the business world begin to think of themselves as consumers, because there is hardly ever any business that at one time or another does not play the role of a consumer, and he must have the same type of protection as any individual consumer must have.

MR. LYLES: Mr. Determan, is it my understanding that a business has to join your Better Business Bureau before you get a working relationship with them?

MR. DETERMAN: That is not necessary. All I am saying is that, for a business to join the Bureau, they have to meet certain prerequisites, and these prerequisites are getting a little higher as we go along. We will handle arbitration, complaints and inquiries about all businesses, members or not.

MR. LYLES: But you can take action against a business that is not a member of your Bureau?

MR. DETERMAN: Well, up to a certain point. Bureaus have no teeth at the end of the process. Arbitration is our one effort to get teeth at the end of the process. If a company is not a member of the Bureau, we have very little leverage in getting it to change a business practice that we might not approve of or might not fit a particular trade practice. With our members we have more leverage.

MR. L.A. RICK (St. Louis County, Missouri): Where there is a consumer protection board set up under the auspices of the Better Business Bureau, weights and measures personnel do not lose their identity as they do under a consumer protection office. I do not think that any single office for consumer protection could have all the legal aid available to the Better Business Bureau with its 20 or more agencies. This is one of the ways we can do a beautiful job so far as consumer protection is concerned and still hold our identity, which to us means a lot.

MR. S.D. ANDREWS (Florida): I only regret that Mr. Morgan was not here yesterday afternoon to hear the presentation by the spokesman for the wiping cloth industry, which used its dealings with the federal government as the precedent for being allowed to sell on gross weight when the Model State Law and all other regulations that we have been able to get our hands on require net weight.

MR. STABLER: Mr. Morgan, are you aware of the magnitude of GSA purchases that could or should be subjected to weights and measures regulations, whether it be by GSA or someone else? Would you say that 50 percent of your items are purchased by weight or measure?

MR. MORGAN: I don't even have a feel on that. On dollar volume, it would not be 50 percent. It might be in the 30 percent class.

MR. STABLER: If it were 30 percent, how would this compare with your total dollar volume of purchases? What volume does GSA purchase annually?

MR. MORGAN: About a billion dollars a year.

MR. STABLER: So we are talking about 333 million.

MR. MORGAN: That figure may be somewhat misleading, because one of the biggest purchases is of computer equipment for all government agencies, which is the largest single item purchased by GSA where its dollar volume is concerned. The wiping cloth incident

has been brought very forcefully to my attention in the last four or five days. I have had this job for about a year, and I did not realize that we had this problem, but I got it the other day from the Bureau of Standards, so you can be well assured that we are looking at it.

MR. T.E. KIRBY (Georgia): Mr. Morgan, many of the state organizations such as the Highway Department will be purchasing polyethylene using the standards that are established by GSA, and I believe those are 368C. We found, when we got copies of those, that polyethylene in particular was allowed under those standards a 20 percent deficiency in terms of average weight or thickness. I also found out that FHA was using this polyethylene and was using this mil thickness, specifying 368C as the basis of that. On questioning the engineer in charge of construction relative to the requirements that were being met by FHA, I was told: "If we require 6 mil polyethylene on site, we inspect to see if it is 6 mil. If it is 4 mil polyethylene, then we check it to see if it is 4 mil." When I asked what system was used for checking it, he said: "A fellow with any experience at all can take a sheet of it, feel it, and tell you if it is 4 mil or 6 mil."

MR. MORGAN: I hope that was not one of the GSA inspectors. If you will check the specifications, you will see that they indicate the test method to be used for checking the thickness and that it is not by feeling the sheet of polyethylene.

MR. J.M. CHOAMIN (Middlesex County, New Jersey): Mr. Morgan, are you familiar with other agencies who draw specification from your agency or who adhere to specifications from your agency, such as the Veterans Administration?

MR. MORGAN: Yes, we are very familiar with them. In my division we have what we call a Federal Specification Program. If there is a federal specification written for an item, it is mandatory for all federal agencies to use it. If it is an interim specification that has not been coordinated with all the agencies who have an interest in it, it is not a mandatory requirement. I think we have even a greater impact, because many of the state and local governments also use the federal specifications.

We have a council for the state and local purchasing agents that is headed by the Commission of Federal Supplies and Services. It meets quite often. I do not know the number of states who are members of the council, but we continuously send our specifications to the ones that are members and ask for comments. If they can suggest any improvement, we ask them to let us know. We are working with several of the states, but do not have as many as we would like to have.

MR. CHOAMIN: Can we look forward to having your agency tighten immediately on those important specifications that bear particularly on weight or measure?

MR. MORGAN: I do not think we are in a position to say which ones are important. If you will give us this information, we certainly will.

MR. L.D. HOLLOWAY (Idaho): This 20 percent variance does not even come close to what we enforce in our regulatory program. Why would the federal government so set specifications that would have a plus or minus range so far out from the standard that we enforce?

MR. MORGAN: I cannot answer that question right off because I am not familiar with all the specifications in that detail. If you are talking about the specifications for the normal polyethylene, I will have it looked into.

MR. ANDREWS: Does anybody know what PS 17-69 has in limitations on variations?

MR. T.I. BIDGOOD (Monsanto Company): PS 17-69 was adopted at the end of 1969, and it provides for an average of no error. You have an allowed variation of plus or minus 20 percent in terms of thickness. But the old 368C was allowed to be as much as 20 percent deficient or 20 percent in excess of the stated quantity, but it was generally produced at the lower level.

MR. ANDREWS: Mr. Morgan, do you have research facilities in your organization where you actually work out these specifications, or do you rely on established organizations and associations to help you with these specifications?

MR. MORGAN: We have very limited research facilities. It is mainly research on developing test methods. We depend a great deal on ANSI, industry, and associations to help us with our specifications. We have a very competent, professional staff in most of the commodity areas, but we do not have the research and development facilities that you are thinking about.

MR. LYLES: Mr. Morgan, I am sure that you may look for what the National Bureau of Standards puts out in regard to voluntary product standards. Mr. Stabler, I think that you need to take a look at your system for putting out these voluntary product standards, because they do speak of tolerances. The average concept is not mentioned in your product standards. So, to me, we have a conflict here between the tolerances as mentioned in your voluntary product standards as well as what we look at in the field as meeting the average.

WEDNESDAY EVENING — JULY 12, 1972

ASSOCIATE MEMBERSHIP RECEPTION



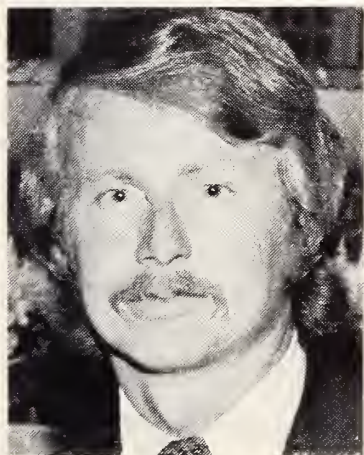
Conference delegates enjoyed a delightful reception on Wednesday evening, which was sponsored by contributors of the associate membership. Photographs of the reception and representatives of the sponsors are shown.

MORNING SESSION—THURSDAY, JULY 13, 1972

(GENE BALLENTINE, *Vice Chairman*, Presiding)

FORUM ON MANAGING TO KEEP PACE WITH THE CONSUMER MOVEMENT

D.E. EDGERLY, Office of Weights and Measures, *Moderator*



During the 56th National Conference last year, it was proposed that steps be taken to establish a mechanism within the Conference itself for evaluating state and local weights and measures programs with respect to their laws, regulations, standards, test methods, equipment, and the performance of the personnel themselves. The goal of the program is to promote and to encourage uniformity and excellence of weights and measures administration. As you know, the Conference asked OWM to propose a plan for fulfilling the stated goal. Our first panel member is Tom Stabler, Chief of the Office of Weights and Measures, and he has been pretty much quarterbacking this entire effort throughout the past year.

PROGRAM EVALUATION—TO THINE OWN SELF BE TRUE

by T.M. STABLER, Chief, Office of Weights and Measures,
National Bureau of Standards

Evaluation and certification of weights and measures programs is a new concept and should be of interest to everyone concerned with good government.

You are well aware, as am I, that considerable fiction exists in weights and measures reporting. To combat this, I think we should, through introspective means, search for the truth and answers to questions such as: Just how good is the law in my state in comparison with the Model? What is the level of compliance in the field? How effective is our technical education program?

The Office of Weights and Measures of the National Bureau of Standards and several weights and measures jurisdictions recognize an existing lack of uniformity in laws and regulations for practices and procedures between states, cities, and counties. There is an information gap relating to program effectiveness, the level of activity in compliance, and funding necessary to conduct weights and measures programs that will be truly responsive to the needs of industry and consumers and afford a high level of protection in commercial transactions.

It was proposed at the 1971 National Conference that a planning committee be formed to study the feasibility of a weights and measures evaluation and certification program.

If the Conference adopts such a program for evaluation and certification, a standing committee, perhaps, should be formed to certify qualifying participants, based upon evaluation by an impartial body, perhaps the NBS Office of Weights and Measures. It is believed that a well designed voluntary program will greatly assist weights and measures departments in their efforts to properly adjudge inspection and testing programs and laboratory services. In addition, it should provide useful information for planning, budgeting, and reporting.

An evaluation and certification committee of the National Conference could be established as a standing committee and meet annually at the Conference for the purpose of evaluating and certifying the state weights and measures programs. The committee could be composed of seven members. As a suggestion, three weights and measures officials with statewide responsibility would have membership on the committee, together with one representative of a manufacturing industry (a scale company or a meter company), one representative of the packaging industry, and one weights and measures official with local responsibility, either a city or county official. Perhaps the seventh member would be the Chief of the Office of Weights and Measures in a nonvoting capacity, except in the case of a tie vote.

Surveys and data collection could be conducted by the Office of Weights and Measures of the National Bureau of Standards. The committee would study and evaluate the data for each state application and vote to certify each qualified state. Qualified states could receive National Conference on Weights and Measures certificates for a specified period, perhaps a two-year period or a four-year period. States failing to qualify should receive a letter of explanation and review of survey data. In all cases, the data should be confidential.

The evaluation and certification program could be conducted in two or three steps. Step 1 might consist of an evaluation of the state law as compared with the Model Law. The Model Law has fifteen or so very basic provisions that all state laws should have, not to say that the state laws could not have, in addition to the Model Law, other sections that are necessary for enforcement of weights and measures in their jurisdictions. However, the state laws should have certain basic ingredients that the Model contains.

Step 1 would also provide for an evaluation of the state regulations, including the adoption of Handbook 44 as an official regulation, the regulations for packaging and labeling, the registration of service companies, and weighmasters. Part of this first step could be an evaluation of the state's laboratory and standards—the primary state standards of weight and measure and field standards. Does the

laboratory provide an adequate environment for measurement at the state level?

Also in this first step would be an evaluation of personnel. Does the state, in fact, have an administrator of the weights and measures program? Does the state employ field supervisors? Perhaps there exists a gap between the administrator and the field personnel, creating a problem for effective coordination.

Questions should be asked concerning technical education: What is the educational program for personnel? Have they completed the weights and measures home study course? Do they participate in state training efforts on a regular basis? Does the state offer an annual training opportunity for its personnel? What is the formal educational level of the state personnel? Are they college graduates; are they high school graduates; are they something less?

Following the initial evaluation and certification, a state could then request a step 2 evaluation. This might include administrative procedures, such as the allocation of resources, data collection and how it is used or, in fact, if it is ever used, the reporting system and how the reports are transmitted from the field to the office. Other considerations include the inspection followup, system of communication from the office to the users of weights and measures, and enforcement policies. Does the state conduct a service program with little or no enforcement, or is there effective enforcement of the law?

Step 3 might include an evaluation of the testing program. This would involve a field survey of testing or examination procedures. Questions would be asked concerning the compliance level for a jurisdiction, within various areas of testing and inspection. What is the compliance level for packages? What is the compliance level for gas pumps, small-capacity scales, large-capacity scales? The true measure of effectiveness of a weights and measures jurisdiction must include consideration of compliance in the economically important areas of testing.

Evaluation of the state programs should be conducted in some sequence such as I have outlined. The cost of the program will certainly be a determining factor as to how many steps are involved, duration, etc. A state should be permitted to apply for an evaluation at any time during the year. In order to obtain a comprehensive, unbiased report, the Office of Weights and Measures should conduct the survey. To qualify for certification by the National Conference, a specific rating must be achieved, and recommendation for certification be endorsed by the standing committee.

This is the basic proposal for an evaluation and certification program. We hope to be able in the coming year to develop the criteria that can be used in a program of evaluation. We may even call upon a state to volunteer for a pilot evaluation. Then we can say to the Conference, "This is how it worked. This is what we propose. These are the standards that will be used in evaluating state programs." The

National Conference will then have a basis for endorsement of a much needed evaluation and certification program.

DISCUSSION

MR. D.I. OFFNER (St. Louis, Missouri): I tend to become more and more leery of the confidential nature of any type of reporting in which a governmental agency is involved. There are pressures all the time for release of information which, by its very nature, is necessarily confidential. Much of the pressure for release of information is for what you could almost call "raw data."

Secondly, I think we should be just a little bit slow on the creation of a standing committee because its function would be so much different from the functions of other standing committees in the Conference. This committee, as I conceive it, would receive input only from OWM rather than input from all elements in the Conference. Granted, somebody has to have the certification or power, but it seems to me that this would more likely function as an arm of OWM rather than of the Conference.

MR. STABLER: I have to emphasize again that this proposal is really a result of brainstorming sessions and some input from several officials. It is not a blueprint of anything that is operational. This program does not exist as of now.

MR. M. GREENSPAN (New York City, N.Y.): I take the opposite view. A survey along a similar vein was conducted several years in New York City by OWM. The written report of the survey, which I made public, was most helpful to me in obtaining additional equipment. I have used it not only to obtain additional equipment, but as one of the major factors in our projected central testing facility that we hope to get. The very fact that OWM did make this survey and did point out the deficiencies was most helpful to us. I felt no compunction about making some of these facts public. I think that a program of this type would be helpful throughout the entire country in updating and improving the services and even in helping to get the budgets that everyone so desperately needs.

MR. R.L. THOMPSON (Maryland): it is not clear to me whether the intent is to evaluate all the programs within the state, including local jurisdictions.

MR. STABLER: I think that this program in the initial stages would have to be limited. In any new effort like this, you have to proceed in a slow, perhaps conservative mode initially, but I see no reason why this could not be expanded to include local jurisdictions. Perhaps this would be a program that the state could conduct on its own.

MR. THOMPSON: With reference to the model laws and regulations, it is conceivable to me that a specific locality may have something that for its purposes it considers superior. Some jurisdictions have now,

and others are considering, a fee system. In some areas a difference or deviation from the Model may be needed.

MR. STABLER: I think that any evaluation must have an acceptable standard. You would have to judge a program against something. It may not be a standard of excellence, but at least it is a standard universally recognized throughout the nation. The fifteen provisions of the Model should be in every law. Then whatever additional items the state needs because of its peculiar circumstances could be included. Necessary additions should not detract from the rating a state would get in an evaluation of the law. However, if a state law contained only three or four provisions of the Model, you could not say that it had the basic Model Law, and this is where the problem of uniformity arises. Uniformity, of course, is one of the major concerns of this Conference and of officials.

MR. R.W. BUCHANAN (Pennsylvania): Has any thought been given as to how the cost would be handled?

MR. STABLER: Perhaps as this program develops, it could be self-supporting. I think that there should be a fee involved and that, if a state is interested in evaluation, it should be willing to pay for this service. If an evaluation and certification program is really of value to a state, the cost might become a budgetary item in its request for funds.

MR. J.H. LEWIS (Washington): Has anything been accomplished concerning the development of guidelines to help us to best utilize our field reports?

MR. STABLER: I think the OWM electronic data processing system does this. The draft that is being circulated for comment treats this subject quite effectively as to what data are important to gather and how they are effectively utilized in the enforcement of your law.

MR. EDGERLY: When I discuss this, I will have an opportunity to amplify it a little more.

MR. STABLER: Data utilization would certainly be a very important part of any evaluation program. As you know, there are files and files, years of accumulated data that are never used, and this is a serious problem.

MR. EDGERLY: Yesterday afternoon Dr. Willenbrock mentioned the review processes that the divisions within our Institute participate in. Dr. Willenbrock also mentioned the fact that the programs within OWM are being studied to determine their general relevancy to the people we serve, and also to attempt to identify what needs there are that we must address ourselves to in the future.

Our next guest is a Bureau member who assisted us in analyzing some of our programs, Mr. Wayne Stiefel. Wayne's education includes a B.S. degree in engineering from V.P.I. and also an M.S. degree in administration from George Washington University. He has worked at NBS for five years, and for the past two and a half years has worked as an operations research analyst in the Technical Analysis

Division. This is a division within the Institute that is responsible for helping us to analyze our programs and to determine relevancy.

EDUCATION—FINDING THE RIGHT APPROACH TO A VITAL EFFORT

by S.W. STIEFEL, Operations Research Analyst, Technical
Analysis Division, National Bureau of Standards



We of the Technical Analysis Division were asked to review the Office of Weights and Measures training program and to make an appraisal of this important program with the support and cooperation of the staff of the Office of Weights and Measures. The emphasis was to be on observations which would improve the program. Today I would like to ask your cooperation also, drawing on the forum provided by the National Conference to gain your responses to proposed ideas. The evaluation of new ideas can be a major concern for operations research studies, but the creation of these new ideas is illusive and frustrating. In this regard, we can use your help.

The suggestions I will present have received no official attention as yet, and I am hoping this discussion will uncover any unforeseen ramifications and offer further stimulation to our thinking. My remarks today will include a brief description of our approach to the study, an explanation of our view of the present training program, areas for potential improvement, and our preliminary ideas intended to enhance the OWM program offerings.

Let me start by getting into some of the source material used. It consisted principally of the training records supplied by the OWM program manager for technical education, Mr. Otto Warnlof, and information obtained through interviews with a limited number of state and local weights and measures officials. The time available during our study precluded the gathering of data which was not readily available within the Office of Weights and Measures. The training records used dated from July 1969 and detailed location of the training, the date, the audience, the topic discussed, and the duration of the session, as well as the OWM personnel involved. We selected a two-year period for our analysis, calendar years 1970 and 1971, and limited the study to an assessment of how the training program had been operated, as opposed to an evaluation of its

ultimate effect. This was due to absence of required information, and I will touch on this again later on.

The approach included an analysis of the distribution of training offerings to the state and local jurisdictions, and also the distribution among the categories of training, to determine the underlying structure and apparent emphasis of the program.

The objective of the technical education program is to encourage and support a high level of competency of weights and measures personnel in the field. OWM has attempted to satisfy this objective by responding to the vast majority of state requests for training. The knowledge that OWM has concerning the need of jurisdictions for training comes from this direct contact with weights and measures officials and from questions and discussions with industry representatives concerned with weights and measures practices within those jurisdictions.

OWM's technical education includes training programs for weights and measures inspectors, metrologists, and weights and measures administrators. Our examination of the training offered within these categories during the two-year period shows that there were only three states receiving no training assistance in some form from OWM. On a subject basis, four-fifths of the states received training oriented to weights and measures inspectors, and three-fourths received metrology training. For a staff as small as OWM currently musters, this would seem to indicate fairly extensive coverage.

On a geographic basis, however, one-quarter of the nation's states received almost one-half of the training output. In terms of actual numbers, thirteen states participated an approximate average of 4.5 sessions per year, while thirty-nine states averaged only 1.5. It might be thought that this geographic distribution could reflect level of enforcement activity which would normally increase with economic activity, and that the extent of enforcement activity would be related to the need for training.

Using a gross estimate of economic activity from the U.S. Census Bureau, we find that the bulk of OWM emphasis, almost two-thirds, is placed on states having one-third of the nation's economic activity. A similar result was indicated in an analysis of population-related distributions. In this case, states containing one-third of the nation's population received almost one-half of OWM training. It may be that OWM training and resources are being concentrated where they are most needed and that some jurisdictions do not perceive a need for OWM assistance. Unfortunately, there is at present no objective means readily available within OWM to determine what the jurisdictional needs are and thereby to support this notion.

In examining the nature of OWM training activities, we discovered that somewhat under 45 percent of the effort is W & M inspector oriented, somewhat under 30 percent is devoted to metrology, and somewhat less than 20 percent is on administrative subjects, with the

remainder devoted to information dissemination on various subjects. Further geographic and subject oriented analysis revealed that just four regional sessions accounted for 20 percent of all of training exposure received by the jurisdictions and encompassed 60 percent of the states. Training in W & M administration averaged 5.6 states per session, while metrology training averaged 2.5 states, and W & M inspector training averaged 1.5 states per session. Presumably the more extensive coverage of a single session of a subject permits OWM to devote less resources to that subject and still maintain equally effective levels in all areas.

In addition to the conduct of training courses, OWM is concerned with the development of materials to support their training efforts. These include NBS publications and visual aids such as the slide and tape series on device examination procedures. The publications, however, it is noted, must serve several purposes simultaneously. They are used as a guide for enforcement, as training aids, and simply as a source of knowledge, as references. To illustrate the point, Handbook 44 is a set of codes for weights and measures devices and practices used in commerce, and at the same time serves as a direct basis for weights and measures inspector training.

The membership of this Conference has placed technical education high on its list of priorities for OWM programs, indicating its value to your weights and measures program. This was brought up yesterday by Mr. Moe Greenspan's reading of his letter to Dr. Branscomb, in which the Committee on Liaison with the Federal Government gave technical training as second on its list of priorities next to the National Conference.

Our analyses were concerned with enhancing OWM's ability to meet your training needs, and our suggestions are offered with this intent in mind. The following ideas might be considered by OWM as suggestions for potential improvement to its programs. First, as I pointed out earlier, there is a need for OWM to have an objective information base—its own management information system, if you will—to know who needs training help and what kind. The informal mechanism of information gathering that exists today should not be lost, but should be supplemented by the application of the same kinds of sophisticated computer systems OWM is telling you that you should be using to do your job better.

You have a right to wonder why OWM devotes its resources as it does, especially if you are one of the jurisdictions that sees OWM personnel once a year. And OWM should have the capability to tell you why in convincing fashion.

Finally, this information system capability will ultimately provide the basis for demonstrating needs for and effects of the OWM training efforts. It is this that provides the kind of objective information for program justification that high level management is demanding today. Besides better rationale for resource allocation, OWM must

also seek ways to increase its resource utilization. Regional type sessions as mentioned earlier are clearly a step in the right direction. It would be well to provide more training in this format. Also, more effective utilization of resources is needed. The home study course is an example of what I have in mind, but more of this needs to be done.

The development of detailed course outlines, with training material such as visual aids and detailed illustrated text material, would provide a package which would ease the training burden for weights and measures jurisdictions, with or without OWM's direct involvement. Particular emphasis should be directed at producing a complementary document to explain the codes in NBS Handbook 44 and provide illustrated explanations of required procedures. Review of other NBS publications should address their present function and the desirability to introduce complementary material strictly for training purposes.

Ultimately, however, OWM needs your continued initiative and energies. OWM training efforts are directed to the individual, for enhancing his competency. In the end, however, what effect OWM training efforts have on the individual depends on the encouragement he receives back home. There are three ideas we have in mind in this regard.

First is the possibility of increasing receptivity and motivation among the individuals who are being trained. State police, for example, have inducements that encourage the policemen to participate in training programs. There are approved courses of study and formal incentives for the men to uplift themselves. To what extent is it possible to parallel these programs for weights and measures personnel?

Another idea aimed at the individual involves a scheme similar to that present in Great Britain, where all inspectors are given an examination. Upon passing, they are issued certificates of qualification. The element which would be useful from our nation's viewpoint involves the certification provision.

What is proposed is that OWM, in concert with the National Conference Education Committee, develop an appropriate examination for weights and measures inspectors or, if deemed necessary, several examinations where divisions and functions are recognized. The states could make their own decisions concerning the use of the examination. However, examination results would serve to illuminate what the strong and weak areas are. This would alert the states concerning their training needs on both the statewide and the individual basis.

The last notion I have takes advantage of a federal program for intergovernmental exchange of personnel. I am thinking of a weights and measures intern program, where senior officials of supervisory level, not directors, would work in OWM for several months on projects mutually agreeable to the individual, his jurisdiction, and

OWM. This would provide OWM with the concentrated effort from officials with valuable field experience, and at the same time give the individual a national perspective for weights and measures concerns.

In closing, I have suggested that thought be given to the OWM program in rationalizing the allocation of effort, in increasing utilization of existing resources, and in using the resources more effectively. Also I have suggested that thought be given to the individual, to his encouragement, his evaluation, and his reward. If OWM is to serve your needs, it is essential that they maintain the cooperation and supporting relationship they have with you, the state and local officials. Implementation of any of these suggestions would be possible only with your support. Your responses, therefore, with regard to these matters will be essential to any successful followthrough.

DISCUSSION

Mr. J.R. BIRD (New Jersey): In effect, we are becoming more and more professional in our approach. Rather than using the word training so many times, we should also use the term educational approach, because it is not enough to train a professional weights and measures man to do the nuts and bolts operation. He must have a background of education to project and uplift his work in a professional manner.

MR. STIEFEL: I was trying to make a distinction between training as opposed to education. Education, in the context that I would be using it would be more of education of the general public as to what weights and measures concerns were. Training related directly to the actual technical knowledge that the official needs to perform his duty.

MR. J.M. CHOHAMIN (Middlesex County, New Jersey): I would like you to elaborate on the proposal for a working agreement between OWM and officials cooperatively working on projects at OWM. How would it be financed?

MR. STIEFEL: I am not familiar with the exact details of the program. I do know that there is already established a program whereby individuals come to the Federal Government for perhaps as much as a year. I am not certain of this, but I believe it is possible to get government funds to subsidize such a person for that period of time. Before such an arrangement is attempted, however, there must be a desire on the part of both parties to do it. It has to go through a budgetary process to get approval, just like other OWM programs.

MR. CHOHAMIN: We are in the National Regional Council in my county, which takes in all in a circle from New York City as far east as Hartford and as far southwest as Camden, and are going to have some time on closed circuit T.V. for exchange of views. The Assistant Director for this project came to my office and asked me what type of

program we could give them to put on the air for weights and measures officers. I would like to suggest that you consider taping some of these training sessions for such a program on a local level and on a national level. Incidentally, I suggested that portions of this Conference might possibly be taped for the benefit of officials who could not be here.

MR. J. L. DONALDSON (NBS Institute for Applied Technology): To my knowledge, I do not think that the government would subsidize the intergovernmental personnel program. However, there are two methods by which such a program could be instituted. One is by an actual exchange of personnel. Somebody in OWM would replace the fellow in the field for a period of time. Another would be to have OWM attempt to push this as a program that it supports and possibly get some money for it. Right now the climate is receptive for bringing people into the Bureau on a short term basis. However, OWM would have to know that people would be willing to come into the Bureau and work for a few months.

MR. EDGERLY: We are talking about a new approach to our training program whereby, instead of fielding requests from the states to do training, we will actually try and determine for a state, based on the individuals and the level of training in the state, what training they need.

MR. STIEFEL: Some of the things that you would consider would be the turnover rate in the state, with the actual breakdown of the inspectors' jobs on a functional basis, and the training that the state was performing by itself. The best thing to base any kind of a determination on would be information on the individuals, because training or education is aimed at the individual, to get him to perform his job better.

MR. D.I. OFFNER (St. Louis, Missouri): Some thought should be given to the fact that the Bureau and the weights and measures jurisdiction may not agree on the type of training that is needed. We in the field are often not most aware of exactly the type of training that we need.

MR. EDGERLY: In our program at OWM we go out and do a lot of training, yet we have no feedback. We do not test the officials and we do not know how good the absorption rate is. We cannot evaluate our efforts if we do not have some means of feedback.

MR. R.L. THOMPSON (Maryland): I think that the testing is an excellent suggestion to determine what level a jurisdiction has acquired and what additional training would be desirable to reach some yet to be determined point. I feel that the program leader, or director, or superintendent is often aware of what this program needs in the way of training. My thought is that, once it has been decided what a jurisdiction needs, the jurisdiction be approached to decide what portion of this training it could effectively cope with.

MISS JACQUELINE KENDALL (National Consumers Union): It is commendable to hear you people talking about educating inspectors, but it seems that before this is done the standards should be raised on the scales themselves. What good is all that training if the best trained inspector can leave a store with a scale that is so easily manipulated.

MR. WARNLOF: I feel certain that, with the sophistication in the devices today, scales cannot be manipulated as easily as you say. But let us also talk about the consumer's responsibility. If she sees a manipulation, it is her responsibility to call it to the attention of the weights and measures official or to the merchant.

MISS KENDALL: Most of the wrapping scales in the supermarket, for instance, measure in hundredths of a pound increments. If they can be set so the label will not register say for eight hundredths or sixteen hundredths of a pound, you can allow for all kinds of discrepancies that way.

MR. WARNLOF: The package speaks for itself. It is the weights and measures responsibility to enforce a package-checking program. There is no device that cannot be manipulated in some way, but I am convinced that the devices that are available for packaging meat products which we are talking about at the supermarket level are designed appropriately and properly. The enforcement program is to see that they are used properly. Some jurisdictions require that there be a scale in the store available to consumers so they can check packages.

MR. EDGERLY: I think we are getting into the area of consumerism now, which is going to be our next topic.

CONSUMERISM—ITS SPECIFICATIONS, TOLERANCES, AND USER REQUIREMENTS

MR. EDGERLY: One hundred years ago the concept of the consumer did not really exist in America. The range of goods available was narrow, and the list of a family's needs were really basic. The relationships then between buyer and seller were personal and almost direct, and the simplicity of the marketplace provided really little room for abuse.

However, as our economy grew, the way of life for the average American family changed considerably. Technological progress brought man marvels never dreamed of. But it also brought confusion and perils that he could not have foreseen. An imbalance was created in the marketplace, and society was slow to correct that imbalance. It was not until well after the turn of the century that President Theodore Roosevelt was able to claim that America had awakened to the fact that no man may poison the public for private profit. But even then the statement was ahead of its time. Free enterprise was freely translated to mean "caveat emptor," let the buyer

beware. And there was a tacit acceptance of the principle that anything a merchant could get away with was acceptable.

Only recently have Americans realized that this doctrine erodes our traditional concepts of justice. They have wearied of feeling victimized by merchants and manufacturers, and they have set out to reform and to rectify this imbalance between buyer and seller. For more than a century, state and local weights and measures officials have worked to strike this balance between buyer and seller—the very same objective identified in the consumer movement.

What then, if anything, separates these two efforts? Granted, consumerism embodies a wider range of maladies than just weights and measures. However, no one can deny that the clientele group which is served by both consumerism and weights and measures is the same—the general public. Nor can anyone deny that state and local governments were becoming increasingly aware of their responsibility to provide a coordinated program of consumer affairs.

It is my pleasure this morning to moderate a panel of distinguished guests who will discuss this broad area of consumerism and in particular, we hope, its relationship to weights and measures. Each panel member will offer brief comments, after which I will open the floor for discussion by the delegates.

Our first panel member is Mrs. Betty Bay, who is Director for Federal-State Relations for the Office of Consumer Affairs. She previously served on the staff as Associate Director for Legislative Affairs, Associate Director for Field Operations, and as liaison with national consumer organizations. Before joining the Office of Consumer Affairs, she served as Consumer Information Specialist at the Department of Agriculture and as an Associate Editor for *Better Homes and Gardens*, as well as Editor for the *Trenton Missouri Daily and Weekly Republican Times*. Mrs. Bay is a native of Missouri and a graduate of Iowa State University.

In recent years, the term consumerism has been widely used when referring to a number of maladies in the marketplace. Are there, in fact, a set of issues which clearly identify to the consumer platform? If so, would you discuss these with us please?

REMARKS BY MRS. BETTY BAY



The term consumerism does not appear in my 1960 Theory Dictionary, and yet that term and what it implies is very much with us. I think there is a very broad consensus today that consumerism is here to stay, and it is healthy. I know the long and commendable record of weights and measures officials in serving the consumer and in seeing that he or she is fairly served. Yet, as you seek to move with the times and to assure that your office serves the wants and needs of today's consumers—I think it is very well and I laud you for this review of what is on the consumer's mind today—the first intelligent step in problem solving is to define the problem.

Now I will give you the overview of our Office of Consumer Affairs in the Executive Office of the President. We do have the advantage of a national perspective provided from the thousands and thousands of letters we receive from consumers, the meetings with them, with contacts with federal officials, local officials, educators, and the business community. But if I make one point here today, it would be this. We laud your inviting us to speak on behalf of the consumer or to bring his problems to your attention, but, as you meet in your national meetings, your regional meetings, and your local meetings, I would strongly encourage you to reach out and meet with the consumer himself.

There are organized groups, voluntary groups of consumers, a long list of national organizations not organized as a consumer organization *per se*, but in their national program and in their state and local programs they are interested in the consumer. A few of those examples are the League of Women Voters, the American Association of University Women, the American Association of Retired Persons. It is a long list.

Harold Wollin met recently with a group of the Washington representatives of those organizations who meet regularly with us to tell them about this upcoming meeting, and I would encourage you very strongly to reach out in your own state and local level to find these groups and the individual consumer as well. One of the points I wanted to make here has been made by example—a young lady who represented consumers and came to the microphone and asked a question.

You may find consumers with a wide range of questions you do not anticipate. Perhaps clarification is needed in many cases. It is well to hear what is on their minds. I think one of the points of consumerism that those of us in government as well as those in the business community must recognize and act to resolve is that the consumer

grows weary of being talked to or addressed by those of us who assume we know what he needs to know or wants to know. I think you will find it refreshing, informative, and very helpful, as you develop your programs, to hear from the consumers themselves.

Some of the issues you may think are not a question on the consumer's mind are questions, and one of the basic needs today is increased communication directly with the consumer. For those of us in government and the business community, and educators, all of us who seek to work with the consumer, we have no grounds for smugness to say, "Oh, we are putting out a pamphlet which explains our program," or "We will go and speak at a program to the consumers." We need to evaluate in terms of today's communications the kinds of material that we are making available which we think are informative and educational.

Today we are coping with a whole new means of communication. Consumers, the public, or whatever term you would use (they are interchangeable in my mind) are accustomed to the television, to fast pace presentations. We do not, I think, totally satisfy them. We give them a pamphlet and send them home and say, "There it all is."

We need to reach them in new ways. What we tell them is for their own good, but there are needs to improve the presentations that we make to them. We need to constantly appraise the means of communication and how well we reach groups who may not have English as their native and basic language and those who have not had the advantage of education. I see a lot of pamphlets, publications, not only from state and local level, come over our desk, but from the federal government as well, and too often we gear them for, say, a high school level education. They are in very small print, so that, if you have eye problems, you may not be able to read all the good news therein.

We in our office will be happy to provide you, either through the Secretariat for this Conference or directly in any way the list we have of state and local voluntary consumer organizations, the list of national organizations interested in working with the consumer. In short, we will work with you in any way to help you reach out, and I hope you will.

I have been to some of your state meetings, regional and otherwise, and I did not see as many consumers there as I might have hoped. I will trust that this is past history and that you will be communicating. It may not always be comfortable, but I think it is one of the primary needs today.

The letters which roll into our office, the state and local consumer offices, with their documentation of despair, of fraud, and runaround of people being hurt, and of responsiveness spell out the roots and causes of the consumer movement.

The marketplace today is more impersonal, so the consumer has more of a sense of "I don't know where to go with a question. I don't

know where to go when I have a problem. Are they really listening? Are they really there?" We have a more mobile society, so that the trading area where you go to shop may be today here, tomorrow miles away, so again we have this loss of contact with where to go with our problems, and I keep hitting to all of us who by any standard are government, federal, state, or local.

I have heard some horror stories of the runaround or the referral, endless it seems to the consumer, of where he goes with the questions. I have heard of fourteen phone calls made by one man to get a question answered. One secretary even hung up. I think he was calling about mulches, if you want to know, and one secretary who apparently had not heard the word mulch before said, "You know you're pulling my leg," and hung up on him. Within our own bounds, we can train the secretaries or whoever answers the phone to realize that it is the consumer at the other end, and the consumer feels that he is paying the bill. He is, for all of us. We work for him. Rather than to say, "Our office doesn't handle that; we suggest you call some other agency," take the added step and tell him where to call, or, best yet, give him the name of the guy and the phone number. Give him help. He is saying, and I think to a great logical degree, "You know I want answers from government as well."

Also, as a followup of World War II, the consumer was hungry for goods. But we have an increasingly sophisticated consumer today. We have a turn toward more quality, which again makes him look in despair when something he buys does not measure up to all he expected or all the advertising or labeling or the package led him to expect, and he does not know where to go and be heard and get redress for his grievances.

These problems should not have crystalized to the extent that they have, but we do have an emergence of consumer leadership at all levels. President Nixon, in his last consumer message to the Congress, pinpointed many of the problems facing consumers when he said: "In today's marketplace, the consumer often finds himself confronted with what seems an impenetrable complexity of many of our consumer goods, in the advertising claims that surround them, the merchandising methods that pervade them, and the means available to conceal their quality. The result is a degree of confusion that often confounds the unwary and too easily can be made to favor the unscrupulous." "I believe," said President Nixon, "new safeguards are needed, both to protect the consumer and to reward the responsible businessman."

In short, we do not feel the consumer movement is antibusiness. I think there is growing in the business community the feeling that the scale should be balanced between the buyer and seller in a world today, where the consumer is faced with a plethora of goods and has less ability, because of the technical nature, to evaluate them himself.

The consumer wants to be heard and to have redress for his

grievances. He wants his money back when he feels he has been taken, and his cause is just. He wants to have an advocate at the policy-making level. He does not want to be done to or talked down to. He wants to be a part as we make policies, and this goes to government too, at the federal, state, and local level. One of the things Mrs. Knauer has done is to translate that great "legalesed" document called the Federal Register into layman's language, to try to make it available to the consumer so that he knows of hearings that are coming up and occasions when his views are solicited. Previously they were solicited in the Federal Register only, and he did not have access to this. She has tried to put this into the hands of consumers, so they know and feel that their views are welcomed and they know how to direct them properly to be heard.

The consumer is seeking an advocate to represent his views where he personally cannot be represented before agencies of the government. He wants to have more information on labeling, packaging, advertising, warranties, and guarantees. Mrs. Knauer has encouraged business to adopt unit pricing, and I hope that you would within your own realm of jurisdiction give similar encouragement to the business community. Other examples of things that have been high on her priority list include packaging of bacon to allow the consumer to see the fat-lean ratio before she buys, percentage labeling on orange juice products, cosmetic ingredient labeling, and open dating of foods to show how long they have been on the shelf.

In the insurance area she has been urging very recently the disclosure of comparative life insurance cost. Among other priority projects, of course, is auto no-fault insurance, which we are currently working on.

This is to give you the broad scope of consumer issues. The consumer wants increased product safety and to be assured that his health is respected. He wants consumer education for himself and his children. Our office is well aware of the increased attention at the state and local level to consumer problems, such as the establishment of consumer offices, focal points for the consumer to bring his problems and to research new means of resolving these problems.

One of the things I did recently in our Federal-State Relations Division was to try and document the many exciting things happening at the state and local levels. There was not, we found, in any form like this, a documentation so that the states could draw from one another what was being done at the legislative, program, or information level. We hope to continue this, and we hope that you will give us input as to what your officers are doing, so we can share this with other states and so that the consumer will know who and what is being done in his behalf.

Our office, the Division of Federal-State Relations, stands ready to work with you at any and all times. You do have and you have had a long responsibility in the consumer's behalf. We cannot sit. We have

to stand and find new ways to reach him, to listen, and to try and adapt what we are doing to resolve the problems that are on his mind.

MR. EDGERLY: The next gentleman who was to have been with us this morning unfortunately could not come. His name is Mr. Charles J. Irwin, Director of the Division of Consumer Affairs in New Jersey. However, Mr. Sam Christie, State Superintendent of the Office of Weights and Measures in the Division of Consumer Affairs has agreed to stand in for him.

Mr. Christie, many of the delegates here this morning face the same situation that you faced some time back in the development of the Division of Consumer Affairs. Could you just briefly outline the activities of your Consumer Affairs Office and also where weights and measures fits into this?

REMARKS BY MR. S. H. CHRISTIE, JR.



Mr. Irwin is a very dynamic person, very active, and he has a great many thoughts as to how to go about making the Consumer Affairs Office in New Jersey a very effective and efficient one for the sake of the consumer and the state.

The office is a combination of many boards that have been involved in consumer complaints over a number of years, and includes weights and measures as one of its cornerstones. As Mr. Irwin got into the work, he found to his surprise that weights and measures is a very definite consumer affairs project and can be very effective in promoting consumer affairs in general.

One of the things that he has done has been to take our task force operation and combine it with task force people from other branches of his office, and we make unannounced hit-and-run appearances for checkweighing packages and observing the equipment that is being used. At the same time, the other members of this task force from the various other segments of the office are there to discover violations that exist in other fields in order to do away with some of the complaints that have come in regarding those. It is a combination effort.

In one of the ghetto areas, for instance, the operation conducted by our office disclosed a very horrible condition insofar as the health violations were concerned, and the place was immediately shut down. We weights and measures men did not know at the time that there were some complaints regarding the health conditions, but the other officers did, and it gave them the opportunity to go in and observe and act.

We have found that only a minimum number of complaints on weights and measures come into the Office of Consumer Affairs in Newark, but there are many complaints coming in regarding con-

tracts, home improvements, and operations particularly in the nature of franchise operations. Very recently the Office was able to get a cease and desist order to prevent a particular individual from conducting his shady type of operation which had been going on for four or five years, and at the same time get a rebate of around \$225,000 to the various citizens of the state who had been bilked by this individual.

This is a coordinated effort which revolves around one thing, and that is action. It is to get the most effective use out of manpower, to reduce the complaints, and to let the consumer know the end result. Too many times reports or complaints have been received at various state offices, and were not followed up. Many times these complaints were thoroughly investigated, but the consumer himself did not know the results, and this instituted another series of complaints.

The action has been successful, too, in another way so far as we in weights and measures are concerned. We now have an opportunity to reach out and talk to groups that we had no contact with before. The interest is great enough so that educators, for instance, are now coming to the Office for additional information, not just on consumer affairs in general, but weights and measures in particular.

The young lady who was at the microphone earlier is a case in point. We have an opportunity on these occasions to settle the questions in the minds of these individuals as to the operations of equipment, why certain things can take place, why certain things cannot be done, and what they should do to help prevent being cheated by just simple observation and reporting. We also have an advantage in that members of the staff are constantly meeting with groups, two, three, or four times a day. They are making talks and carrying our message. These communications result in the education of consumers, thus keeping complaints down to a lower level.

This, too, has assisted Mr. Irwin in allowing only the larger, more important, legal complaints to be handled at the higher level, where it takes special investigation and a legal staff to complete the case.

MR. EDGERLY: Our next panel participant is Jim Wiley. He is a native of Santa Barbara, California, and entered weights and measures in 1952 as a deputy sealer. He returned to Santa Barbara in 1954 as deputy sealer and was appointed county sealer in 1959. He has served on various committees of the California Association of Weights and Measures, and is presently President of that body.

Mr. Wiley, could you give us your thoughts about consumer affairs with respect to the State of California, and also with respect to your ideas as to whether weights and measures should be in this field?



The need for adequate protection is paramount. Either we assert ourselves in the consumer's behalf, or he is going to look elsewhere. I firmly believe that a logical place for a consumer affairs office lies within the framework of your local weights and measures jurisdiction. To fulfill this need, I would like to direct my remarks to only two subjects; first, to the establishment of a separate function for consumer affairs within the present structure of weights and measures, and, second, to a change from the traditional weights and measures inspection philosophy.

The establishment of a separate, and I would like to stress separate, consumer affairs agency within your present weights and measures administration would give you a single local office for people living within your local jurisdiction to turn to. Again, I stress the importance of the local agency to receive consumer complaints. For instance, the County of Los Angeles discovered 125 agencies involved in consumer protection, and they admit that their list is not complete. No wonder, then, the poor consumer often gives up in disgust, mumbling about government bureaucracy. And bureaucracy, by the way, is defined in the dictionary of quotations as follows: "A sure sign of bureaucracy is when the first person who answers the phone can't help you."

The taxpayer deserves and is entitled to quick, local relief from a legitimate complaint. One highly respected county in California made six points in a request to their Board of Supervisors for the establishment of a local consumer affairs office, and I believe these are worth repeating.

1. To receive complaints of unfair business practices and dealings against the consumer.
2. If a law has been broken, to report the violation to the proper city, county, state, or federal agency.
3. To assist, develop, and conduct programs of consumer education before organizations on request.
4. To disseminate information to the news media, displays and pamphlets alerting consumers to misleading and deceptive practices.
5. Cooperate with city, county, state, and federal agencies to protect and promote the interest of local consumers.
6. To encourage local business and industry to maintain high standards of honesty, fair business practices, and public responsibility in production, promotion, and sale of consumer goods and services.

Let us examine, then, some of the statistics of two counties currently handling both weights and measures responsibilities and consumer affairs from the weights and measures office. Each has a population slightly less than a half million. Each is receiving 100 to 120 complaints per month. Each is successfully resolving over 80 percent of these complaints.

Complaint backlog is between 100 and 240 per month, with complaint attention from one week to three weeks. I would like to point out that priorities are placed on urgent complaints. They are handled immediately in these counties. Monetary return ranges between \$25,000 and \$81,000 per county so far in their program, which is about one year old. One county reports an average of \$12.42 per complaint returned to the customer. This may be in money, services, or goods. The consumer complaints of both counties are increasing about 20 percent a month. Because of the ongoing consumer awareness, one program reports a 49 percent increase in weights and measures complaints. And this is because the consumer now is aware he has some place to complain to.

As you recall, I stressed the need for a separate division for weights and measures and consumer affairs. Weights and measures has a well established effective and efficient foundation for consumer protection. A consumer affairs agency is new and deserves a different approach. Remember these important rules: In weights and measures you are the third man in the marketplace, acting in about the same capacity as an umpire in a ball game. In consumer affairs you have to definitely swing toward the consumer.

An alternate to the creation of a separate division for consumer protection is to become more effective in your weights and measures program, and how to become more effective was a question asked at a Southern California meeting some four years ago. It did not take us long to discover that we spent 80 percent of our time inspecting weighing and measuring devices, of which 20 percent were found to be inaccurate, whereas 80 percent of the consumer dollar was spent on packaged items. Through the excellent and continuing help of the NBS Office of Weights and Measures, the California Department of Agriculture, Bureau of Weights and Measures, and a number of dedicated county sealers, a plan was developed for a pilot program, and this was authorized for the Counties of Santa Barbara and Ventura. The objective of this plan has three elements:

1. To put the responsibility of the accuracy of the device on the owner and user, not on the weights and measures official.
2. To make more effective use of manpower and equipment.
3. To place more emphasis on the end product.

To accomplish these objectives, the following basic plan has been designed. Formerly most commercial devices were required to be sealed annually. Many device owners depended on weights and

measures inspectors to inform them of the condition of their devices. Under the new system, all commercial devices will be placed on a variable frequency of inspection. That is, a device may be on increased inspection of every six months or a decreased inspection of every two years. Records will continue to be kept on the condition of devices, and additional records will indicate the maintenance program of the individual business establishment. This will free the weights and measures inspectors from inspecting devices annually where records have shown that these devices have been accurate in each inspection in the past two years and the business establishment maintains its devices.

Together with a variable inspection program is the requirement for licensing. This is done by county ordinance, and the servicemen will be required to be licensed annually. Each repairman will be required to affix his license number to the device he installs, repairs, or adjusts. If his work indicates that he is incompetent or results in several recalls before the device is repaired, he could lose his license to work within that county.

Lastly, a citation system will be implemented. After an adjustment and educational period, a device owner may be cited for violations of our weights and measures laws.

In summary, I would like to reemphasize that consumer affairs is a new program logically belonging within the confines of weights and measures, but it must be treated as a separate entity. I would like to make one remark to the lady who commented on supermarket scales. That scale, I assume, was off of zero. With our citation program, we would hope to give that guilty person a fair trial.

MR. EDGERLY: Our last panel member is Mrs. Margaret Dana. She is a professional consultant on the changing attitudes and problems of consumer buyers. Having studied at Oberlin College and New Jersey State College, her primary concern has been a firsthand study of consumer buyers, observing what and how they buy, how they use what they buy, and what they say about these products.

Mrs. Dana provides various newspaper columns with consumer information. Two such columns, "Before You Buy" and "Consumer's Question Box," have been syndicated by United Features Syndicate to some 120 newspapers. To maintain authoritative pipelines to sources of essential information for consumers, Margaret cooperates with many technical groups. She is a member of the Board of Directors for five organizations, Underwriter Laboratories, American National Standards Institute, American Society for Testing Materials, National Association for Buyer Protection, and the Philadelphia Better Business Bureau.

Mrs. Dana, I am going to quote from one of your letters to me: "I feel there is too much weight on consumer protection and not enough on consumer information. In my view, information is the most vital protection, and I would like to see more of it in the weights and

measures field. This really is the kind of protection consumers need, even when they are not aware of it." I would like you to elaborate on these views if you would please.

REMARKS BY MRS. MARGARET DANA



A couple of weeks ago I met with a rather large consumer education group, and we were talking about weights and measures. I think you would be amused by what was a unanimous appeal from them. They said: "Weights and measures people are too invisible; they are too quiet. We would like them to make more noise in our communities."

Please note that I am trying to remember to say "weights and measures people" and not "men." The last time I used the word men in my columns, the editor of the Milwaukee newspaper wrote me and said: "Out here in Milwaukee we have some women in our weights and measures department, and we would prefer if you wouldn't talk about weights and measures men."

Before I start in on the business of what the consumer wants, let me thank so many of you for those letters I have had from you this past year, telling me about how many of your departments now have a nice, easy, findable telephone address in your phone book. You would enjoy knowing how many consumers have written to me saying, "Hey, I was able to find the weights and measures phone number in my phone book."

I want to thank you for letting me know about the great projects, the letters from Massachusetts and Kentucky and Tennessee and Los Angeles. I am very glad to be able to carry the news back to consumers that you are doing this.

What do consumers want in protection? The word protection is so badly misused and misinterpreted. Even more badly misused and misinterpreted in my opinion, and I am speaking from a merely physiological point of view, is the word "want." What do consumers want? It is very important, as you head into a lot of new areas of consumer affairs, to make a very distinct difference in definition between two types of wants. What do consumers want?

The first one is very misleading, and it has become a very serious matter in this country, because it happens to be the easier conclusion to come to, decision to make, and it is very broadspread. Be careful of it, because the consumer "want" is from the consumer who has neither information, sophistication, education, or know-how. Consequently, such a consumer wants, or thinks he wants, complete safety of all products so that he never has to think about it; it is taken care of for him.

The number 1 type of consumer wants mandatory protection always of the best in a product, always the best, whatever that is and for whom, and never any variation at all in the weights and measures of any line of products. No allowance at all for one-fourth ounce off or a cent away.

The number 2 type of consumer—and here is our target—bases his want on decisions that come from full information and from free choice among performance alternatives. You see, we do away with that old idea that there is a best. There isn't any such animal any longer. There are performance levels; there are differences, differentials. And put together, they make different products which suit different demands and budgets. This second type of consumer is slow to come about in this country.

We have gone a long, long time in this country assuming that there was a kind of implied guarantee that everything we expected of a product would be taken care of—that it would weigh, measure, and behave as we expected. Well, that kind of economic ignorance has got to go. We have to learn to understand how things are made, how they are produced, what a production line does, and what distribution does. Then, maybe, we will not have some of those idiotic charges that have been made in the past year, such as the charge that in one of our large jurisdictions people in that city were being cheated out of a million or two million dollars every year because weights and measures people were not on the ball keeping packages right according to the way they were labeled. I looked into that very carefully, as perhaps some of you know. I found that it was an extrapolation of a weight on one whole group of units that was below what it was labeled, but everybody extrapolated to say, "If one package is that much off, with five million people buying they are all being cheated the same amount." Well, that is just ignorance.

Now, how are you going to get to this target of the informed, competent consumer who cooperates with you? Well, first by changing the half truth and the unwarranted conclusions that are widespread today, and changing them to whole truths from government, industry, and educators. What we need is a habit, and a training for a habit to use your head, to think. You have to have it in school, you know. You have to start in school. We are not being trained in our public education today to acquire the habit of using our heads. Too many people think that somebody else will do the thinking for us and, if we just go ahead, we will come out all right. We won't. And you have an obligation to stand for that thing, good consumer education of real integrity in our public schools.

Human nature tends to believe the worst always. I think it is a hangover from primitive times, when the norm usually was the worst. So any story spread today about an industry cheating you, the packaging being lousy, or everybody being cheated here—well, it does

happen, but not wholesale, and people do not differentiate. We need to.

Now I am going to go along with your previous speakers who have talked about training needed by the weights and measures people. Of course you know that I am slightly biased in favor of weights and measures people, because I consider that you have been in the consumer information business a long, long time. But over and over again as I go through the country and ask a weights and measures man in a certain area how many times a year or how often he checks the scales in our grocery stores here, I don't get an answer, not because he doesn't want to answer, but because he doesn't know.

We need people-to-people contacts. Consumers need to know that the weights and measures people are really concerned, and they need to understand what you do. So far as the packaging law is concerned, I have tried fifty thousand times, it seems to me, to explain to people what they should look for. They want to know: "Well, what are the weights and measures people looking for? What do they do? What have they to do with the packaging law?" Try to have some round-table discussions locally and tell them about it. They need to know how to protect themselves by knowing what to check.

I am still getting tons of letters asking what it is all about, the meat packaging and the funny things on the label. One person asked what the one and forty-one ounces meant on the label. I explained that it meant one and forty-one hundredths of a pound. Have you tried explaining this to them in your jurisdiction, or have you assumed that they did understand? Let us join in making our target more consumers who are informed and who want to know the important things to help them make a choice.

DISCUSSION

MR. M. GREENSPAN (New York City, N.Y.): In New York City we, in cooperation with the Bronx Community College, in 1967 developed a very extensive program of educating community leaders. It was a course that involved twenty weeks, three hours a night, and the course started with such simple things as reading the scale, and then went all the way up to contracts, credits and so on. In developing this program, we started out with groups of twenty. Before half of the sessions were over, they dropped down to groups of ten or eight, and 90 percent of the information never got back to the community. This is where the big problem, we feel, lies. How can this kind of information get back to the community?

MRS. BAY: I don't think any of us, frankly, have totally resolved that. I would make no indictment here of your own program; I will only speak of some I have seen. We have to look into our own structuring of such educational programs. Sometimes where we have

created a schoolroom situation, we have had courses or programs at hours which seemed logical, but may not be most convenient for people with small children or working people to attend. Again, in a schoolroom situation, some adults who have not had adequate schooling hesitate to reveal what they do not know. Such programs have failed through the approach we have taken.

We have to look at some of the means being used by the advertising media, by all phases of the media, the new communications mechanisms that we can utilize. In our own office we have been searching for this and hope shortly to come out with suggested guidelines for adult consumer education. When that is available, I will get the word to you and will try and share copies with you.

The one most helpful thought I could offer is to meet with the community leaders you are trying to work with and evaluate what caused their dropout. Also try to get more of their input into it.

MRS. DANA: I have been training small groups of people that I call missionaries. Where there is a consumer education committee or group, I gather together delegates from that group and we have a training session, primarily to translate words into simple words mutually understood. I had a discussion some years ago with the Chairman of the Federal Trade Commission about advertising, and he said: "If you want to be understood by everyone, and not misunderstood, you can do it, but you have to plan to do it, and then you have to make sure you have done it."

With these missionaries, we talk about how to get the very simple basic story across, and proceed from the known to the unknown. We never venture out into a difficult situation like "Where should the labeling appear on the package according to the Model Law." Instead, we say: "Can you read this better this way or that way? Is this type large enough? Can everybody see it? How should it be? Well, then that's what the Model Law says it should be." I have found in different parts of the country that these missionary efforts really work like a charm.

MR. S.H. CHRISTIE, JR. (New Jersey): The Consumer Affairs Office in New Jersey has a program known as CALO Officers. These are Consumer Affairs Liaison Officers. Right now there are about ninety people involved. They are strictly volunteers. All of them are women. They go through a certain training program so that they can do a certain amount of sifting at their level of whatever problems come to their attention. They seek out and search, as well as receive, information regarding not only our work, but any work pertaining to the Consumer Affairs Office. The greater the number of cities and towns that you have in a concentrated area and the more difficult your work is to police your area, the greater value these people can become to you as a helpful agent.

MISS JAN SCHAKOWSKI (National Consumers United): We are a grassroots activist organization located in Evanston, Illinois. It

seems to me that, if you people are really serious about communicating with consumers, you should examine the makeup of the weights and measures officials. It seems to me that a homogenous group would have some difficulty in dealing with a very heterogeneous population. I see a very small number of women and of representatives of minority groups. It would seem to be the responsibility for this Conference to somehow resolve that situation. Mr. Christie, you just mentioned that all of your volunteers are women. Why are the volunteers women? Why are they not the policy makers, the decision makers, the paid personnel, so that you don't have to recruit women to communicate with women.

Regarding short weight, the National Consumers United has a scale of our own that has been certified by the City of Chicago. We go around weighing things, and we have found a tremendous amount of short weight. According to an article that appeared in the National Observer on October 23, 1971, an average American family of four is robbed of \$150 every year. That is the government's estimate of the high price of short weighing, a practice that may cost consumers as much as ten billion dollars a year. Whose fault is that?

MRS. DANA: I am very familiar with that quotation. I believe that was a mistake. That was not the government's estimate of how much each family lost each year, but how much each family was saved each year through weights and measures programs. I have that directly from the Chief of the Office of Weights and Measures.

MR. EDGERLY: This afternoon we are having a forum dealing with packaging and labeling, and we certainly would invite the two ladies from NCU to stay over and participate in that forum also. We certainly hope that other members of your group and other organizations will participate more actively in this Conference.

It seems to me that there are two predominant fears that stand pretty much as a roadblock to really jumping in with both feet to the consumer affairs agency. One is the fear of a loss of identity of the weights and measures effort. The second is a fear that the workload that you currently have is almost impossible in terms of the resources that are available.

Mr. WILEY: There is legislation now in California to provide some \$750,000 to promote the establishment of consumer affairs or the expansion of consumer affairs within counties and for the creation or expansion of a fraud division within the District Attorney's Office. These grants are only for two years, and the size and number of the grants depend upon the population of the county. So far as loss of identity, I can see that fear. Weights and measures has been long back in the shadows, while consumerism is now right out in front. I personally believe that these two departments should be combined under one roof, but operated separately because they are separate.

MR CHRISTIE: I think the fear of loss of identity is very evident. It is prevalent in any organization that has had a long background of

activity with a silent sort of operation. The weights and measures operation can be compared to an iceberg. It is more effective than is evident, because only about one-third of the iceberg is really above water. It has been stated to us that we are equivalent to the FBI, a silent arm of government, but very effective.

I think, however, that they are both here to stay, that they are compatible, and they can work side by side. I think the matter of loss of identity will be diminished when you have personnel at the top directing the movement, because weights and measures people themselves have been consumer-minded for a great many years. Consumerism is a tag line of the day. Those who handle the money are willing to put money and services out for that purpose, but in the next five or six years I think you are going to find it leveling off in order to become fully effective and make use of all the personnel involved.

MR. J.C. MAYS (Dade County, Florida): The Consumer Protection Division for Dade County, Florida, was formerly the Weights and Measures Division. However, we are listed in the phone book under weights and measures, and we try to keep weights and measures in the forefront in our operations. Mrs. Dana, could you in your column make some suggestion to the women's organizations and civic organizations to appoint a consumers affair representative to work in conjunction with the weights and measures people?

MRS. DANA: I think this is a great idea. In fact, I am doing it in a variety of fields all the time. I am now trying to get a group of women together nationally to have a briefing on how a good standard is set and how you have a test method for that standard and what it means, and what a sampling plan is. The National Bureau of Standards and all the standards making groups have agreed to underwrite and sponsor it. I think it is a very good idea to get more of our organized clubs to undertake a community service in exactly that way.

MR. STABLER: I think it is the responsibility of this Conference and of the OWM staff to do what we can to see that weights and measures does not lose its technical capability as a result of the consumer movement. Certainly we must see that equity does prevail. Whether we retain our identity or not is a moot question, but we must retain our technical capability. I have seen instances, when weights and measures has been combined with other activities in state government, not necessarily inspection activities, where weights and measures officials have become "hotline" authorities and investigators of consumer complaints. In a very short time these people have lost their technical ability. They can no longer test scales or gasoline pumps or have the technical know-how to check packages. We, as weights and measures officials have a responsibility in the area of consumer interest, but we have other responsibilities that, in my view, far outweigh consumer protection in the contemporary sense. We must retain our technical capability.

MR. S.D. ANDREWS (Florida): I would like to go a little further and

say that I question the wisdom of having a weights and measures division in a consumer affairs office. I think perhaps we are all going to lose our identity if such things as this come about. If we lost our identity, I think it will be the result of our not doing a good job. We will lose the respect of the consumer because we are not doing a professional job as impartial arbitrators in weights and measures matters.

The broad spectrum of consumer affairs encompasses so many things other than pure weights and measures that I question the wisdom of having weights and measures officials become consumer advocates. I think they would be immediately suspect by the other party that they are not being fair and impartial. So I would like to emphasize the necessity for retaining our professional impartial position and strengthen our identity as such. I think if we do that we will improve our stature not only with the consumers, but with the consumer advocates, who will look to us to settle those problems that come to their attention where there is a need for professional service to decide whether a consumer has been shorted in those areas that require professional weights and measures attention.

M DANA: I would like to say that I agree. I do not like the idea of weights and measures becoming a part of, or lost in, a consumer affairs department. If it could be kept independent, if its standards of technical excellence can be maintained, and if the community will support the financial needs of that department to do a good job, which is a very important thing to get across to consumers, then I think that is okay. But I agree that we ought not just let them become complaint carriers. They are too important for that.

MR. ANDREWS: I agree. For example, many of the consumer complaints that we receive in the State of Florida have no relation whatever to weights and measures, such as insurance frauds, poor service to automobile repairs, and things of this kind. We are just getting bogged down in handling complaints that we really have no expertise in.

MR. CHRISTIE: We have become an office within the Division of Consumer Affairs. We are engaged in our own type of work. However, when it comes to referrals, we now receive weights and measures complaints that are funneled to us, and we have to report to the consumer the action that has been taken. There are times when we assist the other branches, but those are minimal. We are functioning as a separate entity and we do retain our identity in this respect.

MR. R.J. CORD (Prince George's County, Maryland): I have had the opportunity to sit as a commissioner on a Consumer Protection Commission for a period of a year. Within a nine-month period, we addressed ourselves to some 397 complaints, of which only one was specifically related to weights and measures. We had complaints from well educated people, from people representing their children who had purchased something and gotten injured. Has any thought been given

to educating the people in the public school system and informing them about consumer protection and what the county does for them in this field?

MRS. BAY: Starting the day Virginia Kanuer took office, she has been talking about the great need for increased consumer education in the schools. Our office has published suggested consumer education guidelines from kindergarten through the twelfth grade. Some of the problems that must be considered before a state mandates consumer education are whether the teachers are trained to teach it and whether we have a sufficient number of teachers to teach it. Some schools are working consumer education into existing courses, such as figuring interest rates in mathematics courses.

Mr. E. PRIDEAUX (Colorado): Mrs Dana, I would like to comment on one remark that you made concerning the inspector that could not give you the information you wanted on the inspection of scales. The person to whom you spoke was an exception. I guarantee that the inspectors do know where the scales are, how often they inspect them, and how they operate.

MRS. Dana: It is actually in the small towns or small county areas where I run into something like this, where perhaps the inspector is a political appointee who does not have any training.

AFTERNOON SESSION—THURSDAY, JULY 13, 1972

(JOHN H. LEWIS, *Vice Chairman*, Presiding)

FORUM ON CONSUMER CONCERNS IN THE MARKETPLACE

E. A. VADELUND, Office of Weights and Measures, *Moderator*



The forum this afternoon will concentrate on recent developments in the marketplace that affect the consumer. Representatives from the academic world, from business, and from government will participate as panel members.

The opening portion of the session will center on a discussion of unit pricing and open code dating—what they are and what they are not. This will be followed by a description of who is doing it nationwide, followed in turn by a description of how it works where it has been utilized and by discussion on enforcement problems.

Other aspects of packaging and labeling will be discussed by federal regulatory agency officials. Developments concerning slack fill, the limited coverage of the Fair Packaging and Labeling Act, and problems in meat and poultry labeling will be reviewed.

Our first group of participants includes Mr. Theodore W. Leed, Professor of Food Marketing, Department of Agricultural and Food Economics, University of Massachusetts, Amherst; Miss Jean Judge, Director of Consumer Affairs for the Grand Union Company of East Paterson, New Jersey; Mr. Henry J. Stern, First Deputy Commissioner of Consumer Affairs, New York City; and Mr. Clarence G. Adamy, Executive Director of the National Association of Food Chains, Washington, D.C.

Panel members from federal regulatory agencies are Mr. John Gomilla, Chief, Fair Packaging and Labeling Branch, Food and Drug Administration; Mr. Earl W. Johnson, Attorney, Federal Trade Commission; and Dr. John C. DeHoll, Chief of the Labels and Packaging Staff, U.S. Department of Agriculture.

UNIT PRICING AND OPEN CODE DATING

REMARKS BY MR. T. W. LEED



I would like just briefly to talk about unit pricing and open dating in terms of the whole concept of consumerism. I would like to give a definition of what consumerism is and indicate how unit pricing and open dating fit into this whole concept of consumerism.

I think one of the best definitions of consumerism that I have seen is in an article written by two gentlemen by the name of Day and Aker in the July 1970 issue of the *Journal of Marketing*. They defined it as the widening range of activity of government, business, and independent organizations that is designed to protect individuals from practices of both business and government that infringe upon their rights as consumers. They said that really there are three aspects to this. One is protection against clear-cut abuses, such things as food and drug, fair trade practices that protect consumers against outright fraud or deceit—food inspection which deals with health and wholesomeness—and these are probably the least controversial part of consumerism. The second is the provision of adequate information. The third is the protection of the consumer against himself and other consumers.

I think that the second area, the provision of adequate information for making purchasing decisions, where unit pricing and open dating fit into the picture, is the aspect of consumerism that has been getting the most attention, because of the feeling that buying is becoming so complex with the proliferation of products and ingredients that the consumer is simply not in a position to make intelligent decisions without more information on price and quality. So I think that unit pricing and open dating fit into this category of trying to provide the consumer with more information on price and quality.

I suppose it depends on which side of the fence you are on as to how you would evaluate this statement. I have tried to be objective about this because I have a great deal of respect for industry. I feel that the food industry has a good overall track record, and I think it would be too bad if we passed legislative regulations that interfered with improving this track record. On the other hand, I think there are some practices that have been perpetuated, or at least accepted, by industry that perhaps are not in the best interests of the consumer.

Let me go on and tell you what I think unit pricing is, and also open dating. First, unit pricing is simply the identification of price per standard unit of weight or measure, which enables the consumer to make valid cost comparisons, and it is not a measure of value. It is simply a measure of cost. The consumer, however, should be able to

make a value judgment once the cost per standard unit of weight or measure is known. So it facilitates value comparisons; it does not measure value.

It is not a substitute for individual preferences and tastes. Certainly I do not think that it will replace brand preference. In fact, unit pricing may indeed reinforce brand preference. I think that unit pricing is consistent with our concept of the free market, because perfect knowledge or perfect information is one of the basic precepts of our market system.

Where is unit pricing in effect in terms of regulations? Massachusetts was the first state to pass a unit pricing law. It went into effect January 1, 1971. Connecticut, Maryland, Rhode Island, and New York City are other jurisdictions where unit pricing regulations are now in effect. I think that the passage of the unit pricing law in Massachusetts was due largely as a result of the failure of the Fair Packaging and Labeling Act to bring about package standardization in foods.

How does it work? Well, in Massachusetts it covers upwards of 5,000 items. Most of the grocery items are included, some health and beauty aids, and frozen fruits and vegetables, and juices. Meats, poultry, and fish had been unit priced in Massachusetts for some time under a previous law. The law in Massachusetts, as in the other states, requires certain kinds of graphics and means for providing this information. An orange tag has to be placed directly above or below the item in Massachusetts; or where that is not possible, there has to be a list or a sign at or near the point of display.

The unit price has to be expressed in three digits—to the nearest cent if the price is over one dollar, or to the nearest tenth of a cent if the price is under one dollar. The units are pounds, pints, quarts, gallons, 50 feet or 50 square feet, and 100 units, depending upon the customary way that the commodity is sold. We had a regional conference at the University of Massachusetts in March, and I feel that progress was made in bringing about greater uniformity among the states and municipalities in the Northeast that had unit pricing regulations.

One of the basic issues here has been, first of all, should we have unit pricing, do consumers need it, and will they use it? Secondly, should it be voluntary or mandatory? There are arguments on both sides of this obviously. I guess it boils down to whether or not unit pricing is a right or a privilege. I think that unit pricing is perfectly consistent with the concept of the free market. President Nixon, and I think President Kennedy before him, stated that the consumer has the right to make an intelligent choice based upon accurate information. I think that unit pricing is consistent with that concept.

Should unit pricing be mandatory or voluntary? After studying this issue for some time and watching it operate, I really lean toward mandatory unit pricing regulations because, I think for it to be ef-

fective, it has to be uniform. It has to be presented in a uniform manner, and I think you people in weights and measures understand the importance of uniformity in presenting information. Do consumers use it? If they do not, does this mean that we should not have it? I think it is too soon to tell whether consumers will use it. I think it is such a new and different method of presenting prices that consumers are not familiar with it and probably will not use it until greater education is brought about. Many of the educators at our conference said that unit pricing is vital and that it will provide an important foundation for consumer education in food buying. I think that unit pricing can be a very positive fact in facilitating consumer choice and, certainly, in increasing consumer satisfaction, and perhaps in improving the credibility of the food industry. Let me put it this way. I do not think that all industry spokesmen have been honest with themselves or with the public in some of the arguments that are given against unit pricing.

I think open dating is a bit different from unit pricing, inasmuch as the unit price does provide a standard for making cost comparisons and making value judgments. The purpose of open dating is to provide the consumer with a guide to quality. Open dating is generally accomplished in several ways. One is to put the date of manufacture or packaging on the product. Another is to put a pull date on the product—a date when it should be removed from sale. Or it can be an expiration date—a date beyond which the product should not be consumed. These are all ways of providing open dating.

Open code dating, by the way, I think is a contradiction in terms, because code dating is a code which requires a key to interpret, whereas open dating can be read by the consumer, whether it is the date of pack, expiration date, or pull date. It is obvious to the consumer without knowing what the “code” is.

There was a very thorough study made at Rutgers University by the Department of Food Technology, and their conclusions were that open dating would not generally result in providing meaningful information to the consumer on quality, and they recommended that it not be done. Their point was that temperature and other factors are much more important in determining quality than in simply time elapsed, and that putting on the open date could actually mislead the consumer because, depending upon how the product is handled, the product that has been in the market channel a short time could be of poorer quality than the one that has been in the market channel a longer time.

So I think that, unlike unit pricing, open dating does not provide the consumer with a consistently meaningful standard of comparison. I think that pull dates for highly perishable items like bread and milk make sense, where you have a very short span in terms of time and distance and the distribution system. But for processed packaged

foods, I have some very serious reservations as to whether it will be a desirable thing to accomplish.

REMARKS BY MR. C. G. ADAMY



How widely are they being used? In addition to the four states and one city where these are required by law, 109 corporations, food chains, now voluntarily unit price their goods. Recognizing the widespread operating areas in which these companies operate, this means that, in every major metropolitan area in the United States, two or more companies have provided them, so they are available in every real market in the United States.

As to open dating, some 62 companies are now open dating their private labels. As you understand, open dating realistically or practically is best done at the point of labeling, and so, in the case of private labels, we are, of course, the labeler, and this information is, for all intents and purposes, generally available in the market throughout the United States, not necessarily in every company or every store.

These are both positive reports. There well may be more companies in both categories doing this. Once we determined that this large a number of people were participating in these two programs and that they did reach throughout the length and breadth of the nation, we had achieved the goal we were interested in. Other than continuing to promote the program, we are no longer keeping track of the number of companies engaged in the program, so there could be more.

REMARKS BY MISS JEAN JUDGE



Consumerism, I think, is probably one of the most exciting, one of the most positive, one of the greatest opportunities that has confronted government, education, and business in many moons if it is viewed in the correct way. I deplore any kind of a climate that says, "If you are not for me, you are agin me," or that also says, "You are guilty until you are proven innocent," because I think both attitudes and statements foreclose communication and mean that the approach tends to be negative defensiveness rather than positive offensiveness in the consumer interest. Meetings such as this are probably the healthiest thing that have come down the pike in a long time.

I use the term "price comparison information" instead of unit pricing. The semantics of consumerism get a little confusing. For many people, unit pricing means quite a different thing from what it literally means under laws, and that is price comparison information. As a matter of corporate policy, the Grand Union Company is a consumer oriented company and it has been committed to the consumer's right to know the information that is needed or wanted to make better informed buying decisions. This is generated out of a basic belief in the free market economy, in the consumer's being a critical element in that, and an informed consumer's being a very effective force in a free market economy.

The fact that the information is not requested by all consumers or the fact that the information is not used constantly or effectively by even a majority or a minority of the consumers is not the issue. Put in another way, we do not confuse the consumer's right to know with the use made of the information, and this is a very helpful distinction to make.

Operating under this basic philosophy, the Grand Union Company, on an experimental basis, voluntarily introduced price comparison information on some 1,800 items in 36 of our stores in New York City in mid 1970. In May of 1971, still on a voluntary basis, we expanded our program to additional items in some 200 additional stores and three divisions of the company operating in three states. Late in 1971 and early this year, and on a continuing basis, the number of items and the stores using or instituting price comparison information programs were expanded, until now I would hazard a guess there are from 5,000 to 7,000 items in some 300 or more of our stores and five divisions of the company in eight states that have unit pricing. The program is a computer based shelf ticket program, because this has been found the most feasible, both from the consumer viewpoint and the operational viewpoint.

Part of our consumer philosophy at Grand Union is that it is not difficult to proliferate consumerism programs. However, we feel it necessary, when we do institute a program, to then consumerize it as we say—that is, to take the steps which are both meaningful and feasible to help consumers become aware of the information's existence, to understand it once aware of it, and how to use it once understood. Then it is their determination whether to use it and whether to use it effectively in their own interest.

In accord with this, we have been supporting and continue to support our unit pricing program with in-store signs, customer leaflets or handouts, and, in ad information, demonstrating the system. Challenges of these educational efforts, which I feel are important to backstop any program like this, are compounded by a proliferation of laws, each with somewhat different requirements and compliance features. We have had, on occasion, to rescind an ongoing

education program in order to redesign because the ticket base had to be changed.

In the matter of open code dating, again as a matter of corporate policy, the Grand Union Company has felt that its customers have a right to know something of the freshness of its private label products, particularly what we define as perishable and semiperishable. By our definition, these are the products with a year or less of total product life from point of manufacture or pack to the determination of the life of the product in the home.

The date we are using currently is the pull date or the off-sale date. According to our policy, the desired and the preferred style we are working toward is, in the case of today's date, JUL 13. It is a fact of life that, when you are dealing with a variety of suppliers of various sizes, you cannot have instant agreement or facility for this sort of thing, so on a temporary basis, where it is not mandated otherwise, we are on a short term base permitting 7/13 for today's date until the conversion can be made to ultimately open date in terms clearly understandable. In addition, in our consumerizing philosophy, as labels are changed and products are changed to be brought into conformity, we are trying to include home care information on the label, since product freshness in the mouth is the critical and ultimate product freshness test, and care of the product from the point of purchase to the point of consumption is equally critical in this system.

I think open dating is a critical and important program both for the consumer and the food industry. I do not in any way want to minimize its complexity, its challenge. It is not easy. There are many views and many differing opinions in and out of government, in and out of education, and in and out of industry; but nonetheless, enough of our customers have indicated, and consumers in general, that this is information they feel they have a right to, and we agree and we will try, to every possible extent, to provide it.

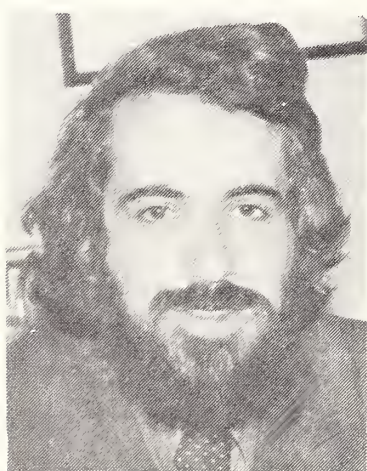
I wish I could stand here and say that everything I say and everything corporate policy says is, in fact, in effect 100 percent of the time in every single case in every single Grand Union store. You and I both know this is not the case. We are, as every organization is, an organization of many thousands of human beings, of human employees, each capable of human error or errors in judgment. Recognizing this fact, we are attempting to strengthen our employer education relative to programs such as this, and increasingly will merchandise directly to our customers the information and policies that should be available to them in our stores, and urge them to let us know if the system is broken down.

Increasingly, I believe, food retailers are reestablishing themselves in the role of the buying agent for the American family, and I believe that it is a logical and correct role. I would like to wind up with something I read because I think it is critical in the time in which we

are, whether we are sitting where you are or sitting where I am. Many aspects of today and tomorrow, neither good nor bad in themselves, depend upon what we do with them. William James, the historian has pointed out that the basic difference between people is not the difference between liberal and conservative, rich and poor, Republican or Democrat (even this year), Christian or Jew, Black or White, consumer advocate, government advocate, or industry advocate. They are all relevant, but the crucial difference is between what he called the tough minded and the tender minded. He defined the tough minded person as one who recognizes the reality principle in the world around him, and a tender minded person as one who, when confronted with reality, sees not what is there, but what is inside his own head and what he has brought with him in order to console himself.

What we would like to cope with is not enough. We must cope with what is there. In this era of the right to know (and I think it is the hallmark of the age in which we live), I believe the tough minded requires of each of us, whether in government, industry, or education, to realistically identify real consumer needs and wants, and then lend all our talents to meeting them in the most efficient, effective, and economical way in our own mutual and independent interests.

REMARKS BY MR. H. J. STERN



I have brought along with me, from New York, Andrew Freedman, who is the Counsel to the Department of Consumer Affairs and who has primary responsibility for the preparation of regulations, conferences with industry, and the legal aspects of unit pricing and open dating. Moe Greenspan, who is one of your delegates, is our Chief Inspector, and he has the job of enforcing unit pricing and open dating in our city. Our fair city is the largest and most populous jurisdiction in which unit pricing and open dating are in effect.

I think the last three speakers have told it well in terms of what it is and how it came to be. In effect, these are reactions. Unit pricing was a reaction to the abuses of proliferation of packages, the confusing package, the snail and giraffe shapes, slack fill—all of those things which make less appear to be more—the fragmentation of sizes, and the increasing complexity of people being able to tell how much they were getting; also such things as packaging to price, the famous shrinking Instant Coffee jars, which went from six to five inches, and

then to four, the soda bottles going from 32 ounces to 28—all the stories of a similar nature to the examples of packaging to price. All this led to a sense of annoyance on the part of consumers and the desire for reliable information.

Now, in our case, we passed unit pricing by regulation, and we were greeted by the food industry with a law suit. We had a very limited program of unit pricing in perhaps four or five categories, staggered to go into effect one by one, so we could explore it and see how it worked, and iron out the bugs in the system. The first category, I think, was dry cereals, and we did this in our sort of tentative manner and were greeted with a law suit by our local food stores, food merchants, and their trade association.

The law suit prevailed, and it was held that we were without power to do this. So we went to the City Council, which passed a local law much stronger than anything we had in mind before, providing for mandatory unit pricing of practically all commodities, which is what we have now in New York City. And who can tell, it happens very often in life and in politics, and I guess in weights and measures, that when you lose . . . , and vice versa.

At any rate, we have this in New York. During the first year we really learned a great deal that was right with it and a lot that was wrong with it, because the supermarkets came out with their own labels, and some of the labels were incredibly bad.

For one thing, everything came out in IBM computer type, which is called Pica, but was really less than a tenth of an inch in size. They listed on the labels such things as the lot number, the code name for the food, abbreviations for the food, the size of the package, and all sorts of irrelevant extraneous information to the unit price. When people looked at the price, they could not really single it out or tell what it was.

Secondly, it was often done on a black and white background, so you could not really tell one set of things from the other. Then the unit price was called different things. Some called it unit price, super price, value price, price per measure, CPM for cost per measure. The retail price was called retail price, market price, you pay, or just plain price or selling price. Each one appeared on different places on the label, and it was really extremely difficult for most people to use the thing effectively.

A conference was held with Professor Leed's leadership, and also the leadership of the Massachusetts Consumer Council, Dermot Shea—it was the great Amherst meeting on March 13, 1972, I believe, and the Treaty of Amherst was arrived at by the various jurisdictions. We worked out solid improvements. For one thing, the term unit price was to be used as opposed to any other term which means the same thing. For a second thing, the unit price was always to appear in orange, and orange was to be the color of unit pricing. This is an

enormous standardization to measure, because now, whatever color the rest of the label may be (that is up to the discretion of the stores), the unit price will be the orange price. So people will differentiate from the regular price and know what to look for.

There were also minimal size requirements. In placement, it was agreed that the unit price was to be to the left, and the selling price was to be to the right. This is the reverse of the way A & P does it, but it is the way most of the stores have been doing it: We worked out these items of standardization, and we adopted them in regulations in New York City which go into effect July 10, with extensions to be granted at the discretion of Counsel Freedman until December 31 to enable stores to use up their own labels.

One provision of the regulations requires the stores to submit labels to us for approval prior to their issuance, so we can go over them and see that they do conform and that no store goes to the unnecessary expense of printing a nonconforming label.

When our inspectors go out in the field, they come back with about a 10 percent violation rate, and we serve violation notices on those stores where unit pricing is incomplete. We try to be reasonable in enforcement because, if there are thousands of items in the store, it is quite likely that some will not be unit priced. In some cases the unit price has not come in from the factory, the computer isn't ready yet, it is a new shipment, or the label has been torn off by a kid. One cannot expect 100 percent compliance in something as difficult and complicated as this. We have reasonably high standards of compliance. When companies fall below that, they receive multiple summonses and are fined. The fines collected have run into thousands of dollars in toto. Individual firms have been fined up to several hundred dollars for failing to post unit prices.

We find that, in general, compliance is fairly good, and compliance is increasing. We set a floor of two million dollars in volume for the unit pricing requirement. This eliminates the mom and pop stores, the smaller merchants, but there are still many hundreds of supermarkets in our city which meet the two million dollar test and have gone into unit pricing programs. We also met regularly with the industry and the New York State Food Merchants and a committee consisting of the top executives of the largest chains.

Open dating is a related matter and one which has stirred much more public attention and public outrage than unit pricing. People are simply getting tired of getting rotten food and moldy sour cream and dairy products and having to pinch each food and poke each bread, of having to open each thing and sniff and hold it up to the light, and try to do research in the stores to determine freshness. What an outrage it is that manufacturers can publish secret codes, printing this information for their own benefit in a code which keeps it from the consumer.

The study at Rutgers University thought that this system was just fine and recommended that manufacturers be allowed to print secret codes and not reveal this information to the public. I think that it will go down as a nineteenth century relic in an age of consumerism that academics could conclude that it was legitimate to keep this information secret. It is a basic disclosure. A person has a right to know whether his food is fresh and how fresh it is. It is true that there are other factors, like storage and method of treatment and so on, which determine freshness as well as age. If there were some way to publish storage conditions, we would publish that, but there is a way to publish age and that is now required by local law in the City of New York.

Open dating applies to a wide variety of dairy and bakery products, and under the law we have to hold hearings whenever we expand it. We are expanding it, for example, to include muffins, which were previously omitted. We do not open date butter or margarine, because those items are, in fact, originally forms of milk which has been modified to those fats in order to be able to be stored. Every time we consider a new product we call in the manufacturers of the product, the processors. They bring samples of the product and we exhaustively determine whether it is appropriate to open date. In the future we are headed for open dating of processed meats. Some companies like Oscar Mayer do it voluntarily now. People know it is just good business and good sense to have a date on the product, because people feel more confidence in the date. The date is usually a month or two in the future anyway if it is a pull date. People at least have the security of knowing that the stuff has not been lying around for three or four months. So open dating is very much with us, and we will be using it even more so.

We have had problems in compliance because there are a lot of small bakeries. In unit pricing, the burden of compliance falls on the retailer, the retail chain. In open dating, the burden of compliance falls on the manufacturer, and there are some small manufacturers and processors who have had difficulty in compliance. But it has been explained to them that, if they cannot do anything else, they can always buy pressure sensitive labels with dates on them and affix those dates to the plastic of the package. One good thing is that a number of bread companies which sell at fixed prices, like Arnold and Pepperidge Farm, are putting the unit price and the selling price on the package themselves. In other words, they are preprinting unit pricing, and this will become increasingly widespread.

To conclude, this is, in general, a relatively new area and New York is in the lead. We have had very little resistance from industry since the initial law suit, which turned out so badly for them. The line is not really drawn between business on the one hand and government on the other, because there are a lot of people within government who do

not live up to their responsibilities and a lot of people in industry who do. Concerning the tough minded and the tender minded, it is more or less the people who move forward and who are not afraid who will do new things, and the people who find one reason after another to hang back. It is between the people who say yes and the people who say no. We like to think of ourselves as people who say yes. We like to think of ourselves as the most vigorous and militant consumer jurisdiction in the country. At any rate, we are the largest.

DISCUSSION

MR. J. DONALDSON (National Bureau of Standards): I take it that unit pricing is a consumer program. I have heard the corporate view and the government view, but I have not heard how the people who are on the other end of it are reacting to it.

MISS JUDGE: I assume you mean the consumers. There is a small but growing use of it as it is increasingly available in the market. It is a fact of life, no matter how much we might wish it otherwise, that price is not and never has been a prime *per se* motivator of consumers, even at the lowest income. A new piece of price information will not by its very presence automatically be clutched. I think this is true with any piece of new information. I don't know that it will ever be the tool used most in a store. We are learning day by day and hopefully doing a better job of explaining it, its presence, what it is, and how to use it.

MR. STERN: An interesting thing that we have learned in the consumer business is that, if something is substantially better than something else, there is a certain limited number of people that will use it. For instance, savings bank life insurance is about 10 percent cheaper than ordinary life insurance and provides identical benefits, yet the experience in Massachusetts for many years and in New York is that it achieved about a 5 to 6 percent market penetration rate, and there it stood. Even if something is demonstratively better, there is a limited number of people who will take the trouble to use it and take advantage of it.

With regard to unit pricing, this is a substantial change in people's buying habits, looking for a second price and allowing it to influence them. In general, more young people use unit pricing than older people. More college educated people use unit pricing than people with a lesser degree of education. It is the kind of thing that picks up with repetition, with promotion by the stores, with the new standardization of unit pricing signs, and we expect the usage of unit pricing to become substantial.

MR. DONALDSON: Could you cite any imperical references of work done to indicate the extent to which people are using unit pricing? I assume some studies must have been done, because a lot of people would not be putting a lot of time into it if they have not studied it.

MISS JUDGE: I cannot give the exact figures. Studies made at Cornell University on the usage and the degree of understanding showed a small percentage. That this is what consumers want may or may not be an accurate statement. There are some consumers who do want and need and request this information, not a majority and not the very ones who we would hope would make greater use of it.

MR. DONALDSON: One of the things I am concerned about is that government is going to tell too much to the people about what is good for them. At this point I may think it is good, you may think it is good. But if 3 percent or 5 percent of the people are using it, we are still telling them what is good for them.

MR. ADAMY: The evidence at hand from the studies that have been made during this first year period would run from 5 to 6 percent, to 20 percent for some companies. The members of NAFC tell me that, despite the low utilization, none of them plan to take it out, because it has an intangible value in that apparently a great many consumers are pleased that it is there. It has a trust confidence factor.

MR. L.W. VEZINA (Alexandria, Virginia): Mr. Stern, how could unit pricing give you the quality of merchandise you want, especially ice cream, when our laws require ice cream to weigh 4 1/2 pounds per gallon and you can get ice cream to weigh 3 pounds per gallon?

MR. STERN: Unit pricing is no determinant of quality. It is purely a determinant of price. It enables you to know the cost per pound of a cheaper product compared to the cost per pound of a more expensive product, and to decide whether you want to pay the premium price for quality. There is no evidence that unit pricing has caused people to buy lower quality goods. It is just a measure of price and a standard of comparison. In New York City ice cream is sold by volume, I believe, and is not unit priced.

MR. VADELUND: I would think that would be true in any jurisdiction. Ice cream, by and large, is required by state and local laws to be sold in standard units. It is, by its nature, unit priced.

MR. V.J. DEI GUIDICE (Armour & Company): Miss Judge, did you say the consumer was not motivated by prices?

MISS JUDGE: The consumer is concerned about prices. Price is one among several factors that determines a consumer's decision to buy. It is not the sole determinant in many cases. I say this, having spent fifteen years of my life working with low income consumers. That is what makes a democracy.

MR. S.D. ANDREWS (Florida): I don't oppose unit pricing, but I do oppose mandatory unit pricing. I think that unit pricing should be on a voluntary basis, as recommended in our Model Regulation. I oppose unit pricing if it is going to take time away from the more important duties of the regulatory officials. If it is so important, everybody will adopt it on a voluntary basis as a competitive tool, so why should we force it as a mandatory requirement?

MR. LEED: I feel unit pricing should be required because the consumer has the right to know what she is paying for a commodity, and it is not possible to have this knowledge without some kind of standardization, either in packaging or in unit pricing.

MR. ANDREWS: We as weights and measures officials are requiring that the statement be accurate. Where do we stop giving additional information?

MISS JUDGE: The purpose of unit pricing is to give relative price, and that is the ability to make price comparisons within a category brand and between the same size of differing brands. The guidelines just recently published by the Packaging and Labeling Subcommittee of the Department of Commerce Committee on Consumer Affairs incorporates the whole spectrum of labeling information that can be accomplished on a voluntary basis. I would wholeheartedly hope that it be done universally on a voluntary basis, because I think that when you begin to mandate, then you build all kinds of traps. Where it is not necessary to mandate, I would certainly concur that it not be done that way.

MR. STERN: We tend to believe that things like seat belts in automobiles and packaging and labeling standards come out much better when everyone is required to adhere to the same standard. These are minimal standards, and certainly companies can go beyond these if they want to provide more information, but I certainly would not want to allow some company to say that their food cost less because they didn't bother with unit pricing.

You say that the price and the contents both have to appear on the label. All we are doing is going one step further and doing the division and telling the housewife the cost of the product per unit. Nor does it occupy a substantial amount of time of our inspectors. Since it is limited to the largest chains, it is to a great extent self-executing. We have received excellent cooperation from industry on it.

MR. ANDREWS: I just cannot let that last statement go unchallenged. It requires a terrific amount of time for an inspector to go into a supermarket and check whether they are unit pricing accurately or not.

MR. STERN: We do not check the division. In the year we have been doing this, we have never had a single case where the computers gave out a false unit price. All the inspectors have to check is whether the posters are up there, which is not so time consuming.

MR. ADAMY: It would be physically impossible and unreasonably costly to unit price without the benefit of computers; therefore, New York City's stipulation in exempting small companies is both wise and effective.

MR. STERN: We went beyond the law. The law as passed in New York City set the floor at \$250,000 in annual volume, but we went to \$2 million because we even wanted to exempt the middle sized com-

panies. It really applies to those companies which have computer capability.

MR. M. GREENSPAN (New York City, N.Y.): What originally started the whole furor about unit pricing was the fact that, within products, the various manufacturers did not standardize their packages. A single item could be found in 12 1/2 ounces, 13 1/8 ounces, 14 3/4 ounces, so it was impossible to make any kind of value comparison between the identical product manufactured by different companies. One problem that has yet to be resolved is what type is legible and useful to the consumer, as the IBM runoff is just a wee bit too small by about one-sixteenth of an inch.

MR. G.L. JOHNSON (Kentucky): Does unit pricing discourage special sales?

MISS JUDGE: It hasn't in our case, because the specials are specially ticketed with the unit price and the sale price. We have had, to my knowledge, no fewer specials by virtue of having unit pricing than we had before unit pricing.

MR. J.C. MAYS (Dade County, Florida): The State of Florida Legislature passed a law on unit pricing which gives uniformity by adopting and making it necessary to conform to the code that was originated here at this National Conference. If they voluntarily go into unit pricing, then it is mandatory, of course, that they conform to the uniform standard established here. I believe the law goes into effect January 1 of next year. Actually what the state did was to pass as a law what we recommended in the Model State Unit Pricing Regulation.

MR. D.I. OFFNER (St. Louis, Missouri): Mr. Stern, I have some reservations about the practice of having the factory imposing the unit price, as in the case of bread, because it would tend to discourage the merchant from selling that product at a lower price. Frequently in St. Louis some merchants will traditionally sell an item at a price lower than the factory printed price. To encourage the processor to put on the unit price would tend to maintain the price at a somewhat higher level.

MR. STERN: Our experience in New York City has been that prices are preprinted by the manufacturer only on baked goods, bread and special cakes from large bakers such as Arnold and Pepperidge. They include the price of the product as well as the unit price. I have never seen the items marked down unless they are a day or two days old.

MR. OFFNER: Missouri is one of three states that historically has never adopted fair trade pricing legislation, so it is a common practice for many merchants to mark down the preprinted price.

MR. R.L. THOMPSON (Maryland): In Maryland the unit pricing law is under the Attorney General's Office, and not under weights and measures. Weights and measures inspectors generally find the greatest percentage of violations in the smaller stores who need not

comply with unit pricing. It seems to me that we perhaps are inadvertently placing the consumer in double jeopardy in these areas.

MR. STERN: We seem to be involved in a two-class system of regulation, with one set of laws for the big companies and another set for the small companies. This was perhaps most noticeable in the rules set out by President Nixon's Price Commission, where large companies were subject to strict regulations on procedures they had to follow to apply for price increases, and then 20 percent of the economy (all the small businesses) were told they could charge whatever they felt like. It is a new kind of economic enforcement—enforcement on the big people where most of the business is done and taking your chances if you decide to go to a smaller shop.

The reason for this is due to the difficulty of compliance on the part of the small stores, when you do need a computer to set up unit pricing, and secondly the difficulty of enforcement, of sending your inspectors into thousands of these tiny places and getting them to stick to the standards. The change that you have alluded to goes far beyond unit pricing. It applies to standards of equal employment opportunity and fair hiring, and in some cases to certain health and safety standards, which are stricter for larger firms. I do not know what the result of it will be except to say that I also observe the phenomenon. Most people have the option of using either the larger firm or the smaller firm. If they choose the convenience, the credit, or the availability of the corner store, they then, by making that choice, sacrifice some of the legislative advantages they would receive in the larger store.

MR. D.K. FORBES (District of Columbia): I was happy to hear Mr. Stern say that only the educated use unit pricing because my experience with it has been not too good. In a large number of instances where there is liquid measure involved, such as lighter fluid, rubbing alcohol, shaving lotion, which is normally sold by the fluid ounce, they unit price it by the pound. I am sure you have to have a college education to figure that one out.

MISS JAN SCHAKOWSKI (National Consumers United): Is baby food one of the items required to bear an open date?

MR. STERN: Baby food is not required to be open dated. The reason is that baby food is, in a sense, hermetically sealed, and open dating primarily applies to baked goods, dairy goods, goods that have to be stored at specific temperatures to avoid deterioration. Bottled baby food would be in the same category as canned food and, therefore, is not subject to that standard at this time.

MISS SCHAKOWSKI: Our experience as a consumer organization has been that consumers are quite interested in a date on baby food. They have written us a number of letters, and we in turn, when we were publishing a booklet translating code dates, went to the baby food companies imploring them to give us this information. Gerber and Heinz absolutely refused, and we do find this absolutely outrageous.

MR. STERN: Well, I agree with you. In fact, in many cases the baby food is older than the baby.

MISS SCHAKOWSKI: For those of you who may think that open dating is not vital information, we found in the codes that we have broken such things as luncheon meats that were sitting on the shelves six months beyond the date that they should have been off the shelves. Other items were two years beyond the date that they should have been sold. These code dates were the ones determined by the companies. Tough minded business men will understand that consumers are going to demand open dating and eventually we will get it.

MR. STERN: Under the New York law, the Commissioner of Consumer Affairs has the authority to determine, after public hearing, which items should be included. I can tell you that these items increase month by month, but, in the order of need, one starts with those goods which are sold fresh as opposed to those which are sold in sealed containers.

MR. W.S. BUSSEY (Interim Study Committee on Consumer Protection, Texas State Senate): I know that, when the Fair Packaging and Labeling Act first went into effect, there was considerable activity and several reports on the progress that was being made in standardization of packages. Is any progress being made?

MR. VADELUND: Yes, progress has been made. There are voluntary quantity standards for 44 product categories, making up something in excess of 80 percent of those products subject to the Fair Packaging and Labeling Act. They are not the total answer, however, to resolving the problems of making value comparisons. You still have the density problem, for example. While you may provide enough of a standard to permit a consumer to make what might be termed horizontal comparisons from company A's product to company B's to company C's, it is oftentimes still difficult to make vertical comparisons within a brand. This is, as you know, a voluntary program. We think basically that some combination of package quantity standardization and unit pricing is probably the answer to providing value comparison information.

MR. BUSSEY: There have always been many arguments pro and con on standardization, but when an industry wants to standardize something it does a pretty good job, like in regular coffee, butter, dairy products, ice cream. The industry wanted it done and they did it.

Where retail food stores advertise certain prices on package commodities on special sale where the unit price is already marked to conform to the regular selling price, how do you go about correcting the unit price?

MR. ADAMY: The common practice is to unit price on the shelving or on a sign near the item. Changing the price on a prepriced item is merely a matter of putting the new price on it.

I am totally opposed to any form of retail sales price maintenance. We as an industry do not, in fact, encourage prepricing of items for that and other obvious reasons.

MR. BUSSEY: In many instances my observation has been that the pricing is not changed except in the newspaper. The item is already prepriced and, if there is a price on the shelf, that is left the same.

MR. STERN: We have had experience with that in fictitious specials. We have found that in some chains which advertise specials, up to 50 percent of the items advertised are either unavailable or are actually marked at the original higher price and have not been marked down for the special. We serve violations when we find such instances. The extent to which this practice is carried out by the large food chains, which should do better, is incredible.

MR. BUSSEY: One chain in Austin, Texas, did quite a bit of advertising about their unit pricing, saying that this is what the consumer wanted. However, evidently the consumers did not know it because they did not pay any attention to it, and the practice was abandoned. I was told by some of the store managers that nobody was paying a bit of attention to it, it was costing them some money to do it, and was a good deal of trouble, and therefore they abandoned the program. I think there are chains in other parts of the state that are still following through on the program, but I don't think that the consumer has been convinced that this is actually what he wants and what he needs, because he has not paid too much attention to it where it has been done voluntarily.

MRS. JACQUELINE KENDALL (National Consumers United): It seems kind of ridiculous to hear everybody going to such lengthy discussions about how you would lower the price for sale. Obviously the same problem exists in raising the price, and I notice that the supermarkets manage to raise prices quite frequently, and I think they could lower them the same way they raise them. Take it off and change the label.

MR. J.M. CHOAMIN (Middlesex County, New Jersey): Mr. Stern, have you every instituted an action on the store level, rather than on the manufacturer's level where you found that the pull date affected the shortage in that the rotation process was ignored? You cannot hold the manufacturer responsible beyond a point, where rotation is one of the factors contributing to the shortage.

MISS JUDGE: We do not hold manufacturers responsible for something that has occurred by virtue of malperformance in a store.

MR. STERN: We proceed against the retail store. If the citation is short weight of prepackaged items and the item was prepacked by the manufacturer, the store impleads and collects back from the manufacturer whatever fines are levied against it if the manufacturer wants to continue selling to that store.

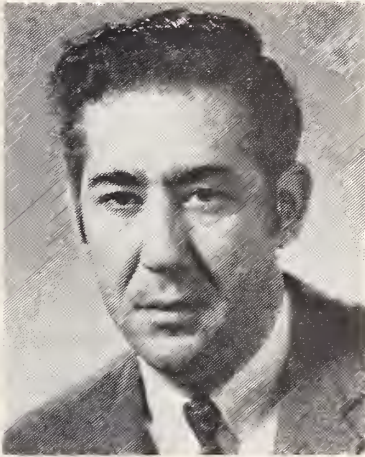
MR. CHOAMIN: Where a manufacturer has a shelf life testing procedure program for his particular product and tells the super-

market that he will not be responsible for the shortage, it is unfair for us, as weights and measures officials, to cite that manufacturer.

MR. STERN: You are absolutely right. We always cite the store, whether it is the fault of the store or the manufacturer, because the store is the business that sells to the consumer and the business over which we have jurisdiction.

FDA + FTC + USDA — REGULATORY NEWS AND VIEWS

REMARKS BY MR. JOHN GOMILLA



As you are aware, the Fair Packaging and Labeling Act gives the Food and Drug Administration the authority to draft regulations, if they are needed, to prevent nonfunctional slack fill. Historically, every time the Food and Drug Administration has sought to take some action against a product by virtue of its being slack filled, we lost in court, and our actions were taken under the authority of the Food, Drug, and Cosmetic Act, one section of which says that a package may be misbranded by virtue of the way it is formed, or filled or made. Everytime we tried in court, we lost.

With the advent of the Fair Packaging and Labeling Act and this new section which gave us the authority to get into the slack fill area, we thought we would have a new lease on life, but we did not have a sufficient repository of data upon which to base the issuance of new regulations, even though we knew there was a need for these regulations.

It so happened about the time that we decided that we needed to gather such data to support the issuance of these regulations that we came into some money from the Congress, and we decided to utilize that money in the form of contracts with eleven states. We decided also to make these contracts twofold in nature. We asked the states to gather data on the presence of nonfunctional slack fill in six broad categories, and also do some work on package size characterization for us, since they were going to be in the stores anyway. In the process we contracted with mostly weights and measures officials or other regulatory agencies in the States of Alabama, Florida, Idaho, Maryland, Minnesota, Missouri, Oklahoma, Pennsylvania, Texas, Washington, and Wisconsin.

The six broad categories that we looked at were macaroni and noodles, candies, crackers and cookies, dry cereals and dry grain products, dry mixes such as cake mixes, and dry desserts such as pudding mixes. We confined our activities to those areas, and the

states, in the course of a year looked at about 11,000 samples of packages within these groups, consisting of approximately 55,000 individual packages.

Some of the findings I am going to relate to you now are quite interesting, and I want to caution you as to what I am going to say. These figures are the amount of space in the package that is not occupied by food. The space is occupied either by air or maybe by filling material, cardboard or wrappers, or what have you. These figures represent the amount of space in a given package which is not occupied by the food. These figures do not represent the amount of slack fill, because that has to be determined later. They just represent the amount of space in the package that is not occupied by food. Some of this space is unavoidable, and we recognize that, but some of it, we feel, can be avoided by some more judicious manufacturers processes, or perhaps package design.

We do know, for example, that one major firm reduced the size of their cereal package, one in particular, by about six cubic inches during the year, and they did not disturb the quantity of contents at all. So we know that it can be done.

The greatest degree of slack fill that we found, or the greatest degree of empty space that we found, was in the dry dessert mixes. When you deal with the numbers of packages that we dealt with and the numbers of manufacturers it represented, these figures represent pretty valid observations. For example, we looked at the dry dessert mixes of some seventeen different manufacturers, and we found that the average percent of empty space in these packages ranged about 47 percent.

Forty-seven percent of the packages were not occupied by food. This space was occupied by either air or something else. We are not talking about slack fill *per se*. We have not determined how much of that 47 percent had to be, but we feel that a good portion of it could be eliminated. I will explain later what we are going to get into to draw some conclusions as to how much of this empty space should be eliminated and how we are going about it.

Gelatin types, flavored, about 36 percent of the package was not occupied by food. Pudding mixes, 35 percent. Mint candies, 29 percent. Vermicelli products, 29 percent. Spaghetti products, 29 percent. Potato chips, 27 percent. Cookies, filled or iced type, 25 percent. Prepared mixes not elsewhere classified, about 25 percent. Pretzels, 23 1/2 percent. Plain cookies, 23 percent.

I can go on and on, but these give you an idea of the work that the administration has cut out for us during the next couple of years, to try to ascertain how much of these figures that I have quoted really represents a true slack fill, how much of it is functional, how much of it is nonfunctional.

In order to ascertain how much of this slack fill is functional or

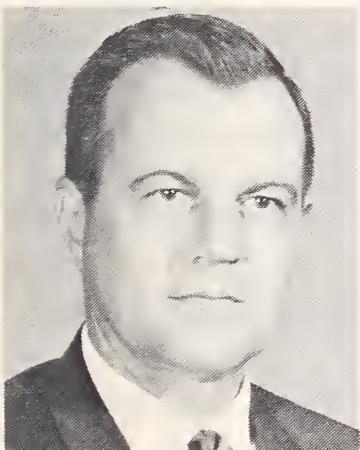
nonfunctional, we have embarked now on our own field program wherein the Food and Drug Administration goes into the plants to make the necessary investigations and inspections to ascertain what the filling practices are, how full a manufacturer can actually fill his package, and how he might redesign his package so that these spaces are not just air, so that the product is filled to the maximum capacity.

We decided to look at these particular areas based on these findings that I just related to you. We are going to be conducting inspections of manufacturers of dry dessert mixes, pudding mixes, vermicelli and spaghetti products, potato chips, gelatin desserts, mint and hard candies, cookies, and prepared mixes.

The states also examined these products for short weight and found a significant amount of short weight. In the overall picture of the 11,000 samples that were examined, we found 5.6 percent to be more than 1 percent short weight. Now, I am going to caution you here again, these samples consisted only of five packages each. When the states found that they were short weight, they often went back and collected a more representative sample, so as to base a determination on the actual amount of short weight, and they found a significant amount of short weight still.

Once we finish our inspections, we will then be in a position to have a greater shot at how much of these packages should be occupied by food and set some standards by regulation, of course, as to what level we feel the fill should be. At this point, it is very difficult to state whether this is going to be on a product-by-product basis or on a group of products basis. This will have to be determined by the evidence later this year when we finish these inspections.

REMARKS BY MR. E. W. JOHNSON



I am going to speak to you on the Federal Trade Commission's request to Congress recently that the FTC jurisdiction be expanded to cover all other consumer commodities under the authority of the Fair Packaging and Labeling Act. Of course, other consumer commodities exclude the food, drug, cosmetic, and medical device products, which are under the jurisdiction of the Food and Drug Administration.

The Commission's request was contained in the last fiscal year's report to Congress, and it reflected very briefly the ambiguities contained in both the FPLA and the legislative history of the Act. In the Act is a statement that it should cover household products only. Well, what is a household?

Then we have the legislative history. There are several broad categories of typically packaged products, such as durables, textiles, wearing apparel, paints and kindred products, garden and lawn supplies, pet care supplies, stationery and writing materials, and these were all named as specifically not to be included in the Act. The Commission noted that such omissions appeared inconsistent with the declared policy that packages and labels should enable consumers to obtain accurate information, as to the quantity of the contents, and should facilitate value comparisons. Now, when I say packages and labels, I think it includes all packages and labels.

Thereafter, based upon the desires to resolve any ambiguity of definition and to further the broad concept of assistance to consumers and manufacturers alike, it was recommended by the Commission that all packaged and labeled commodities, distributed for retail sale at least, be included under this Act.

Now this is not a new effort on our part by any means. It is one that originated from as far back as the initial challenges made by industry to our initial effort to encompass all other consumer commodities, and that is the way our regulations were written to begin with. Obviously, the identity of the commodities that are durable and not durable, or that are ordinarily carried in supermarkets or drug stores, as opposed to variety stores and hardware stores, is a monumental task of clarification, and it still is not totally clear. The big issue, however, should not be what is included under this act on a commodity-by-commodity basis, but what is the purpose of the Act and should it apply equally to any product which is sold in packaged or labeled form, and we think so. It is the Commission's opinion that basic affirmative disclosures—and I use that term advisedly—on every package should include identity, net quantity, and at least the name and place of business of a responsible party.

To mandatorily require this information necessitates a law backed by regulation, and we have that law for certain commodities. Of course, the Commission can prevent deception in any single case of misstatement of this information, but this entails a long, tedious process of case-by-case proof of deception, and was one of the main reasons for enacting this Act. Now, on the practical side of this request for expansion is the consideration to assist both the consumer and the manufacturer/packer alike.

I think we are all experiencing day-to-day requests from the consumer to improve or correct label information. As expressed several times over in the Laws and Regulations Committee meeting on Tuesday of this week, there must be teamwork effort at all jurisdictional levels if we are going to accomplish this job at a minimum cost to everybody. If we are all working toward one common goal with identical coverage, there is a concert of effort. This is a very commendable goal now embodied in the Model State Packaging and

Labeling Regulation, but until that is adopted by every state, or something similar to it, there remains a void which we can fill at the federal level, where interstate commerce is concerned.

With today's methods of manufacture and distribution, it is not uncommon, as we know, to find a single product sold in all fifty states, nor is it uncommon to find a problem affecting several members of industry in large segments of the country. I recall to your mind again Tuesday's meeting, in which the marking of polyethylene sheeting in the Northeast was discussed. These are problems where we, at the federal level, can render assistance to totally eliminate the problem, provided we have the jurisdiction.

Turning to the manufacturers for a minute, and you have a very exemplary group sitting here today who seek to serve the consumer, they want to know what the various governments desire. The more uniformity of requirement, the better service we provide to them, and ultimately to the consumer, I believe. Once these uniform guidelines are laid out, we will have fair competition as well as fair packaging and labeling, because all jurisdictions can turn their efforts to the few who choose to test these rules. Under the theory of fair competition, industry will and does police themselves in the interest of staying within the boundaries, rather than chance following the competitor across the lines set in the regulations. This enables all of us to quickly recognize the problem areas and effect a cure with more time left for areas not now attended to, and there are a lot of those.

In summary, over the past few years, the Commission has recognized the need for consumer protection at every jurisdictional level. As a consequence, we have established regional offices which have the ability to take action in their assigned areas. In addition, they have organized consumer protection centers in conjunction with local authorities to channel all matters to appropriate authorities for handling.

We have advocated that the various states adopt some consumer protection laws similar to those of the FTC Act. Now, all of these efforts are aimed at creating a team composed of all government levels which can logically and economically respond to valid consumer complaints at every level. Ergo, we have asked to expand our consumer commodity list.

REMARKS BY DR. JOHN C. DeHOLL



In 1970 the U.S. Department of Agriculture issued regulations on meat inspection, which included regulations on meat inspection, which included regulations on net weight labeling. At that time, before the regulations became effective, a section within the regulation dealing with random weight meat products was administratively set aside, because of the fact that many of these meat products do undergo quite a bit of shrinkage from the time of packaging at the processor until they are sold

at retail to the consumer.

We have been working in some areas to come up with some new regulations and to define what is a random package. We have not completed those regulations. We have been working with Mr. Vadelund and some of his people in trying to develop these regulations. The poultry regulations were issued in May and become effective the 17th of this month. They do have regulations with respect to random weight products. The consumer size packages will not have to have a net weight on them. However, the shipping container will have to have a total net weight and tare weight of the individual consumer size packages.

I am sure some of you have heard about the problem with respect to the bacon package out in California. It is quite a problem. We are looking into it to see what is the real answer, and will probably work with the representatives of the Conference in trying to find some solution.

I am not sure what we are talking about when we refer to fanciful names on meat products. I guess we are talking about California steaks, Kansas City steaks, and New York steaks and Manhattan steaks, and things of this kind. We generally do not go for fanciful names. We do have some that have fanciful names on them, but there is also a descriptive name on the label.

Judging from the quantity of consumer complaints we get about fanciful names, I would say most of this is done at the retail level. We have no jurisdiction at the retail level. This is strictly a matter up to the states. Some of the states have come up with some regulations on common names for various meat cuts. It would appear to me, though, that if each state goes its own way we are going to have a lot of names. I believe that the action taken by the National Meat Purveyors Association and their institutional users several years ago would be a good approach. They came up with specifications for what a name means, so that an institutional buyer in New York, when he orders a roast ready rib from a purveyor in New Jersey, in New York, or in California, knows what he is buying.

It would be a tremendous job to define all of the appropriate names for retail cuts, but I think it could be done over a long period of time.

DISCUSSION

MR. M. GREENSPAN (New York City, N.Y.): Dr. DeHoll, I am not sure whether the tare weight will be marked on the shipping container or on the individual package.

DR. DEHOLL: Currently the poultry regulations require the total net weight on the shipping container and the tare of the individual consumer size packages. The tare is on the shipping container.

MR. D.I. OFFNER (St. Louis, Missouri): I have noticed, in connection with some meat products and, even more, in some fish products, packed in New England at random weight, there is a label inserted inside the package under the plastic film which informs the weigher how much tare to allow for the package. Frequently these tares are in fractions of an ounce, whereas the actual weighing is done on a scale that reads in hundredths of a pound. I think that, where a tare weight is furnished, it should be in the system that will conform to the scale on which the package is most likely to be weighed.

MR. H.J. STERN (New York City, N.Y.): I think we are all right essentially in unit pricing and open dating, but we are really in the dark ages as to federal responsibility having to do with consumer protection. This is not the fault of the civil servants who are here. It is really the fault of the congressional and leadership attitude. I think it is incredible, for example, that we do not have nutrient labeling, and even more so that we do not have quantity labeling. For instance, on an 11-ounce can of beef stew the net weight is required, but not the quantity of beef, whether it is 2 ounces or 4 ounces. We have written to the FDA about this, and have contended that you can get much more information from a can of dog food. Perhaps the reason for it is that a dog cannot read and, therefore, it is safe to identify the dog food.

We are behind in the area of slack fill, quantity labeling, and nutrient labeling. And we are particularly behind in labeling of drained weight. There is more to tare weight than the can itself. There is also the packing medium. It is just incredible to me that even the most minimal labeling requirement should not require a can of peaches to say that the can contains 6 ounces of peaches and 5 ounces of syrup, and whether the syrup is light or heavy.

I predict that there is going to be a labeling revolution, in the same way that there has been an auto safety revolution. I wish the federal officials a great deal more power and real authority to promulgate straightforward labeling standards.

MR. J.R. BIRD (New Jersey): Dr. De Holl, what consideration is being given to evaluating the labels on T.V. dinner packages where the graphics that are on the package do not actually depict what is in it?

DR. DEHOLL: Quite a bit of consideration is being given to it now, and we are developing some more regulations with respect to those illustrations.

MR. STERN: That is a great issue—the phony picture of the big piece of fatback pork on the can of pork and beans, which is not at all realistic. The pork is simply dragged through the pork and beans.

DR. DEHOLL: I am glad to say that is a Food and Drug problem.

MR. STERN: We had a complaint about cans of snap beans, where the label showed ten snap beans mixed in with the regular beans, whereas the can never contained more than three or four. The classic misrepresentation is the picture on cans of mixed nuts, which shows all kinds of cashew nuts and almonds and filberts, whereas the inside contains essentially peanuts. Misrepresentation also occurs in the coloring of food products shown on the label. For instance, the beans shown on the can will be green, but are pallid inside. I would like to see the Department of Agriculture and FDA move on deceptive illustrations.

MRS. JACQUELINE KENDALL (National Consumers United): Dr. De Holl, is water injected into chickens?

DR. DEHOLL: No. The chickens are immersed in water. The only amount absorbed is that which is necessary to chill the chickens immediately after slaughter.

MRS. KENDALL: Are the chickens that come wrapped into the retail outlet supposed to be weighed again before sale?

DR. DEHOLL: Those that come prepackaged are not supposed to be weighed again.

MR. STERN: Didn't we have this thing about 3 percent to 6 percent oil and water being injected into chickens?

DR. DEHOLL: That was turkeys. There is a regulation which limits the amount of basting compound that can be used, and there has to be a prominent statement identifying the composition of the solution that is injected.

MR. STERN: Wasn't the disclosure requirement just suspended by the FDA?

DR. DEHOLL: There was no suspension of the disclosure. The disclosure is still there, and the quantity is limited to 3 percent.

MR. L.D. DRAGHETTI (Agawam, Massachusetts): What amount of pickle is permitted in packages of corned beef?

DR. DEHOLL: Actually, there should be no free pickle in there. Of course, corned beef itself has quite a bit of pickle in it. If the product becomes a little bit warm in these retail stores, some of the pickle will leak out. The corned beef may contain up to 10 percent pickle and the brisket 20 percent.

MR. STERN: Pickle is water, isn't it?

DR. DEHOLL: It is brine—curing ingredients in a water solution.

MR. DRAGHETTI: In the curing of hams I understand there is some kind of device that injects water into them, is that right?

DR. DEHOLL: It is a curing solution. The purpose is to get the curing solution to all surfaces within the ham. We have two classes of ham. A product labeled ham cannot weigh any more than it did in a green state. A product labeled "ham, water added" may contain up to 10 percent.

MR. DRAGHETTI: Do USDA people check the scales inside the factories producing hot dogs and meat products?

DR. DEHOLL: Yes.

MR. DRAGHETTI: Are the weights used to check these scales all certified back to the National Bureau of Standards?

DR. DEHOLL: No.

MR. DRAGHETTI: How are tolerances figured on package lots of hot dogs?

DR. DEHOLL: That is not within my area. It is within the area of our plant inspection activity. There is a specific instruction in our inspector's manual of procedure which outlines all this.

MRS. KENDALL: Dr. De Holl, in the Chicago area the majority of the chickens are reweighed in the store because they do have the store labels over them. They come in chill-packed, so the water that is in there is not frozen, it is just chilled. If you weigh the package, it weighs more than it does after the chicken has thawed out and the water has run off, as much as 23 hundredths of a pound in some cases.

DR. DEHOLL: A lot of that type of poultry goes out in large size containers. The chickens are packaged at the retail level.

MRS. KENDALL: Is it legal for chickens to be weighed in the semifrozen state?

DR. DEHOLL: Poultry that is frozen is usually weighed prior to freezing.

MRS. KENDALL: No, it is sold as fresh. It is not sold as frozen. They call it chill-packed.

DR. DEHOLL: I am not really familiar with this. I will look into that.

MR. T. E. KIRBY (Georgia): Dr. De Holl, a little less than a year ago I checked a weight that belonged to a representative who was checking the fishing industries in Georgia. That one-pound weight had rusted to the extent that it weighed a little less than 12 ounces. Also, over a period of two years I tried to check a kit of weights, about 150 pounds, belonging to the Grain Section of USDA, but was never able to check them. My experience with the weights sealed out by this factory is that they are not necessarily within what we would think of as Class F tolerance. I wonder if the standards used in the various sections of USDA are being properly tested. The only agency that I know of where the weights are being tested is the Packers and Stockyards Administration.

DR. DEHOLL: With respect to fish, we have nothing to do with that. I have been talking only about meat and poultry products. I will be glad to call this other matter to the attention of our Grain Division.

MR. A.J. LADD (Akron, Ohio): Mr. Gomilla, why are not soaps and detergents included in your slack fill survey?

MR. GOMILLA: Because they are not under our jurisdiction.

MR. VADELUND: They are under the jurisdiction of the Federal Trade Commission.

MR. LADD: Why does not the Federal Trade Commission look into slack fill in soaps and detergents?

MR. JOHNSON: As Mr. Gomilla outlined to you, the FDA did have an amount of money given to them by Congress to check slack fill. I would like to look at it as being most important to look into the food factory first.

It is hard to pick up samples and to weigh them and check them out without the absolute technology of these gentlemen in this audience. We do not have that yet, unfortunately. However, if you find anything outlandish, we would appreciate having it brought to our attention. We have not had that brought to our attention by anybody to date. We have been asked why we have not been in the slack fill field. Essentially, we are in the retail price maintenance—nonmaintenance if you will—field, such as retail sale price concepts of “cents off” and the like. We feel from the economic side that this is another important factor, and so our emphasis has been placed there.

MORNING SESSION—FRIDAY, JULY 14, 1972

(WARREN E. CZAIA, *Vice Chairman*, Presiding)

FORUM ON TECHNOLOGICAL DEVELOPMENTS TO AID CONSUMERS

O.K. WARNLOF, Office of Weights and Measures, *Moderator*



Our forum this morning is divided into three parts, each concentrating on technical developments in specific areas which aid consumers and affect weights and measures enforcement.

DIGITAL DESIGNS—WEIGHING

The participants for the first portion will be Don Kendall, Chief Scale Engineer, Toledo Scale Company, and Tony Cattell, Supervisor of Standard Product Engineering, Fairbanks Morse, Inc.

REMARKS BY MR. D. B. KENDALL



Digital indication is certainly evident that scale manufacturers and merchants are trying to help the consumer. The analog customer indication on cylinder or drum scales is somewhat difficult to read and is of little value to the customer in determining whether she is being charged the correct unit price and total price.

The new digital display of the quantity of decimal pounds should be more understandable to the housewife. However, it appears that a little more education is necessary. We believe that a homemaker should be able to understand 1.41 pounds more readily than 1 pound 6 1/2 ounces. Since she knows that 41 cents is 9 cents less than 50 cents, so 1.41 pounds then bears the same relationship to 1.50 pounds as \$1.41 does to \$1.50. This quantity indication, with the unit price and total price, presented digitally provides all the information to the customer in a readily understood manner.

There has been a lot of discussion about adjustment of the scale at zero with digital displays. These scales can be improperly adjusted, but it should be quite evident to the housewife that the scale is not

properly adjusted because it will be blinking an occasional plus one interval if it is set fast. On a scale graduated in hundredths of a pound, a plus interval is about the equivalent of a fifth of a graduation of a cylinder scale graduated by half ounces. So it is our feeling that, when this scale with the resolution of 2,500 graduations indicates zero, it means zero just as closely as the cylinder scale it supersedes.

The matter of how to indicate zero or how to know that the scale is close enough to zero to be satisfactory for use is a new problem in connection with digital indication, and I do not believe that there should be any one positive way to solve the problem. I agree that, if there are only 500 digits in the capacity of the scale, just the indication of a zero is too broad. This problem is going to have to be addressed by the Conference, and there will be a solution sometime in the future.

One of the solutions could be a requirement for twice as many digits as there are analog graduations. For instance, if you require 1,000 graduations on an analog scale, requiring 2,000 increments for a digital scale means that, if the digital scale indicates zero and has been adjusted as proposed by the S & T Committee to plus or minus a half digit, when it reads zero it is at least as close as a quarter of the corresponding analog graduation. If it blinks plus once in a while, it is not properly adjusted.

I think further consideration is going to have to be given to this possible broad zero. With the negative action of the 57th Conference on the S & T Committee recommendation, I think the only solution in the interim is that the Office of Weights and Measures in their prototype examinations will have to determine whether a device, in a particular application, is appropriate.

It is my proposal that the method of establishing a narrow enough zero indication is to require at least 2,000 digits in the nominal capacity of the scale. There are other ways of doing it. One is to expand the resolution at zero only. For instance, in the case of a 1,000-pound by 1-pound dial, some manufacturers have a switch which permits reading the scale to a tenth pound for setting zero. The intent of this proposed regulation was that, when this is done, the zero is adjusted so that it is in middle of this 1-pound band.

Another way is to just press a button which increases the sensitivity of the scale so that a digital indication would be magnified by some factor such as five, to permit a finer resolution at zero. I feel this is necessary if you only have 1,000 graduations—that the resolution of 1 pound in 1,000 is not fine enough for zero establishment. A weights and measures official can always tell when a digital scale is properly adjusted at zero by putting a weight equal to half of the digit on it. The indication should then blink between zero and the first digit.

Questions have arisen concerning the appropriate indication of an out-of-balance condition behind zero. It is my view that the indicator should not display any zeros when the device is out of balance behind

zero, even if it is in conjunction with a minus sign or a red light labeled to indicate an out-of-weighing range condition. If the scale is in a behind-zero balance condition (that is, more than one-half digit behind zero), it should indicate that with a signal light or with a minus sign and the zeros blanked out, or the minus sign could be activated and negative values displayed.

Another method would be to indicate complements. That is, if a scale is one pound behind zero, the display would be 999. This method could only be used when these complements exceed the capacity of the scale.

Since in some instances digital scales can indicate far beyond the capacity of the weighing element, it becomes necessary to indicate in some manner an overload condition. This can be accomplished by flashing the figures or activating a signal light labeled "overload" or "out-of-weighing range."

It would be preferable, in my opinion, to turn on a signal light indicating overcapacity and blank out the weight figures. It would eliminate the possibility of the operator's saying, "Well, I may be just a little bit over and I am going to record that anyway," because it is possible that you may be grossly over.

If this is a scale with a load cell and a steelyard and conventional lever system, for instance, you may be overloaded enough to be against the stop, so you may read 200 or 300 pounds over nominal capacity, but the load may be 2,000 or 3,000 pounds over capacity. So my own feeling is that you either flash the figures or turn on a signal light indicating overload and turn the weight figures off.

Concerning the need for a power switch and whether it is necessary for it to be readily accessible by the operator, there must be some means of disconnecting power to the device. It is possible that a short could develop and start a fire. If the device is connected to the power system with a line cord, the receptacle is readily available to the operator so he can pull it out in a hurry. This is an acceptable disconnect. Many of these devices with digital indicators are small devices mounted on a desk, smaller than typewriters. If the device is permanently wired to the line, a separate disconnect on the wall would be acceptable.

I feel that, if the device has a switch on the face of it, it should be protected from being accidentally turned off. The toggle switch can be guarded so that, if you brush your hand by it, your hand will be guided away from the handle by wings so that you actually have to make an effort to turn it off. If you do turn a load cell scale off and immediately turn it back on, you may get some random figures until those figures are updated, or if you leave it off for an hour or so, you may find that the load cell temperature has to be reestablished.

I feel that there should be a pilot light on the device indicating that power is connected to the device, not only that the switch is on, but that a fuse has not blown.

REMARKS BY MR. TONY CATTELL



My comments are directed to the hold and tare capabilities on digital instruments. I think most of us are familiar with a manual hold function on servo mechanized dials, particularly those incorporating several ranges. A manual hold function holds a scale in the anticipated weight range. This is a user orientated function switch, and it speeds the weighing process by eliminating the need for the scale to range with each weighing.

As an example of that, if several containers which are approximately the same weight are being weighed, in order to reach the weight of the first container the indicator may need to go through several ranges. If a manual range switch is used, the scale may be held in the anticipated weight range, thus eliminating the need for ranging in subsequent weighings.

With digital instruments, the weight cycle time is, by comparison, very short, thus making the manual hold switch a redundant function, except possible in the areas of special custom engineered systems. In general weighing applications, utilizing digital electronic instruments, I see no requirement whatsoever for a manual hold function switch.

Concerning the taking of tare weight, basically there are three methods of calibrated tare most often associated with electronic digital weighing instruments. I will define these as digital tare, pre-set tare, and automatic tare.

Digital tare systems employ one or more decades of rotary or thumb-wheel switches, or even microdials, into which tare value is manually entered by the operator for each weighing or series of similar weighings. By definition, digital tare systems must provide a visual readout of the tare value entered, so that the operator can observe the tare entry. Both switches and their associate readouts must be clearly marked as tare entries. The effect that the tare entry has on the digital indicator varies from instrument to instrument by both instrument and application. We can show either a negative readout or a complement readout on the indicators.

When a tare of 2,000 pounds is entered on an instrument equipped for negative data display and the scale platform is unloaded, the indicator shows an indication of 2,000 pounds minus. By applying a 2,000-pound container to the platform, the indicator comes up to zero. When the container is filled, the net weight indication on the display is 10,000 pounds. It is not necessary for this indication to be marked as a net weight because the tare is visible to the operator and to any bystander. This is the same condition that exists on a mechanical scale with a tare bar. The one important feature is that, when the tare is initially entered, the indicator has a minus indication.

Instruments that are not capable of displaying negative numbers will show either a complement of the tare entry or some other arbitrary fixed value. With the same tare entry of 2,000 pounds, the indicator reads behind zero, and it is necessary to indicate, either by a pilot light or a brighted up display, that a behind zero readout exists.

Again, by adding a container weighing 2,000 pounds to the platform, the indicator comes up to zero. By adding 10,000 pounds of net weight to the platform, the display reads 10,000 pounds, and the tare entry is sufficient to indicate that it is a net weight display.

Both of these examples of digital tare are designed to facilitate operating speed and flexibility of application. We must be careful not to place restrictions on such digital weighing instruments which would in any way defeat the aims, purposes, and accomplishments.

The contract for buying and selling is very often made on the printed record rather than on the displayed weight. In this area the buyer must also be protected. To guarantee the integrity of the printed record, two conditions have to be met. The system should be equipped to prevent printout when the scale is out of range, and the printed record should define whether the printout is net, gross, or tare.

Preset tare is the one most commonly used in custom engineered systems. This method operates on the same principle as digital tare, except that, instead of individual decade entry switches, a single selector switch is used to enter a particular channel of preset tare values. Where several entry units are provided, a reference chart relating to switch position to the selected tare values must be included and clearly visible to the observer.

In switch position one, this could be a tare weight of 20 pounds, position two could be 60 pounds, and position three could be 90 pounds. There is no way, by just glancing at it, to know precisely what the tare entry is, and there should be a chart associated with this equipment mounted where it is clearly visible which relates switch position to the actual tare entry.

Automatic tare is perhaps seen less frequently than either of the other two. This may be considered as an automatic return to zero function, and it is standard to the Fairbanks Morse line of digitruck and dyno instruments. Here the tare value is applied by effectively moving the instrument zero position to the applied weight, so that, when additional weight is applied to the platform, the displayed weight is a positive net indication.

In the operation of a truck scale using this method, the instrument is set at zero and the first axle of the truck rolls onto the platform and its weight is displayed. If necessary, a printed record of the axle weight is made. When the automatic tare switch is operated, the instrument returns to zero, in effect counterbalancing the initial applied weight.

This procedure is repeated for each axle until the entire truck is on the scale and the weight of each separate axle has been recorded or

noted. When the truck leaves the platform, the instrument will display the total gross weight as a negative quantity. Before the next weighing, the automatic tare is again operated, and this resets the scale to zero. In this system, the automatic tare switch may be a tool uprighted switch or a key switch to reduce the possibility of its being used for fraud.

DISCUSSION

MR. C.G. GEHRINGER (Hobart Manufacturing Co.): As far as the zero balance is concerned, I think we must recognize that it is impossible to measure anything accurately, whether it is linear, mass, or volumetric, without a definite reference starting point. How we are going to get this definite starting point needs to be resolved.

Also, concerning double graduations, isn't this going to require a revision of Handbook 44 so that you can get specifications for digital different from the specifications and tolerances for the analog type of indicators which we now have?

And what are we going to do about the units or resolution? What happens when the minimum tolerance is less than a half graduation, as presently provided in T.2.1. and Table 3 of Handbook 44? We still have a problem, where the increment of weight is much greater or more than double the tolerance, that is not covered by just doubling the graduations. Would it be possible to specify on digital, because of this half graduation change, that the minimum increment would not be greater than twice the applicable tolerance?

MR. KENDALL: At the present time Handbook 44 permits an additional half digit tolerance over the basic tolerance for digital indications. The minimum tolerance for a digital indication on that basis would be one digit, and on an analog scale only a half graduation is permitted. My suggestion will help both tolerance application and zero-setting accuracy, and would require certain modifications to the handbook.

If you try to set a digital scale half a digit off, the scale will blink between zero and one. To avoid a plus indication, quite frequently you will have to set it to less than a half graduation ahead of zero. If you have twice as many digits, that means you are setting it to a fifth of a graduation as your maximum deviation from zero, and that is not out of range for the present requirements for analog scales.

Nobody expects an analog scale to split the graduation every time it is reading zero. You set it as close as you can, and when you apply a load it does not always come back to split that zero graduation. You have to have a little leeway there. If you have 2,000 digits on the scale, you will find in practice that you are setting your zero just as accurately on the digital scale as you are on the analog scale.

MR. S.J. DARSEY (Florida): Handbook 44 presently requires that the value of the minimum graduated interval on a scale used for the retail sale of foodstuffs should not exceed one ounce. If a digital automatic prepackaging scale were produced with a minimum interval of 0.06 pound in accordance with this requirement, the uncertainty at zero would be plus or minus 0.03 pound. This 1/2 ounce uncertainty would have a significant economic effect. What is the possibility of such a scale being produced?

MR. KENDALL: As I see it, this one-ounce (0.06 pound) interval would not be practical if the device has at least 2,000 intervals. Also the least significant active digit would be in ones or twos, not sixes.

MR. WARNLOF: Since existing technology provides scales with a minimum interval of 0.01 pound, an official would not allow the use of a device with a minimum interval greater than that. The basis for this decision is provided in Handbook 44 General Code, Suitability of Equipment.

MR. DARSEY: In certain weighing applications, repeated weighings of large trucks with heavy loads are necessary. Has there been an effective hold button developed for a mechanical dial so that the device does not have to return to zero after every load?

MR. KENDALL: Not for a purely mechanical dial, as far as I know.

MR. L.D. DRAGHETTI (Agawam, Mass.): Would vibrations or sudden changes in temperature affect the zero indications on electronic scales?

MR. KENDALL: This is a possibility. As I mentioned before, there are several ways of determining what the zero indication is. I still feel that either of the two that I mentioned would solve this problem. If 2,000 digits were required, you know that a zero indication will be 1/4 of what would be the analog graduation. Or you can expand the sensitivity of zero by activating another decade, for example, from 0.01 pound to 0.001 pound, and by so doing you can determine whether zero has moved part of an increment. It may be necessary to make a zero adjustment with quite an extreme change in temperature.

DIGITAL DESIGNS—MEASURING

The participants for this portion are Walt Gerdom, Manager of Customer Service, Tokheim Corporation, and Chairman of the Technical Committee of the Gasoline Pump Manufacturers Association; Bob Nix, Assistant to the Manager of Engineering, Gilbarco, Inc.; and Tom McLaughlin, Product Sales Manager, Veeder-Root, Inc.

REMARKS BY MR. W. F. GERDOM



My comments will be directed toward existing requirements that either affect the design of or need special interpretations when applied to digital equipment. If the existing analog indications in a petroleum dispenser were to be replaced with a digital display, it would require, without question, a 0.01 gallon minimum increment.

To determine the accuracy of the measuring device, it is necessary to define the measurement much more closely than 1/10 gallon, since 1/10 gallon is approximately 23 cubic inches. A digital display designed with only 1/10 gallon increment would provide an uncertainty of plus or minus 11 1/2 cubic inches. Reducing the minimum increment to 0.01 gallons, the uncertainty would be plus or minus 1.15 cubic inches, which is sufficient for testing purposes. Another reason for this finer increment is to provide a mathematical agreement of the quantity with the total price to the closest cent.

There has been some discussion concerning the application of code requirements to digital indicators used in conjunction with existing dispensers with analog indicators. It was not the intention of the manufacturer of the equipment that these digital indicators were to be primary elements, although they can be used as such.

My interpretations of specific code requirements as applied to these digital indicators are as follows: (1) G-UR.3.2. Position of Equipment. It is my view that the analog indicators on the pumps on the island are the customer indications, and it is not necessary that the digital display intended for use by the operator of the equipment be visible to the customer. (2) Since the digital display can be a primary element, because it may be used in a normal commercial use of the device, it would be necessary that this display meet the requirement of S.2.5.1. Zero Setback Interlock.

The Conference has been asked to study the matter of what agreement is necessary between the analog indications and the digital indications. It is my view that, if the existing analog indications meet the requirements of the code, the digital display need only display values to the nearest indicated analog graduations.

REMARKS BY MR. R. E. NIX



With respect to digital indicators used in conjunction with existing analog dispensers, it is apparently not necessary to indicate both money values and quantity values, because there are many consoles on the market which indicate only the dollar value and others which indicate only the quantity value. Our primary concern is to provide for mathematical agreement when both values are displayed digitally. The question, then, is what resolution is required for the quantity value? The following is an example of a delivery of gasoline at 40 cents a gallon.

The delivered quantity is 10 gallons plus a half tenth, and the total computed price is \$4.02, which is indicated on the dispenser on the island. With the understanding that all the computation takes place in the analog dispenser on the island, I want to transmit these values to a digital remote readout console. If I choose to indicate digitally only tenths of gallons, the device must select the closest graduation. Since we are exactly halfway between tenths, the device selects the lower value and indicates 10.0 gallons and, with no selection necessary, indicates a total price of \$4.02. Mathematically, 10.0 gallons X \$0.40 a gallon equals \$4.00. Now, is this mathematical agreement or not?

Apparently one way of overcoming this would be to provide a minimum increment of 0.01 gallon rather than 1/10 gallon. Then, with an analog indication of half a tenth, we will display 10.05 gallons on the remote console. Mathematically, 10.5 X \$0.40 does equal \$4.02. Our company addressed itself to this problem a couple of years ago and contacted the Bureau for interpretation. Upon their advice, the company chose to provide 0.01 gallon minimum increment.

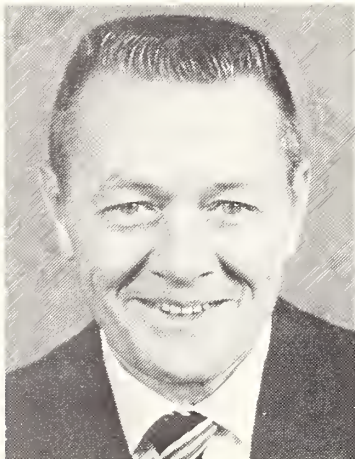
We wrote letters to many jurisdictions asking them to review this matter and advise us as to the requirements in their jurisdictions when displaying digitally both money and gallon values. We asked, "Can the gallons indicated be shown in tenths of gallons or must the value be shown in hundredths?" The following are some of the replies we received:

The answer to your question as to whether gallonage indications are required to be shown in tenths of a gallon or hundredths of a gallon when both money and gallon values are shown on the same remote readout device, we feel that, in order to insure full compliance with paragraph G-S.5.5. of the National Bureau of Standards Handbook 44, the gallon indication must be in the hundredths of a gallon.

Our requirements indicate the necessity of having the gallon registering in the hundredths when displaying digitally so that mathematical agreement of within one cent can be attained between the analog and digital computers.

It would appear to conform to this specification that digital quantity representations would require indications in terms that would be in units less than one-tenth gallons. The use of digital quantity representation in terms of hundredths of a gallon would appear to meet this criteria.

REMARKS BY MR. T. J. MCLAUGHLIN



With respect to printed receipts issued by retail petroleum dispensing equipment, I think we are a little bit ahead of our time, although some equipment of this type has been manufactured. We do know, of course, the standard ticket issued by a top mounted printer. However, a remote digital display that prints tickets is another ball game.

An example of relating the quantity value only to a printed receipt would be at a truck stop, where a pulse transmitter takeoff from an island dispenser is accumulated electromechanically and printed out on demand at the end of a delivery.

In this instance, there are two requirements of the handbook that are applicable. The first is section G-S.5.6. of the General Code, the application of which is self-explanatory. The second is in the LMD Code UR.3.3, which states that, when one of the values is printed, the other two values must necessarily be shown also. These values can be printed or handwritten. These sections of Handbook 44 also apply to the recording of money values only.

However, when both money and gallons are printed, this gets a little more difficult, principally because it appears you must meet the Handbook 44 requirement of mathematical agreement stipulated in G-S.5.5 of the General Code. Fortunately, at this time I do not know of any remote printers of this type, but certainly we are going to have to cope with them in the future.

At Veeder-Root we do manufacture a printer that is a slave to the computer at the island, and mathematical agreement is achieved by stepping up the gallon shaft ten times and printing gallons in hundredths of gallons. On receipts of this type, the price per gallon is handwritten in, and, of course, this would comply with UR.3.3. of the LMD Code.

DISCUSSION

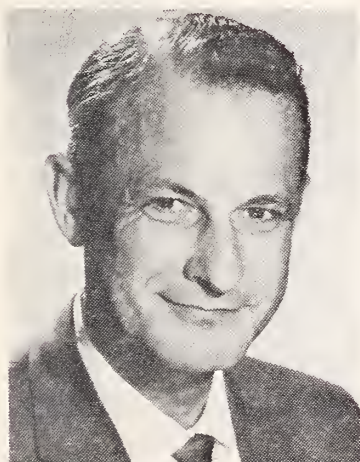
MR. S.D. ANDREWS (Florida): I think there is something here that transcends weights and measures enforcement. There will be a tremendous customer concern if he finds that he has one reading on the remote and another on the island dispenser. I would think the retailers would be equally concerned with that, if not more so, than whether we weights and measures officials are going to give them a broad interpretation.

MR. GERDOM: The situation exists where oil companies are requesting remote indicators with both total price and quantity display. They would prefer the quantity representations in tenths gallons, since it represents less expenditure in terms of the equipment. If this equipment, which does not comply with Handbook 44, were installed, it would create a difficult situation. However, there seems to be an inconsistency, since a console of this type, displaying only gallons to the nearest tenths or only money values to the closest cent, would comply with the requirements of the handbook.

CLOSED FILL SYSTEMS—FOR ECOLOGY'S SAKE

The participants for this portion are Dick Southers, Coordinator of Operations and Engineering, American Petroleum Institute; Glenn Moore, Vice President of Engineering, OPW Division, Dover Corporation, and Vice Chairman of the SAE Fuel Supply Systems Committee; and Joe Hine, API Research Associate, National Bureau of Standards.

REMARKS BY MR. R. SOUTHERS



Closed fill systems have happened in San Diego, County. Any new station that is built there must have totally enclosed systems. In other words, no vapors must be vented to the atmosphere. This requirement is not only for stations, but for all petroleum handling installations. We will see the spread of this type of regulation across the country.

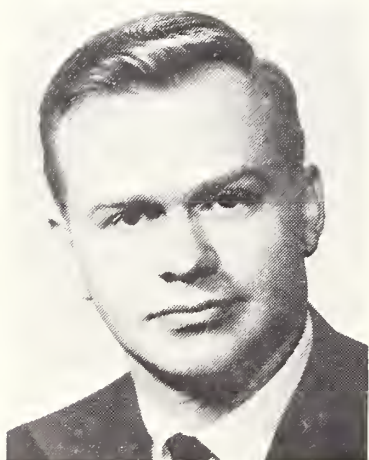
People who are interested in this will be talking about the tremendous amount of hydrocarbons that are put into the atmosphere from these facilities. The figures that you will probably see quoted will state that a station doing a thousand gallons a day will recover through a tight system approximately a gallon and a half a day. They may come back as aggregate figures saying that there are some 350,000 service stations in the country, so we are looking at better

than a half million gallons a day that are being taken back into the pockets of service station operators.

What I would like for you to think about at this time if the latter type of figure is given to you is to be aware that it does come out to about a gallon and a half a day. This then breaks down into about 90 to 100 customers, with an average fill of 11.3 gallons, so the amount per individual customer is very small. There are many unanswered questions at this point as to whom this product even belongs to. I would hope that, through the National Conference, we will be able to work out these problems together.

I know many of you are concerned with other considerations in the merchandising of petroleum products, such as product quality. This spring API has published and made available for distribution a pamphlet titled "Gasoline, Questions and Answers." This publication provides answers to many of the common questions people are asking today.

REMARKS BY MR. G. E. MOORE



The Fuel Supply Systems Committee of the Society of Automotive Engineers has within its scope all technical investigations pertaining to fuel systems, safety, and air pollution of automobiles, trucks, and buses. Most recently, our activity has been with the dispenser nozzle spout for leaded and nonleaded fuel which would be required in 1974-75.

The recommended practice of the SAE group has been utilized by the Environmental Protection Agency and has been published in the Federal Register, and comments have been solicited and are waiting finalization right now by EPA.

This committee of the SAE is made up of a number of individuals, serving voluntarily as individuals supplying engineering expertise and technical knowledge. These committee members work for automobile companies, oil companies, service station equipment manufacturers, EPA, underwriters laboratories, automotive equipment suppliers, the National Highway Traffic Safety Administration, and the API. We have had, from time to time, personnel from the National Bureau of Standards attend meetings of this committee.

Vapor recovery during refueling has been under consideration for some time by this committee. In the past six months it has received a great deal more attention because of the San Diego requirements mentioned earlier by Dick Southers.

The SAE Fuel Supply Systems Committee held its symposium meeting on May 23 to discuss and handle presentations on the state of the art in vapor recovery during refueling. At that time the Scott Research Laboratories presented a report on work they are doing for the Coordinating Research Council. Scott is presently concluding a second-year study to determine the quantity of vapor loss and spillage during refueling. The study to date indicates that these refueling losses are less today than the 1975 exhaust standards, which, of course, we know are extremely stringent. The refueling losses are in the range of four-tenths of a gram per mile, or about two ounces during the average refueling at today's standard. Also at the meeting, Mr. R. J. McCoy, Gilbarco, Inc., presented a study that his company is making on vapor emission control and has made on automotive refueling. Other reports were given by Dr. Joe Summers of EPA and Dick Southers of API.

The primary responsibility of the SAE Committee with regard to vapor recovery during refueling is to determine a recommended practice for the interface between the vehicle, fill pipe, and service station nozzle. One of the things uppermost in everyone's mind that must be considered is cost versus effectiveness. For new automobiles there should be a minimum redesign to accommodate the standard. For existing automobiles consideration should be given to the retrofit of these automobiles, which, of course, may prove to be impossible.

With regard to vapor recovery refueling from the standpoint of weights and measures enforcement, a number of questions are yet unanswered and will probably remain unanswered until field experience is gained.

For instance, when the fuel tank is full, will the fuel back up into the vapor recovery system and be returned to the service station? Perhaps it will become necessary to provide some type of shutoff means to the nozzle to prevent the reversal of flow. Since little is known in this area, we must determine how much fuel in the form of vapor (that previously went into the air as pollution) will be returned and to whom it belongs. If the customer is to be reimbursed, how can it be measured and what concentration is it? This will vary with temperature and vapor pressure and other components of the gasoline.

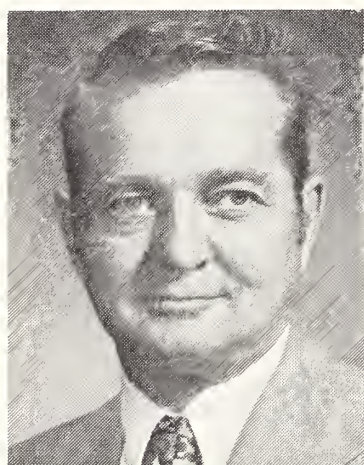
Another proposal is to use a vacuum source to recover these vapors. Since the reduced pressure will increase the likelihood of fuel vaporizing, it is possible vapors will be drawn back. If so, will the customer be compensated for this quantity that perhaps is recovered?

If vapor control is required in future automobiles and the SAE Fuel System Committee is successful in coming up with a standard connection, vapors could be retained in the automobile, which will reduce weights and measures considerations.

In conclusion, there are a number of unanswered questions that must be faced in the future if we are to meet the requirements of air

pollution control bodies in the fight to clean up our environment. I would like to extend an invitation to the National Bureau of Standards to have a representative attend future meetings of the committee, since we are now into the heart of the problem of tight fill and vapor recovery during refueling.

REMARKS BY MR. D. J. HINE



The Research Association Program of the National Bureau of Standards is one in which the Bureau cooperates with private organizations to advance technology. Twenty-seven months ago I was selected to represent the API in a program with the National Bureau of Standards to investigate and evaluate 1, 5, and 10-gallon graduated-neck test measures. We thought when we entered into this program that we would be leading the technology rather than having to follow it. After hearing the presentations of Mr. Southers and Mr. Moore, it now appears that a followup program will be necessary to solve any problems brought about by closed fill systems.

Our proposed followup program in which we are now launched is going into the closed fill system. We are going to design and fabricate four provers of field size. Extensive studies will be made of their actual field operation. These devices will be designed to accommodate open or closed fill systems, bottom loading or top loading, and have a vapor recovery capability. By the end of the year there will be available to you a report of our two years of progress. This report will include our recommendations for quality and procedural activity in the calibration of field test measures.

DISCUSSION

MR. S.D. ANDREWS (Florida): Should weights and measures officials be concerned with what the pump measures or what the customer receives? Couldn't we divide this thing into two parts and let the weights and measures officials be concerned with the accuracy of the pump measurement and let the consumer affairs people take it from there and be sure the customer gets what he is supposed to receive?

MR. WARNLOF: I disagree with that view. I think that weights and measures responsibility extends beyond the performance of the device. It includes a supervision of the actual operation of the device to the point that the customer receives full measure.

REPORTS OF THE CONFERENCE COMMITTEES

REPORT OF THE COMMITTEE ON LIAISON WITH THE FEDERAL GOVERNMENT

Presented by M. GREENSPAN, *Chairman*, Chief Inspector,
Department of Consumer Affairs,
New York City, New York

(Wednesday, July 12, 1972)



The Committee on Liaison with the Federal Government submits its report to the 57th National Conference on Weights and Measures. The report consists of the tentative report, transmitted in April as part of the Conference announcement, as amended by the final report.

The report represents recommendations of the Committee that have been formed on the basis of written comments received during the year and oral representations made during the open meeting of the Committee. The Committee intends to maintain the line of communications already established with federal agencies and to aggressively pursue all matters involving federal and state relations in the weights and measures field.

Advisory to NBS Office of Weights and Measures

As reported to the National Conference last year, the Committee has accepted as one of its principal activities the responsibility of serving in an advisory capacity to the NBS Office of Weights and Measures. In this regard the Committee represents the interests of all groups comprising the National Conference on matters relating to the programs of OWM.

The Committee has viewed with great concern a reduction of the OWM budget and staff over the past several years. Such reduction has placed serious constraints on the operations of OWM and occurs at a time when its service to the states and guidance to industry are needed more than ever to maintain an efficient and effective weights and measures system in our nation.

Meetings have been held with top management of NBS on this problem and the Committee has encouraged interested officials in government and industry to communicate their views and support to

the Committee as well as to NBS. The tremendous response to this call was most encouraging and hopefully has put an end to further reductions.

In looking to the future the Committee is of the opinion that OWM should receive a substantial budget increase and should expand program capabilities to meet its growing technological and administration responsibilities. In this regard the Committee during its interim meeting prepared and sent the following letter to Dr. Lewis M. Branscomb, Director, NBS, and President, NCWM:

Dear Dr. Branscomb:

The Committee on Liaison with the Federal Government, National Conference on Weights and Measures, has encouraged the Office of Weights and Measures to develop a budget for Fiscal Year 1974 which would be substantially larger than that currently allocated. It is a unanimous resolution of the Committee that OWM fully support the NCWM both directly and indirectly, and therefore a minimum budget of 750 K per year is required for necessary overall support. In addition, the needs of the NCWM can best be met if the allowing priorities for program elements within OWM are recognized:

Program Elements

1. National Conference on Weights and Measures
2. Technical Education
3. Engineering Studies
4. National Prototype Examinations
5. Standards, Laboratories, Calibrations
6. National Standardization (Models)
7. Packaging and Labeling
8. Railway Track Scale Testing
9. Metrication
10. Management Information and Assistance
11. International Standardization Activities (OIML; ISO)

All items of lesser concern to the National Conference on Weights and Measures have been deleted from this list.

The Liaison Committee, in a recent meeting with Dr. F. Karl Willenbrock, Director, IAT, felt that both a reasonable estimate of future support, as well as a preferred ordering of priorities, would be valuable to him and, in turn, to you. Dr. Willenbrock indicated firm concepts on his part would be forthcoming in July. However, we wish to set forth these opinions well in advance of NBS budgetary review for Fiscal Year 1974. We would also urge that this resolution be a prime factor in determining the final allocation of funds within the Institute for Applied Technology for Fiscal Year 1973.

Sincerely,

(signed)

Moe Greenspan, Chairman
Committee on Liaison with the Federal Government
National Conference on Weights and Measures

**Relations With Federal
Regulatory Agencies**

1. *FDA and FTC:*

The Committee was advised that the Office of Weights and Measures has sent to each state copies of the cents-off regulations issued by the Food and Drug Administration and the Federal Trade Commission under the Fair Packaging and Labeling Act. This matter is now under consideration by the Committee on Laws and Regulations who plan to prepare and recommend a composite cents-off regulation for inclusion in the Model State Packaging and Labeling Regulation as soon as confirmation orders are published by FDA and FTC.

2. *USDA:*

(a) *Meat Inspection Regulations:*

The Committee received correspondence from several state officials concerning the suspension of regulations issued by the U.S. Department of Agriculture which required the labeling of random weight meat packages shipped in non-consumer containers. This matter was also considered by the Committee on Laws and Regulations during its interim meeting and will be covered in its Tentative Report.

(b) *Proposed Procedures for Determining Net Weight of Food Products:*

This matter was referred by the Committee on Education, Administration, and Consumer Affairs. The Committee is in agreement with the Education Committee that one set of procedures should be the goal of USDA and the National Conference. Therefore, the Committee has directed correspondence to appropriate officials within USDA asking that all efforts be made to cooperate with NBS in the development of a uniform sampling plan and package checking procedure that would be acceptable to all parties.

**Programs with Department of
Defense and U.S. Postal Service**

1. *Department of Defense:*

The cooperative program of weights and measures inspection on military installations became effective with the publication of program guidelines in the Final Report of the Committee to the 56th

National Conference. In accordance with the guidelines, weights and measures officials were requested to forward copies of all inspections to OWM. Since July 1971 the following data have been received:

No. Installations	No. States	Scales	
Inspected 22	Reporting 7	Insp. 89	% Rej. 18%

Meters		Packages	
Insp. 43	% Rej. 1%	Lots Insp. 241	% Rej. 41%

NOTE: Reasons for rejection include lable errors in addition to short weight.

2. U.S. Postal Service:

The Committee is continuing its effort with officials of the Postal Service to achieve a voluntary inspection program similar to that with the Department of Defense. A representative of the newly reorganized U.S. Postal Service met with the Committee to discuss steps being taken within the Service to raise standards of accuracy in postal scales. The Postal Service is planning to develop a program of scale testing and maintenance by their own personnel that would preclude the need for cooperative testing by weights and measures officials. As a first step, NBS Handbook 44 is being studied by postal authorities to incorporate applicable provisions into a postal scale code. Subsequent plans for scale testing and maintenance are expected prior to the Conference. The Committee has instructed OWM to act in its behalf by reviewing the intended postal program and recommending what further steps the Conference should take in ensuring the accuracy of postal scales and weighing practices.

Imports

The problem of incorrectly labeled or inaccurate quantity declarations in imported packaged products continues to exist. The problem, the Committee feels, can be temporized by stern enforcement measures at state and local levels, but can *best* be solved by initiating direct representation in the Organization of International Legal Metrology (OIML) to effectively confront weights and measures officials representing the exporting countries. Furthermore,

such an effort will be in support of the proposed General Agreement on Tariff and Trade (GATT) Code of Conduct, which attempts to harmonize national or central model laws or standards of foreign countries which purchase commodities from the United States.

Under the proposed code, domestic penalty for improper weight or measure may result in the claim of a non-tariff restraint to trade, and, therefore, could adversely affect the U.S. balance of payment including the ability of U.S. exporters to remain internationally competitive in adopting the weights and measures, and packaging requirements of potential markets overseas.

Unanimously agreed by the Committee on Liaison with the Federal Government.

NBS Enabling Act

As a result of discussions during the 56th National Conference concerning programs with federal agencies, the Committee urged the National Bureau of Standards to amend its Enabling Act to assume the responsibility for federal weights and measures enforcement on federally controlled activities such as military commissaries and postal offices. Meetings have been held with appropriate NBS officials, and the feeling is that NBS should not actively seek to gain regulatory authority in any area.

New Standards for Major Cities

In accordance with the Committee's recommendation last year, the Committee received a status report from the Chief of the Office of Weights and Measures on the study that has been undertaken to determine the need and feasibility of furnishing new standards to weights and measures departments serving large metropolitan areas. Although officials in several cities have expressed an interest in this matter, there is not yet sufficient information and data to formulate a definite plan for the implementation of such a program. The Committee will continue to explore the ways and means by which a program of this nature could be established to effectively serve those for whom the need exists.

Surplus Property

Correspondence was received from the State of Nebraska asking that NBS review the Federal Surplus Property Act to determine if weights and measures agencies are eligible for surplus property. A meeting was held with the Chief, Personal Property Division, Property Management and Disposal Service, General Services Administration, concerning this matter.

The Federal Property and Administration Services Act of 1949, as amended, and related statutes, authorize the Administrator of General Services to donate surplus property to:

1. Educational, public health, and civil defense organizations.
2. Public airports.
3. Educational activities of special interest to the armed services.
4. The American National Red Cross.
5. Public bodies.

Weights and measures agencies, as well as other municipal, county, or state regulatory activities are considered non-eligible organizations. It appears that the only way to make weights and measures agencies eligible is to introduce legislation to have the Federal Property and Administrative Services Act amended. The Committee does not feel that such action is warranted at this time.

M. GREENSPAN, *Chairman*, New York City, N.Y.

L.D. HOLLOWAY, Idaho

A. SANDERS, Scale Manufacturers Assn.

W.N. SEWARD, American Petroleum Inst.

E.E. WOLSKI, Colgate-Palmolive Co.

T.M. STABLER, *Staff Assistant*, NBS

H.F. WOLLIN, *Exec. Secy.*, NCWM

Committee on Liaison with the Federal Government

(Mr. Greenspan moved for adoption, and after a second from the floor, the report of the Committee on Liaison with the Federal Government was adopted in its entirety by the Conference by voice vote.)

REPORT OF THE COMMITTEE ON EDUCATION, ADMINISTRATION, AND CONSUMER AFFAIRS

Presented by G.E. MATTIMOE, *Chairman*, Deputy Director,
Division of Weights and Measures, Department of Agriculture,
State of Hawaii

(Thursday, July 13, 1972)



The Committee on Education, Administration, and Consumer Affairs submits its final report to the 57th National Conference on Weights and Measures. The report consists of the tentative report, transmitted in April as part of the Conference Announcement, as amended by the final report. The report represents recommendations of the Committee that have been formed on the basis of written and oral comments received during the year and oral presentations made during the open

meeting of the Committee.

The Committee, under its broadened role, considers its purpose as one of investigating, taking action on, or reporting on matters affecting the following fields:

1. The technical training and education of weights and measures officials.
2. The education of the general public in matters of weights and measures.
3. The education of owners and users of devices.
4. The administration of weights and measures programs.
5. The relationship of weights and measures to the interests of the consumer.

The Committee assumes its broadened role with a dedication to enhancing weights and measures programs on a nationwide basis.

Education

1. *National Weights and Measures Week*

The Committee commends Mr. James Stewart of Virginia, Chairman of National Weights and Measures Week, for his efforts in promoting the Week. Appreciation is also offered to Mrs. Margaret Dana for her singular efforts in promoting the Week and to many state and local weights and measures jurisdictions for their support of the Week. The Committee intends to pursue plans initiated during the course of the year for a 1973 Presidential Proclamation of Weights and

Measures Week and for issuance of a commemorative stamp in 1974 to signify the 175th anniversary of the signing of the Weights and Measures Act of March 2, 1799.

The Committee was pleased to receive a communication and literature pertaining to the celebration of National Weights and Measures Week from the National Conference of Standards Laboratories. It is gratifying to have this worthy organization join weights and measures officials in the promotion of the Week. Such combined effort and recognition will surely be beneficial to all concerned.

2. Home Study Course

The Office of Weights and Measures has completed a revision of the Weights and Measures Home Study Course. The Committee concurs with the revision and has asked the Executive Secretary to submit the Home Study Course to the Executive Committee for Conference endorsement.

3. State and Local Weights and Measures Activity Summary

The Committee is grateful to the twenty-three state officials and seven local officials who submitted activity summaries. However, the Committee is disappointed that more jurisdictions did not respond to the request for material. The Committee strongly urges officials to support this endeavor in the coming year.

4. Metrication

The National Conference on Weights and Measures has a responsibility under current pending national legislation on metrication to speak in a unified voice in support of adopting the metric system. This Committee sent correspondence to 535 members of Congress to voice its support of metrication. A surprising few of these communications were answered. Therefore, the Committee requests the Executive Secretary to refer the matter to the Committee on Liaison with the Federal Government so that further steps may be taken to voice the intent of the National Conference with respect to metrication.

The Committee has become aware of random efforts throughout the country to develop education programs dealing with metrication. Such a program is currently under development in Hawaii. The Committee urges the continued efforts on the part of OWM to develop education material on the metric system. It also expresses its appreciation to Mrs. Evelyn Czaia, representing the Southeast Alter-

natives, a group of schools in Minneapolis, Minnesota, dedicated to offering alternatives in education styles, for her communication. The Committee has directed a request to the Resolutions Committee that a resolution be forwarded to the National Education Association advocating that schools begin this fall in teaching the metric system as a regular part of the math curriculum.

5. *Handbook 44 User Requirements*

A recommendation was received from industry that a publication be put together by the National Bureau of Standards containing user requirements and information of interest to device owners and operators. The Committee endorses the concept but feels that such a publication could be best pursued by industry with cooperation from the Bureau.

Administration

1. *Weights and Measures Evaluation and Certification Program*

During the 56th Conference the idea was presented for a program to evaluate weights and measures jurisdictions in light of standards set by the National Conference. OWM has established the initial parameters for such a program. These will be discussed during the Conference.

2. *National Information and Data Bank*

In order for the Committee to serve weights and measures officials in matters relating to the overall administration of enforcement programs, data must be gathered on the current operation of these programs. In gathering such data, the Committee can identify problem areas, define the overall investment of weights and measures resources, and lay the foundation for a much advanced system of information retrieval for use by all officials. To this end, the Committee has directed OWM to begin plans on a national survey of weights and measures enforcement. The format and content of the survey will be discussed during the Conference.

The immediate intent of a national survey is to develop a data base from which decisions can be made as to current and future weights and measures priorities. However, long-range possibilities include the operation of a clearinghouse to disseminate up-to-date information on current inspections of goods and services throughout the United States.

3. *Subcommittee on Computer Technology*

The Committee wishes to recognize the efforts of the Subcommittee on Computer Technology in the development of the first of a series of publications dedicated to the use of automatic data processing in weights and measures. The publication entitled, "Weights and Measures Enforcement—Part 1—An Approach to a Difficult Task" is currently being distributed for comment. It is planned to offer a final document to the 58th National Conference for endorsement. The Subcommittee has completed its two year tenure and is dissolved as of this year.

4. *Handbook 67 Revision*

In accordance with the general plan described in the Introduction to the various Tentative Reports of the Conference Standing Committees, the Committee will cooperate with OWM in the finalization of a revision to NBS Handbook 67 "Checking Prepackaged Commodities." The Committee has reviewed and commented on a preliminary draft of the revision prepared by OWM. Additional study of the revision by weights and measures officials, representatives of the packaging industry, and others is anticipated in the months ahead.

5. *Meeting with USDA Representatives*

The Committee met with officials of the U.S. Department of Agriculture to discuss the proposed procedures that were recently published by USDA for determining the net weight of food products. The Committee expressed its concern over the nonuniformity that would be brought about should the new USDA procedures differ substantially from the procedures being considered in the revision of NBS Handbook 67. The Committee, therefore, asked OWM to cooperate with USDA in settling questions of uniformity so that one set of procedures for all agencies might be the final goal. Additionally, the Committee referred the matter to the Committee on Liaison with the Federal Government for its study and action.

The Committee is pleased to learn of recent efforts on behalf of USDA, HEW, FTC, and NBS to cooperate in the development of a sampling plan to serve all agencies. The Committee wholeheartedly endorses this approach and sees it as a significant step forward in promoting the National Conference aim of uniformity in methods of test.

The Committee has no specific recommendations to the Conference in this area at this time. However, it should be recognized by all officials that the position of weights and measures vis-a-vis consumer protection is increasingly at issue in many jurisdictions. The Committee, therefore, feels a sense of urgency in bringing this matter before the Conference in the hope that a unified position may be developed so that weights and measures can properly deal with the implications of the consumer protection movement. Any comments or suggestions on this matter would be welcomed.

G.E. MATTIMOE, *Chairman*, Hawaii
D.I. OFFNER, St. Louis, Missouri
E. PRIDEAUX, Colorado
J.C. STEWART, Virginia
R.T. WILLIAMS, Texas
D.E. EDGERLY, *Staff Assistant*, NBS
H.F. WOLLIN, *Exec. Secy.*, NCWM

Committee on Education, Administration,
and Consumer Affairs

(Mr. Mattimoe moved for adoption, and after a second from the floor, the report of the Committee on Education, Administration, and Consumer Affairs was adopted in its entirety by the Conference by voice vote.)

REPORT OF THE COMMITTEE ON LAWS AND REGULATIONS

Presented by S.D. Andrews, *Chairman*, Director, Division of
Standards, Department of Agriculture, State of Florida

(Thursday, July 13, 1972)



The Committee on Laws and Regulations submits its report to the 57th National Conference on Weights and Measures. The report consists of the tentative report, transmitted in April as part of the Conference Announcement, as amended by this final report.

The report represents recommendations of the Committee that have been formed on the basis of comments received during the year and during the open meeting of the Committee.

**Model State Packaging and Labeling
Regulation**

1. Retail Sale Price Representations

The recent promulgation by the Food and Drug Administration and the Federal Trade Commission under the Fair Packaging and Labeling Act of compatible requirements concerning retail sale price representations indicates a need to develop similar requirements for incorporation into the Model Regulation. Numerous weights and measures officials have recommended that such requirements be made available in the event that their particular jurisdictions have a need for guidelines in this important area of retail marketing. Accordingly, the following amendments to the Model Regulation have been developed and are fully compatible with their federal counterparts.

The Committee recommends consideration and adoption of the following amendments:

Section 13. Retail Sale Price Representations

13.1 "Cents-off" Representations.

(a) The term "cents-off representation" means any printed matter consisting of the words "cents-off" or words of similar import, placed upon any consumer package or placed upon any label affixed to such package, stating or representing by implication that it is being offered for sale at a price lower than the ordinary and customary retail sale price

(b) Except as set forth in Sec. 13.2. the packager or labeler of a consumer commodity shall not have imprinted thereon a "cents-off" representation unless:

(1) The commodity has been sold at an ordinary and customary price in the most recent and regular course of business where the "cents-off" promotion is made.

(2) The commodity so labeled is sold at a reduction from the ordinary and customary price which reduction is at least equal to the amount of the "cents-off" representation imprinted on the commodity package or label.

(3) Each "cents-off" representation imprinted on the package or label is limited to a phrase which reflects that the price marked by the retailer represents the savings in the amount of the "cents-off" the retailer's regular price, e.g., "Price Marked is---Cents Off the Regular price." "Price Marked is ---Cents-off the Regular Price of This Package"; provided, the package or label may in addition bear in the usual pricing spot a form reflecting a space for the regular price, the represented "cents-off" and a space for the price to be paid by the consumer.

(4) The commodity at retail presents the regular price, designated as the "regular price," clearly and conspicuously on the package or label of the commodity or on a sign, placard, or shelf-marker placed in a position contiguous to the retail display of the "cents-off" marked commodity.

(5) a. Not more than three "cents-off" promotions of any single size commodity may be initiated in the same trade area within a twelve-month period;

b. At least 30 days must lapse between "cents-off" promotions of any particular size packages or labeled commodity in a specific trade area; and

c. Any single size commodity so labeled may not be sold in a trade area for a duration in excess of 6 months within any twelve-month period.

(6) Sales of any single size commodity so labeled in a trade area do not exceed in volume fifty percent [50%] of the total volume of sales, of such size commodity in the same trade area during any twelve-month period. The twelve-month period may be the calendar, fiscal, or market year provided the identical period is applied in this subparagraph and subparagraph [5] of this paragraph. Volume limits may be calculated on the basis of projections for the current year but shall not exceed 50 percent of the sales for the preceding year in the event actual sales are less than the projection for the current year.

(c) No "cents-off" promotion shall be made available in any circumstances where it is known or there is reason to know that it will be used as an instrumentality for deception or for frustration of value comparison, e.g., where the retailer charges a price which does not fully pass on to the consumers the represented price reduction or where the retailer fails to display the regular price in the display area of the "cents-off" marked product.

(d) The sponsor of a "cents-off" promotion shall prepare and maintain invoices or other records showing compliance with this section. The invoices or other records required by this section shall be open to inspection and shall be retained for a period of one year subsequent to the end of the year (calendar, fiscal, or market) in which the "cents-off" promotion occurs.

13.2. Introductory Offers

(a) The term "introductory offer" means any printed matter consisting of the words "introductory offer" or words of similar import, placed upon a package containing any new commodity or upon any label affixed or adjacent to such new commodity, stating or representing by implication that such new commodity is offered for retail sale at a price lower than the anticipated ordinary and customary retail sale price.

(b) The packager or labeler of a consumer commodity may not have imprinted thereon an introductory offer unless:

(1) The product contained in the package is new, has been changed in a functionally significant and substantial respect, or is being introduced into a trade area for the first time.

(2) Each offer on a package or label is clearly and conspicuously qualified.

(3) No commodity so labeled is sold in a trade area for a duration in excess of 6 months.

(4) At the time of making the introductory offer promotion, the offerer intends in good faith to offer the commodity, alone, at the anticipated ordinary and customary price for a reasonably substantial period of time following the duration of the introductory offer promotion.

(c) The packager or labeler of a consumer commodity shall not have imprinted thereon an introductory offer in the form of a "cents-off" representation unless, in addition to the requirements in paragraph (b) of this section:

(1) The package or label clearly and conspicuously and in immediate conjunction with the phrase "introductory offer" bears the phrase "--cents-off the after introductory offer price."

(2) The commodity so labeled is sold at a reduction from the anticipated ordinary customary price, which reduction is at least equal to the amount of the reduction from the after introductory offer price representation on the commodity package or label.

(d) No introductory offer with a "cents-off" representation shall be made available in any circumstance where it is known or there is reason to know that it will be used as an instrumentality for deception or for frustration of value comparison, e.g., where the retailer charges a price which does not fully pass on to consumers the represented price reduction.

(e) The sponsor of an introductory offer shall prepare and maintain invoices or other records showing compliance with this section. The invoices or other records required by this section shall be open to inspection and shall be retained for a period of one year subsequent to the period of the introductory offer.

13.3 Economy Size

(a) The term "economy size" means any printed matter consisting of the words "economy size," "economy pack," "budget pack," "bargain size," "value size," or words of similar import placed upon any package containing any consumer commodity or placed upon any label affixed or adjacent to such commodity, stating or representing directly or by implication that a retail sale price advantage is accorded the purchaser thereof by reason of the size of that package or the quantity of its contents.

(b) The packager or labeler of a consumer commodity may not have imprinted thereon an "economy size" representation unless:

(1) At the same time the same brand of the commodity is offered in at least one other packaged size or labeled form.

(2) Only one packaged or labeled form of that brand of commodity labeled with an "economy size" representation is offered.

(3) The commodity labeled with an "economy size" representation is sold at a price per unit of weight, volume, measure, or count which is substantially reduced (i.e., at least 5 percent) from the actual price of all other packaged or labeled units of the same brand of that commodity offered simultaneously.

(c) No "economy size" package shall be made available in any circumstances where it is known that it will be used as an instrumentality for deception, e.g., where the retailer charges a price which does not pass on to the consumer the substantial reduction in cost per unit initially granted.

(d) The sponsor of an "economy size" package shall prepare and maintain invoices or other records showing compliance with paragraph (b) of this section. The invoices or other records required by this section shall be open to inspection and shall be retained for one year.

2. *Bi-dimensional Commodities*

Final amendments to the Federal Trade Commission regulations concerning certain bi-dimensional commodities have recently been issued. These amendments permit several labeling options with respect to certain roll type commodities. Similar regulations issued by the Food and Drug Administration do not allow for options and prescribe one method for stating quantity on certain roll type commodities.

Additionally, consultations with the Pressure Sensitive Tape Industry, one of the industries most directly affected, indicate an industry preference for one uniform method of sale. The establishment of a single method of sale and the labeling of packages utilizing that method will not cause manufacturers to violate Federal Trade Commission regulations.

For these reasons, the Committee recommends the following amendment to Section 6.6.7 of the Model State Packaging and Labeling Regulation with appropriate renumbering of subsequent sections:

Section 6.6.7.(c)(2).—Bi-dimensional commodities, with a width of 4 inches or less, shall have the length expressed in inches followed by a statement in parentheses of the length in the largest whole unit. [Example: 2 inches by 360 inches (10 yards)].

3. *Paint Labeling*

Newly developed technology in the paint industry has resulted in a system of adding colorants to base paints with a high degree of accuracy. The use of the system permits the manufacturer to guarantee a given volume of paint (e.g., quart or gallon) regardless of the amount of colorant added to the tint base. Currently the system is in limited use but will probably increase rapidly.

Representatives of the paint industry and the National Paint and Coatings Association have requested that Section 11.23 of the Model State Packaging and Labeling Regulation, dealing with paint and kindred products, be amended to allow the users of such systems to label their products with the after tinting volume. The after tinting volume will always be in terms of standard whole units—quarts and gallons. The industry representatives also requested that they be permitted to label the before tinting contents primarily for the con-

venience of weights and measures officials in checking such containers.

It has long been established that containers of tint base paints designed to have coloring added at the retail level be labeled to reflect their actual contents. This position was clearly stated by the Conference in 1955 and again in 1956. The Conference took that position since there could be no guarantee that the same volume would be delivered to each and every purchaser because of the various amounts of colorants added. Necessarily then, the only principle that could be applied was to require that the before tinting quantity be stated on the label.

It is the Committee's view that, with the development of new technology, paint manufacturers, where possible, be allowed to label in terms of after tinting volume on the principal display panel of the package. It is felt that this is a reasonable approach when the individual manufacturer's system for adding tint:

- (a) includes definite foreknowledge of how much is to be added,
- (b) includes an absolute guarantee that the quantity received by the customer is as stated on the label,
- (c) provides on the label that tint bases are not intended to be sold without colorant added,
- (d) and the label also bears a content statement reflecting the amount of tint base contained therein.

Accordingly, the following amendments are proposed:

11.23 Paints and Kindred Products

- (a) **Paints, varnishes, lacquers, thinners, removers, oils, resins, and solvents when packed in one liquid pint and one liquid quart units shall be exempt from dual quantity declaration requirements of Subsection 6.6.4.**
- (b) **Tint base paint may be labeled on the principal display panel, as required by this regulation, in terms of a quart or a gallon including the addition of colorant selected by the purchaser, provided that the system employed ensures that the purchaser always obtains a quart or a gallon; and further provided that in conjunction with the required quantity statement on the principal display panel, a statement indicating that the tint base paint is not to be sold without the addition of colorant is presented; and further provided that the contents of the container, before the addition of colorant, is stated in fluid ounces elsewhere on the label.**

Whenever the above conditions cannot be met containers of tint base paint must be labeled with a statement of the actual net contents prior to the addition of colorant in full accord with all the requirements of this regulation.

4. *Packaged Seed Labeling*

At the Conference last year the Committee recommended an amendment to the Regulation concerning the labeling of flower and vegetable seed packages. It was recommended that the Conference consider the adoption of labeling requirements for such packages including a count statement, a metric weight statement, and a proviso that the quantity statement appear in the upper thirty percent of the

principal display panel. Further consultation with weights and measures officials and with industry members has shown that the count statement requirement is inappropriate for many varieties of flower and vegetable seed. We have been made aware that certain varieties number in the hundreds of thousands of seeds per pound. Accordingly, a count statement would be relatively meaningless to the purchaser as well as to the enforcement official; therefore, the following addition to the Model State Packaging and Labeling Regulation is recommended:

Section 10.10 Packaged Seed.—Packages of seeds intended for planting shall be labeled in full accord with this regulation except as follows:

- (a) The quantity statement shall appear in the upper thirty percent of the principal display panel.
- (b) The quantity statements shall be in terms of the largest whole unit of the metric system for all weights up to one-fourth ounce, and in the avoirdupois system for all other weights up to eight ounces; packaged seeds eight ounces or more shall not be subject to Section 10.10.
- (c) The quantity statement for seed tapes, pre-planters, etc., shall be in terms of count.
- (d) Section 10.10 shall apply only to labels (1) revised after the effective date of this Regulation, or (2) as of July 1, 1974, whichever occurs first.

Finally, to be consistent with the newly proposed seed labeling requirements, removal of the word “seeds” from Section 11.8 of the Model State Packaging and Labeling Regulation is recommended.

The Model State Unit Pricing Regulation

The Gift Wrappings and Tyings Association requested clarification or amendment of Section 2 of the Unit Pricing Regulation with respect to packaged gift wrap. The Association noted that gift wrap is sold in much smaller quantities than other rolls of wrapping material and, therefore, the price per fifty square feet would not be appropriate. The Committee is sympathetic to this view and recommends that Section 2. *Commodities*—be amended by adding in parentheses after the listing “Foil, Film, and Other Rolls of Wrapping” the phrase “except gift wrap.”

Methods of Sale

1. *Wiping Cloths*

The National Association of Wiping Cloth Manufacturers requested the Committee to approve and recommend the sale of wiping cloths on a gross weight basis or, in the alternative, to propose an exemption from net weight requirements for such items sold in bales or cartons. In its communication the Association noted that the wiping cloth

industry is an important segment of the nation's recycling effort. The Association also contends that application of net weight requirements to packaged wiping cloths will work an undue hardship on the industry.

We are sympathetic to the aims and purposes of the Federal Resource Recovery Act and recognize the important contribution made by the wiping cloth industry in this regard. It is also recognized that it has been industry practice to sell packaged wiping cloths with a gross weight designation while also specifying a percentage tare weight allowance. This practice, in essence, is not sale by gross weight but is more nearly a sale on a net weight basis.

Accordingly, it is not felt that either a recommendation to permit sale by gross weight or an amendment excluding packaged wiping cloths from net weight labeling requirements is warranted. Historically all packaged commodities have been required to be sold on a net weight basis and net weight requirements are a basic feature of weights and measures laws. Because of this long standing and periodically reaffirmed net weight requirement, and because the industry practice also recognizes net weight, it is the recommendation of the Committee that net weight requirements be applied to packaged wiping cloths in the same fashion as they are applied to all other packaged products.

2. Railroad Car Tare Weights

The Committee on Specifications and Tolerances recommended that consideration be given to the establishment of specific requirements governing the use of stenciled tare weights on railroad cars. Several weights and measures jurisdictions have indicated a problem with respect to the accuracy of such stenciled tare weights when employed in the sale of bulk commodities or in determining freight charges for products shipped by rail.

A meeting with railroad industry representatives to explore the need for such requirements was held. At this time insufficient data are available to determine the degree of the problem and the railroad industry was requested to supply information concerning weighing practices throughout the industry. The Committee has also requested that the Office of Weights and Measures gather such information and also gather all available information from weights and measures officials concerning the problems associated with the use of stenciled tare weights in commercial weighing. At such time as sufficient data are available, the Committee intends to make recommendations on this matter and urges the cooperation of everyone concerned.

Since the interim meeting of the Committee, the Office of Weights and Measures had collected extensive data from the railroad industry, the Interstate Commerce Commission, and weights and measures

officials. The data from the three sources definitely establish that a serious problem exists with respect to the accuracy and use of stenciled tare weights on railroad cars of all types.

Preliminary analysis of the data indicates that no single element in industry weighing practice can be isolated as the cause of the problem. It has been determined tentatively, for example, that scale inaccuracy is not a major contributing factor. The data also do not clearly indicate that the time interval between tare weight stencilings is the single most important factor. More detailed analysis of the data in-hand and, possibly, the gathering of more information will be necessary before definitive remedies can be proposed.

On this point the Committee is pleased to report that a continuing working relationship has been established between the National Conference on Weights and Measures, Office of Weights and Measures, Interstate Commerce Commission, and the affected trade association, the Association of American Railroads. The first result of this effort has been a proposal by the industry to alter current weighing practices by changing certain operating rules to provide for increased control over the time intervals by providing for a 60 month maximum between tare weighings. Part of the proposal includes the establishment of a greater plus and minus variation for cars of higher weights than had heretofore been the practice. The proposed procedure provides the following tare weight variations:

<i>Car Tare Weight</i>	<i>Permissible Variation</i>
Up to 50,000 lbs	300 (lbs)
From 50,000 to 60,000 lbs	400 (lbs)
Over 60,000 lbs	500 (lbs)

This contrasts with current practice of allowing a 300-pound variation on all cars regardless of total weight. It is noted that the industry established 300-pound limitation is of long standing and has not been changed despite the advent of much heavier cars more recently.

The Committee is encouraged by this first step but wishes to call to attention the fact that it is a procedural step only and does not appear to be the total answer.

Before the Committee can accept the new industry tare weight variation, there must be some evidence of the need. The Committee has not been made aware of the rationale for the new industry proposed tare weight variations, and is equally unaware of the rationale for the currently used 300-pound tare weight variations.

It is the Committee's intent to aggressively pursue this matter to correct the existing conditions as soon as possible. We welcome the continued cooperation of all interested parties.

3. *Polyethylene Sheeting*

A request was received to develop specific requirements for the method of labeling polyethylene sheeting and to develop a testing procedure for checking this particular product. It is the Committee's opinion that sufficient authority already exists in the Model State Packaging and Labeling Regulation concerning the proper method of sale for polyethylene sheeting in package form. Section 6.3 requires that the quantity statement on packaged goods must be fully informative to the consumer and that if there is a firmly established trade practice to sell a particular commodity in a particular way it may be employed provided it is also fully informative. A firmly established trade practice for the method of sale of packaged polyethylene sheeting does exist in NBS Voluntary Product Standard PS 17-60. It has been developed by the industry and it specifies that such sheeting shall be labeled in terms of length, width, thickness, and weight. Accordingly, the labeling requirements for this type of product are established.

It is recognized that a uniform test procedure is necessary and the OWM has been requested to develop the procedure and distribute it to all weights and measures jurisdictions. The test procedure is to be accompanied by recommendations concerning necessary equipment and sources of supply for such equipment.

4. *Combination Quantity Declarations*

The Single Service Institute and the American Glassware Association have suggested the adoption of recommendations for paper and glass products sold on the basis of count and size or capacity. Existing labeling requirements mandate that such things as packaged disposable plates and cups and packaged glassware items specify both count and size or capacity on the label. Difficulty arises in attempting to apply the average concept utilized in package control work to such types of packages.

The Single Service Institute has proposed that nominal dimensions of paper plates in package form be acceptable if they fall within a range of minus one-eighth inch to plus one-quarter inch. It was noted that the only existing specification, published by the federal government, now requires that such items fall within a range of minus one-quarter inch to plus one-half inch.

The basic problem arises because of the various configurations in which single service plates are formed. The general practice is to use a standard die that cuts over-size blanks from roll stock. These blanks pass through forming dies which shape them into various patterns. Although the blanks are all uniformly oversize, the forming process yields different dimensions on the end product. Similar problems exist

with almost all types of products including paper, plastic, glass and metal items.

The Committee wishes to explore this entire area in the hopes that reasonable percentage variations from stated dimensions or capacity can be uniformly established for all such products. In the interim, it is recommended that paper plates be permitted a minus one-eighth inch to plus one-quarter inch variation from label dimensions.

The Committee wishes to thank California weights and measures officials, the Single Service Institute and the American Glassware Association for their efforts in attempting to resolve this problem. The item will be retained on the Committee's Agenda and the OWM has been requested to develop suitable guidelines for all similar products for action at the next Conference.

5. *Vending Machine Items*

The Southern Conference on Weights and Measures submitted recommendations concerning product identity and quantity of packaged products dispensed through vending machines. Information was sought from the National Automatic Merchandising Association concerning the proposals of the Southern Conference. The Association noted that they are complying with all packaging and labeling requirements for all packaged products dispensed by machine. The vast majority of prepackaged vended items is national brand merchandise bearing the same label as like items sold at other retail outlets.

The Association also noted that many state and local vending sanitation regulations and ordinances require the posting of the name and address and telephone number of the party responsible for machines which was also suggested by the Southern Conference. They support the need for machine ownership and servicing information.

Accordingly, the following amendment to the Model State Method of Sale of Commodities Regulation is proposed with appropriate renumbering of subsequent sections:

SECTION 15. MACHINE VENDED COMMODITIES.—All vending machines dispensing packaged commodities shall indicate:

- (a) Product identity,
- (b) Net quantity, and
- (c) Name, address, and telephone number of responsible party.

The requirements for product identity and net quantity can be met either by display of the package or by information posted on the outside of the machine.

Other Items

1. Requests were received to consider appropriate packaging and labeling or method of sale requirements for several other items including packaged yarn, fresh fruit and vegetables, timber, and ran-

dom weight meat and poultry products. Insufficient information concerning the nature of the problems associated with these products was available. The Committee respectfully urges that all parties with an interest in these particular items supply whatever information they might have concerning possible problems and solutions.

On the matter of the labeling of random weight meat and poultry products, several state officials have suggested the adoption of a proposal that all such products be labeled by the packer at the time of packing. It is noted that packers are or should be fully aware of the nature of their product and estimated shelf life and shrinkage factors. Currently, federal labeling regulations do not require the labeling of net weight on individual random weight meat and poultry products eventually destined for sale to consumers at retail if the wholesale package is suitably labeled.

The Committee has also been made aware of opinions of other weights and measures officials who feel that, because of the shrinkage factor, random weight meat and poultry products should be weighed as close to the ultimate point of sale to the consumer as possible. It is also noted that the devices used to weigh at the packer level are not the same as those used to weigh at the retail level. This inconsistency presents a problem in that most retail sales are required to present net weight, total price, and price per unit information at the time of sale.

The Committee feels it does not have sufficient information concerning the problems and possible violations in this area and urges all weights and measures officials to submit any information on the matter that they may have. The Office of Weights and Measures has been requested to gather all available information from the meat packing industry in an effort to ultimately resolve this difficulty.

Several requests have been received to explore the possibility of requiring that viscous commodities, both food and nonfood, be required to be sold on a net weight basis. There now appear to be several methods by which viscous commodities are sold. Some products such as mayonnaise are sold by volume; other products such as mustard are sold by weight and volume; and nonfood products such as toiletry items are sold by weight and volume. The Committee has directed the Office of Weights and Measures to gather all available information on these methods of sale and the reasons for them. In its meeting with members of the Industry Committee on Packaging and Labeling, the Committee enlisted the support of individual members of that Committee in exploring this area.

2. *Section 12.1.2. of the Model State Packaging and Labeling Regulation.* Just prior to the open meeting of the Committee on Laws and Regulations, the Committee has received a verbal request to recommend the deletion of Section 12.1.2 from the Model State Packaging and Labeling Regulation. It is the view of the Committee that the question of removal or retention of Section 12.1.2 of the

Model State Packaging and Labeling Regulation is of sufficient import to be considered at length by the Committee, and it proposes to place this item on its agenda. It will be considered by the Committee at the next interim meeting and will be reported to the next Conference.

The Committee recommends that the Office of Weights and Measures explore this matter and make available to all interested parties the reasons for the request and the issues involved. It is suggested that the information be published in the next Office of Weights and Measures Tech Memo and that it be made available to all weights and measures officials as well as all other interested parties including industry members.

The Committee on Laws and Regulations extends its thanks to all those members of the Conference and business and industry representatives who submitted items for consideration. Only through such continuing communications can the Committee fulfill its function to the Conference.

S.D. ANDREWS, *Chairman*, Florida
G.L. DELANO Montana
M.R. DETTLER Washington
R.M. LEACH Michigan
R.L. THOMPSON Maryland
E.A. VADELUND, *Staff Assistant*, NBS
H.F. WOLLIN, *Exec. Secy.*, NCWM

Committee on Laws and Regulations

(Mr. Andrews moved for adoption, and after a second from the floor, the report of the Committee on Laws and Regulations was adopted in its entirety by the Conference by voice vote.)

REPORT OF THE COMMITTEE ON SPECIFICATIONS AND TOLERANCES

Presented by D.E. KONSOER, *Chairman*, Director, Bureau of Weights and Measures, Food Division, Wisconsin Department of Agriculture

(Friday, July 14, 1972)



The Committee on Specifications and Tolerances submits its report to the 57th National Conference on Weights and Measures. The report consists of the tentative report, transmitted in April as part of the Conference Announcement, as amended by the final report.

The report represents recommendations of the Committee that have been formed on the basis of written and oral comments received during the year and oral presentations made during the open meeting of the Committee. All recommended amendments are to appropriate provisions of the codes of the National Bureau of Standards Handbook 44, Fourth Edition, *Specifications, Tolerances, and Other Technical Requirements for Commercial Weighing and Measuring Devices*.

GENERAL CODE

1. *G—A.2. Code Application.*—It is the view of the Committee that there is a need to clarify the application of General Code requirements and specific code requirements in cases of conflict. Therefore, the Committee recommends that this paragraph be amended to read as follows:

G—A.2. Code Application.—This General Code shall apply to all classes of devices as covered in the specific codes. The specific code requirements supersede General Code requirements in all cases of conflict. [Amended 1972]

2. *Digital and Analog Values.*—The Committee received suggestions from the State of Virginia and the USDA Packers and Stockyards Administration that the Scale Code be amended to require that automatic indicating scales equipped with printers be so designed as to print to the nearest minimum graduation. In its deliberations, the Committee recognized that there were instances in other types of devices where both analog weight and money values

were presented digitally. In recognition of this fact and to provide a guide to manufacturers in the design of equipment, the Committee recommended the addition of the following specification in its tentative report:

G—S.5.4. Coincidence of Digital and Analog Values.—Any digital value shall coincide with its associated analog value to the nearest minimum graduation. A digital zero indication shall represent a zero condition within plus or minus one-half the value of the minimum increment that can be indicated. [Added 1972]

On the basis of comments received both prior to and during the open meeting, the Committee recommended that this specification be amended to read as follows:

G—S.5.4. Digital Zero Representations and Agreement Between Values.—A digital zero shall represent a zero condition within plus or minus one-half the value of the minimum increment that can be indicated or recorded. A digital value shall coincide with its associated analog value to the nearest minimum graduation. All digital values shall agree with one another. [Added 1972]

In the application of this requirement and to recognize the difficulty in precise rounding off of values midway between graduations or increments, the Committee recommended that weights and measures officials interpret this new specification as follows: To determine whether a digital value is presented to the closest analog graduation or increment, divide the minimum graduation or increment into ten parts. In selecting the digital value, the first three parts should present the lower value; four, five, and six parts could select either the lower or higher value; and seven, eight, and nine parts should select the higher value. For example, a retail petroleum dispenser equipped with a minimum analog graduation of 0.1 (1/10) gallon when converted to a digital representation would present .01, .02, and .03 gallons as zero; an analog indication of .04, .05, or .06 gallons could be represented digitally as either zero or 0.1 gallon; .07, .08, and .09 gallons should be represented digitally as 0.1 gallon.

(Following extensive discussion on the foregoing item by both weights and measures officials and industry representatives and a suggestion by the Committee Chairman that the specification be clarified by editorial changes, a motion was made and seconded that this item be tabled for one year for further study.)

3. *Money-Operated Devices.*—The Committee received a recommendation from the Southern Weights and Measures Association pointing out the need for a General Code requirement to provide for the return of monies from coin-operated devices which were found inoperative by a consumer and to preclude their use when found incorrect by a weights and measures official. It is the view of the Committee that, when these devices are found incorrect or inoperative

by a weights and measures official, a rejection tag or notice should be appropriately affixed to the device. To inform consumers of the persons responsible for the operation of the device and to recognize that devices now operate with currency as well as coin, the Committee recommends the following amendments:

Add the following new user requirement:

G—UR.3.3. Responsibility—Money-Operated Devices.—A device of the money-operated type, except parking meters, shall have clearly and conspicuously displayed thereon, or immediately adjacent thereto, adequate information detailing the method for the return of monies paid when the product or service cannot be obtained. [Added 1972]

Amend the definition “coin-operated type” as follows:

money-operated type. Refers to a device designed to be released for service by the insertion of money, or to be actuated by the insertion of money to make deliveries of product.

Amend the following code paragraphs to coincide with the above amendments:

LMD Code S.1.4.3.
LMD Code UR.3.2.

SCALE CODE

1. A. 1. *General*.—To coincide with the amendment as recommended in item 1 of the General Code, the Committee recommends that this paragraph be amended to read as follows:

A. 1. *General*.—This code applies to all types of weighing devices other than belt-conveyor scales. The code comprises requirements that are generally applicable to all weighing devices, and specific requirements that are applicable only to certain types of weighing devices. [Amended 1972]

2. *Prepackaging Scales*.—A manufacturer of prepackaging scales has expressed his concern to the Committee regarding the use of readily accessible and adjustable motion detect and delay means in prepack scales found in today’s marketplace. His principal point of contention seems to center on the fact that, although motion detect means are incorporated in most automatic prepack scale designs, some are subject to misuse, which could result in inaccurate printout of weight values.

After deliberation on this matter, it was the Committee's view that existing code requirements of Handbook 44 are generally adequate and that inaccurate weight determinations resulting from careless operation of a scale or improper weighing practices are in violation of weights and measures law and can be dealt with effectively through appropriate enforcement procedures. However, the Committee recommended in its tentative report the following amendment to paragraph S.2.4. to clarify and strengthen requirements dealing with this problem.

S.2.4. Damping Means.—An automatic-indicating scale, and a balance indicator, shall be equipped with effective means (such as a dashpot or electronic motion detection) for damping the oscillations whenever such means are necessary to bring the indicating elements quickly to rest. [Amended 1972]

On the basis of several comments, the Committee reconsidered its recommendation and, in recognition of the many methods for damping, recommends that this paragraph be amended by eliminating the parenthetical included in the tentative report, so that it will read as follows:

S.2.4. Damping Means.—An automatic-indicating scale, and a balance indicator, shall be equipped with effective means for damping the oscillations whenever such means are necessary to bring the indicating elements quickly to rest. [Amended 1972]

3. S.6.1. *Nominal Capacity*.—A comment was received from the Western Association that sellers and installers of weighing devices were supplying scales with indicating elements from one manufacturer and weighing elements from another manufacturer, and that the capacities of these elements did not necessarily coincide. The Committee, therefore, recommended in its tentative report adding the following nonretroactive amendment to paragraph S.6.1.

(e) *On any load-receiving element not permanently attached to an indicating element. [Added and nonretroactive as of 1972]*

On the basis of comments received, the Committee withdrew its recommendation in the tentative report and recommends the following new requirement:

S.6.4. Marking Requirements—Load-Receiving Elements.—On a load-receiving element not permanently attached to an indicating element, there shall be clearly and permanently marked for the purposes of identification the name, initials, or trademark of the manufacturer, the manufacturer's designation that positively identifies the pattern or design, and the nominal capacity. [Added and nonretroactive as of 1972]

4. N.1.1. *Increasing-Load Test*.—The Committee received comment from the Northwest Weights and Measures Association that the term “load-receiving element” in this section was being interpreted as load-bearing. To clarify this requirement, the Committee recommends the addition of the following definition:

load-receiving element. That element of a scale which is designed to receive the load to be weighed. For example, platform, deck, rail, hopper, platter, plate, scoop.

5. *Hopper Scales*.—The Committee received two comments concerning tolerance application for hopper scales used to weigh specific commodities such as fertilizer, sand, gravel, and cement. It is the Committee’s view that it would be more appropriate to apply a maintenance tolerance value of 0.2 percent and an acceptance tolerance value of 0.1 percent rather than one-half of these amounts as now required in table 4. Therefore, the Committee recommended in its tentative report the following amendments:

Amend the title of T.3.5. by adding the word “Hopper” so as to read:

T.3.5. Basic Tolerance Values for Animal, Livestock, Crane, Axle-Load, Hopper, Vehicle and Railway Track Scales. [Amended 1972].

Amend the title of table 4 and table 5 correspondingly.

Amend UR.1.1.4. by deleting the word “Grain” in the title so as to read:

UR. 1. 1. 4. For Hopper Scales Only. [Amended 1972]

Delete the definition for “grain hopper scale.” Amend the definition for “hopper scale, automatic” to read as follows:

hopper scale. A scale designed for weighing bulk commodities whose load-receiving element is a tank, box, or hopper mounted on a weighing element. See also automatic hopper scale.

The Committee received several comments concerning the recommendation in its tentative report. It is the Committee’s view

that the requirements for hopper scales should provide for the following:

1. The tolerance values for hopper scales, other than grain hopper scales, should be 0.2 percent maintenance and 0.1 percent acceptance.
2. The tolerance values for grain hopper scales should be 0.1 percent maintenance and .05 percent acceptance.
3. The value of the minimum graduation for grain hopper scales should remain as indicated in the present UR. 1. 1. 4.
4. The value of the minimum graduation for hopper scales, other than grain hopper scales, should be covered under UR. 1. 1. 8.—that is, 0.1 percent of the nominal capacity of the scale, and in any case not greater than 50 pounds.

Therefore, the Committee recommends the following amendments:

Amend the title of T.3.5. so as to read:

T.3.5. Basic Tolerance Values for Animal, Livestock, Crane, Axle-Load, Hopper (Other than Grain Hopper), Vehicle, and Railway Track Scales. [Amended 1972]

Amend the title of table 4 and table 5 correspondingly.

Add a definition for hopper scale to read as follows:

hopper scale. A scale designed for weighing bulk commodities whose load-receiving element is a tank, box, or hopper mounted on a weighing element. See also automatic hopper scale and grain hopper scale.

Amend the definition for grain hopper scale by deleting the word "manual."

6. *Retroactive Status.* — In accordance with the policy of reviewing all nonretroactive requirements that have been in effect for a period of ten years, the Committee recommends that the following requirements be changed from nonretroactive to retroactive status:

S.1.6.1. Value of Graduated Interval.

S.1.6.2. Label Printer.

UR. 1.1.5. For Crane Scales Only.

7. *Railway Track Scales and Weighing Practices.* — The Committee received several proposals concerning the requirements for railway track scales and weighing practices. To clarify a misunderstanding which seems to exist following the deletion of a number of specific railway track scale testing procedures from the Third Edition of Handbook 44, specifically the application of maximum indicated percentage error in the conduct of a shift test, the Committee wishes to reconfirm the action of the 50th National Conference in the adoption of the Third Edition of Handbook 44. At that time it was the intent of the Conference that, in the conduct of a shift test on a railway track scale, the basic tolerance of plus or minus 0.1 percent acceptance and plus or minus 0.2 percent maintenance are applicable. However, the Committee does recognize a need for a more appropriate definition of the shift test and recommends the following amendments:

Amend the title of N.1.3.4. by deleting the term “Railway Track Scales” so as to read as follows:

N.1.3.4. On Vehicle Scales. [Amended 1972]

Add new N.1.3.5. as follows:

N.1.3.5. On Railway Track Scales. — The shift test shall be conducted with at least two different test loads, if available, distributed over, or to the right and left of, each pair of main levers or other weighing elements supporting each section of the scale. [Added 1972]

Renumber present N.1.3.5. to N.1.3.6.

With respect to new N.1.3.5. and the application of tolerances, the Committee wishes to call attention to T.1.4., which requires that basic tolerances shall be applied to shift tests.

In response to the suggestion that paragraph UR.4.4. Single-Draft Vehicle Weighing be applicable to railway car weighing as well, it is the Committee's view that this is impractical. The individual axle weighing of railway cars has been practiced for many years. The approaches to these devices are controlled, since the level condition of railroad tracks is a necessity. This is not the case with the approaches and other factors in the weighing of motor vehicles. The present method of weighing railway cars is also the only method for in-motion weighing by the railroad industry.

In response to a recommendation concerning the use of stenciled tare weights on railroad cars in commercial weighing, the Committee referred this item to the Committee on Laws and Regulations.

Since the publication of its tentative report, the Committee has received additional proposals and meetings have been held on matters

concerning the requirements for railway track scales and weighing practices. With the accelerated effort by weights and measures jurisdictions in the testing and control of railway track scales, it is essential that the methods and procedures be uniform among the jurisdictions and the private sector. The railroads have been using as their guide a publication of the Association of American Railroads entitled "Scales." The requirements in this handbook (first published in 1921) were developed by the Engineering Division, AAR, with the collaboration of the National Bureau of Standards, the National Scale Men's Association, and the Traffic Department of AAR. This handbook makes reference to Handbook 44 and, for the most part, the performance requirements of the two handbooks are identical.

It is the view of the Committee that weights and measures officials, NBS, the scale industry, and railroad personnel participate in a study to update the AAR Scales Handbook in the ensuing year, so that the S & T Committee may recommend to the 58th National Conference an official recognition of this handbook for use as a procedural guide in applying H-44 requirements. Since there is an increased demand and need for in-motion weighing, and since neither H-44 nor the AAR Handbook presently contains requirements for these devices or methods of test, the Committee recommends that this study extend further to include the development of such requirements and methods.

The Committee has been informed that NBS has obtained appropriate test equipment and the railroads have pledged their support in making scales and motive power available. Weights and measures officials will be advised of test locations and invited to participate in this study. The Committee urges that the states cooperate in this effort and not take action individually.

A number of states are presently witnessing tests of railway track scales conducted by railroad scale men with railroad test cars that have been calibrated within the preceding year on an NBS approved master scale and are exercising regulatory control accordingly. The Committee endorses this action and encourages regulatory officials to continue to work cooperatively with the railroad industry in improving scale accuracy and maintenance.

The Committee wishes to reconfirm its position as stated in the tentative report concerning tolerance application for the shift test. That is, to clarify a misunderstanding which seems to exist following the deletion of a number of specific railway track scale testing procedures from the Third Edition of Handbook 44, specifically the application of maximum indicated percentage error in the conduct of a shift test the Committee wishes to reconfirm the action of the 50th National Conference in the adoption of the Third Edition of Handbook 44. At that time it was the intent of the Conference that, in the conduct of a shift test on a railway track scale, the basic tolerance of plus or minus 0.1 percent acceptance and plus or minus 0.2 percent

maintenance are applicable. However, the Committee does recognize a need for a more appropriate definition of the shift test and recommends the amendments to the code as per the tentative report.

8. *Prescription Scales.*—Since the deletion of all reference to Class B prescription scales, the Committee could see no reason for the “Class A” reference. The Committee recommends deleting the term “Class A” in paragraphs N.3., SR.3., T.2.2., and T.3.2.

9. *Grain Moisture Test Scales.*—Since a number of weights and measures jurisdictions now have the responsibility of testing the accuracy of grain moisture meters, it is the Committee’s view that requirements should be added to Handbook 44 to cover those scales used in conjunction with grain moisture meters. The Committee suggests that the existing Scale Code requirements of Handbook 44 are applicable with one exception. Therefore, the Committee recommends the following amendments:

Add the following definition for moisture-test scales:

grain moisture-test scale. One adapted to weigh samples of grain to be used in grain moisture determinations.

Add the following new requirement:

T.2.5. For Grain Moisture-Test Scales.—The minimum tolerance shall be 250 milligrams. [Added 1972]

Renumber present paragraphs T.2.5. through T.2.8. as T.2.6. through T.2.9.

10. *Truck-Borne Feed-Weighing Systems.*—In response to a request for more definitive requirements relating to these new devices, the Committee is of the opinion that the existing requirements of Handbook 44, with the amendments for hopper scales as recommended in this report, are entirely appropriate. These devices, then, and other similar devices would be considered hopper scales. In addition, the requirements of S.2.3. Level-Indicating Means would be applicable, as these are portable scales.

CODE FOR LIQUID-MEASURING DEVICES

1. S.1.4.2. *Return to Zero.*—Last year the National Conference recognized cumulative indicating elements on key-lock and other self-operated devices by amending S.1.4.2. Since these devices may be equipped with cumulative printers, the Committee recommends that

this requirement be further amended by adding the words "or recording elements" in the second sentence, so as to read as follows:

S.1.4.2. Return to Zero.—The primary indicating elements, and primary recording elements if the device is equipped to record, shall be readily returnable to a definite zero indication. However, a key-lock or other self-operated device may be equipped with cumulative indicating or recording elements, provided that it is also equipped with a zero-return indicating element. Means shall be provided to prevent the return of primary indicating elements, and of primary recording elements if the device is so equipped, beyond their correct zero position. [Amended 1972]

2. *S.2.6.2. Provision for Deactivating Automatic Temperature Compensator.*—To clarify this requirement, the Committee recommends the following amendment:

S.2.6.2. Provision for Deactivating.—On a device equipped with an automatic temperature compensating mechanism that will indicate or record only in terms of gallons compensated to 60°F, provision shall be made to facilitate the deactivation of the automatic temperature compensating mechanism so that the meter may indicate, and record if it is equipped to record, in terms of the uncompensated volume. [Amended 1972]

3. *T.2.1. Tolerance Values on Retail Devices Except Slow-Flow Meters.*—In response to the suggestion that these tolerances be reduced, it is the Committee's view that the existing tolerances are entirely appropriate and should not be changed until such time that a study could be conducted to prove conclusively that a change in the present tolerances is necessary. The Committee recommends that this item be referred to the Office of Weights and Measures and that, when resources are available, a study be conducted in cooperation with the API and the GPMA.

4. *UR.1.1. Length of Discharge Hose.*—The Committee received a recommendation that the length of discharge hoses on retail motor-fuel dispensers be increased. The following particulars were considered by the Committee: (a) That the length of the discharge hose has an effect on the accuracy of the device; (b) that hoses are more rigid now than they were at the time this requirement became a part of the code; (c) that motor vehicles are ever increasing in length; and (d) that a requirement of the Underwriters Laboratory states that the hose shall not touch the ground when not in use. Because of these and other factors, the Committee recommends that this requirement be amended by increasing the permissible length of discharge hoses from 15 to 18 feet. The Committee also wishes to remind the Conference that a hose longer than 18 feet is permissible where it is demonstrated that such a hose is essential for proper deliveries to be made.

5. *Marinas and Airports.*—The Committee received comments that, because of their special nature, a new code be developed for

liquid-measuring devices installed at marinas and airports. It is the Committee's view that Handbook 44 cannot possibly recognize all situations with special requirements and that existing requirements applicable to such devices provide for adequate enforcement.

6. *UR.3.2. Unit Price and Product Identity.*—The Committee received a proposal for this requirement to be amended to also include retail devices of the noncomputing type. The Committee agrees with this proposal and recommends that this paragraph be amended to read as follows:

UR.3.2. Unit Price and Product Identity.—On a retail device there shall be displayed on each face of the device the price at which the product is offered for sale, and in the case of a computing type or money-operated type the unit price at which the device is set to compute and deliver. There shall also be conspicuously displayed on each face of the device the identity of the product that is being dispensed. If a device is so designed as to dispense more than one grade, brand, blend, or mixture of product, there shall also be displayed on each face of the device, at any time the device is in service, the identity of the grade, brand, blend, or mixture which the device is set to dispense. [Amended 1972]

CODE FOR VEHICLE-TANK METERS

1. *Milk-Metering Systems.*—The dairy industry has expressed a need for a meter capable of accurately measuring milk. Meters of this type have been developed and are now in use on a trial basis. In recognition of the existence of these devices and the need to develop appropriate code requirements, the Committee considered the following points: (a) For sanitary reasons, the measurement system must be completely disassembled routinely for cleaning purposes; (b) for sanitary reasons, it is necessary that it be a dry-hose system; (c) the effectiveness of the air eliminator is involved in every measurement process; (d) since the product being measured is not delivered, but rather is picked up, there are no discharge lines as such.

It is the view of the Committee that, with few exceptions, the requirements of the Code for Vehicle-Tank Meters are applicable to milk-metering systems. To cover these exceptions, the Committee recommended in its tentative report the following amendments to the Code for Vehicle-Tank Meters:

Amend S.1.1.3. to read as follows:

S.1.1.3. Value of Smallest Unit.—The value of the smallest unit of indicated delivery, and recorded delivery if the meter is equipped to record, shall not exceed the equivalent of

- (a) one pint of milk-metering systems and on meters used for retail deliveries of liquid fuel for domestic use, and
- (b) one gallon on other meters.

Amend S.2.2. to read as follows:

S.2.2. Provision for Sealing.—Except on devices for metering milk, adequate provision shall be made for applying security seals in such a manner that no adjustment may be made of . . .

Add the following new paragraph S.2.2.1.:

S.2.2.1. Milk Metering Systems.—Adequate provision shall be made for applying security seals to the adjustment mechanism and sealing the register to the meter chamber housing.

Amend the title of S.3. to read as follows:

S.3. Design of Discharge Lines and Discharge Line Valves (Not applicable to milk-metering systems).

Add the following new requirements:

S.4. Design of Intake Lines (For milk-metering systems).

S.4.1. Diversion of Liquid to be Measured.—No means shall be provided by which any liquid can be diverted from the supply tank to the receiving tank without being measured by the device.

S.4.2. Intake Hose.—The intake hose shall be

- (a) of the dry-hose type,
- (b) adequately reinforced,
- (c) not more than 20 feet in length, and
- (d) connected to the pump at horizontal or above to permit complete drainage of the hose.

Renumber present paragraph S.4. Marking Requirements as S.5. and add the following requirements to this paragraph:

S.5.3. Measuring Components.—Milk-Metering System—*All components that affect the measurement of milk which are disassembled for cleaning purposes shall be clearly and permanently identified with a common serial number. [Nonretroactive as of 1972]*

S.5.4. Flood Volume.—Milk-Metering System—*The volume of product necessary to flood the system when dry shall be clearly, conspicuously, and permanently marked on the air eliminator. [Nonretroactive as of 1972]*

Add the following new paragraph N.4.1.1.:

N.4.1.1. Milk Meters.—The “normal” test shall include a determination of the effectiveness of the air elimination system.

Amend the title of N.4.2. as follows:

N.4.2. Special Tests (except milk-metering systems).

Add the following paragraph N.4.4.:

N.4.4. System Capacity.—The test of a milk-metering system shall include the verification of the volume of product necessary to flood the system as marked on the air eliminator.

Add the following user requirements:

UR. 1.3. Intake Hose.—The intake hose on a milk-metering system shall be so installed as to permit complete drainage and that all available product is measured following each pickup.

UR.2.3. Credit for Flood Volume.—The volume of product necessary to flood the system as marked on the air eliminator shall be individually recorded on the pickup ticket of each seller affected.

Amend paragraph T.2. as follows:

T.2. Tolerance Values.—Maintenance and acceptance tolerances shall be as shown in table 1 and table 2.

Amend the title to table 1 to read:

TABLE 1. TOLERANCES FOR VEHICLE-TANK METERS EXCEPT MILK METERS

TABLE 2. TOLERANCES FOR MILK METERS

Indication	Maintenance tolerance	Acceptance tolerance
(Gallons)	(Gallons)	(Gallons)
100	0.5	0.3
200	0.7	0.4
300	0.9	0.5
400	1.1	0.6
500	1.3	0.7
Over 500	Add 0.002 gallons per indicated gallon	Add 0.001 gallons per indicated gallon

On the basis of comments received at the open meeting, the Committee recommends the following changes to the tentative report:

S.2.2.1. Milk-Metering System.—Adequate provisions shall be made for applying security seals to the adjustment mechanism and the register.

S.4.2. Intake Hose.—The intake hose shall be

- (a) of the dry-hose type,
- (b) adequately reinforced,
- (c) not more than 20 feet in length unless it can be demonstrated that a longer hose is essential to permit pickups from a supply tank, and
- (d) connected to the pump at horizontal or above to permit complete drainage of the hose.

Delete nonretroactivity of S.5.3.

S.5.3. Measuring Components—Milk-Metering Systems.—All components that affect the measurement of milk which are disassembled for cleaning purposes shall be clearly and permanently identified with a common serial number.

Delete nonretroactivity of S.5.4. and amend to read as follows:

S.5.4. Flood Volume—Milk-Metering Systems.—When applicable, the volume of product necessary to flood the system when dry shall be clearly, conspicuously, and permanently marked on the air eliminator.

2. *T.2. Tolerance Values.*—The Committee received a suggestion that the special test tolerances for vehicle-tank meters be eliminated and that such meters meet the normal test tolerances under any condition of test. It is the view of the Committee that the special test tolerances are appropriate for slow-flow tests, but should be studied with respect to their appropriateness for split-compartment tests. The Committee intends to study this matter in the year ahead.

LPG LIQUID CODE

1. *S.2.6.1. Provision for Deactivating.*—Consistent with item 2 of the LMD Code, the Committee recommends the following amendment to clarify this requirement:

S.2.6.1. Provision for Deactivating.—On a device equipped with an automatic temperature compensating mechanism that will indicate or record only in terms of gallons compensated to 60°F, provision shall be made to facilitate the deactivation of the automatic temperature compensating mechanism so that the meter may indicate, and record if it is equipped to record, in terms of the uncompensated volume. [Amended 1972]

2. *Outlet Hoses.*—The Committee received conflicting suggestions concerning the installation of two outlet hoses on LPG vehicle-tank meter systems. It is the view of the Committee that the limitation of only one hose on the outlet side of the meter is necessary. Although, under certain circumstances, it may be convenient to have two outlet hoses to accommodate various types of deliveries, the use of two hoses could cause serious restrictions and other problems affecting the accuracy of measurement.

LPG VAPOR CODE

The Committee received several comments concerning the Tentative Code for Liquefied Petroleum Gas Vapor-Measuring Devices.

In response to these comments, the Committee recommended in the tentative report that this code be converted from tentative to permanent status with the following amendments:

Amend the following paragraphs to read as follows:

S.1.1.2. Units.—*A device shall indicate, and record if equipped to record, its deliveries in terms of cubic feet or cubic meters, or multiples or decimal subdivisions of these units. [Nonretroactive as of 1972. To become retroactive January 1, 1982.]*

S.1.1.3. Value of Smallest Unit.—The value of the smallest unit of indicated delivery, and recorded delivery if the device is equipped to record, shall not exceed 100 cubic feet or 1 cubic meter (1,000 cubic decimeters).

S.2.5. Corrections for Altitude.—An approved multiplier table of corrections shall be used to correct for changes in the atmospheric pressure with respect to altitude. The multiplier for a particular installation shall be affixed to the front of the device near the badge.

N.4. Test Procedures.—If a device is equipped with an automatic temperature compensator, the proving device reading shall be corrected to 60°F, using an approved table. user requirement:

UR.2.2. Invoices.—Any invoice on which the charge is based on units other than cubic feet or cubic meters shall have shown thereon the cubic foot or cubic meter equivalent of the unit on which the charge is based.

The Committee received several suggestions and heard several comments during its open meeting. On the basis of these comments and suggestions, the Committee recommends the following changes from the tentative report:

S.1.1.2. Units.—In order to provide for an equitable, orderly, and economical change to cubic feet or cubic meter indications, the Committee wishes to recommend that this amendment be changed to read as follows:

S.1.1.2. Units.—*A device shall indicate, and record if equipped to record, its deliveries in terms of cubic feet or cubic meters, or multiples or decimal subdivisions of these units. [Nonretroactive as of 1972. To become retroactive January 1, 1987, provided that individual marketers shall bring into compliance existing equipment in service as of the effective date of this requirement at the rate of 15 percent every two years.]*

The Committee wishes to call attention to the fact that this new requirement does recognize and provide for metric units.

The Committee also wishes to remind enforcement officials that this requirement applies to all new equipment. It is not intended to preclude the installation of used or reconditioned equipment utilizing an index that the user has customarily used in market areas that the user is not then converting to cubic feet or cubic meter indexes. It is the Committee's intention that, at least on the average, 15 percent of each user's meters must be installed as or converted to approved types of indexes every two years until all of the user's meters register in approved units.

S.2.5. *Corrections for Altitude.* — Since this is a user responsibility, the Committee is making an editorial correction by changing the numerical designation of this requirement to UR.2.2.

UR.2.2. *Corrections for Altitude.* — An approved multiplier table of corrections shall be used to correct for changes in the atmospheric pressure with respect to altitude. The multiplier for a particular installation shall be affixed on the front of the device near the badge.

CODE FOR VEHICLE TANKS AS MEASURES

1. *Compartment Indications.* — The Committee received a suggestion that a limitation be placed on indicator depth due to the difficulty in reading locating markers placed too deep within a compartment. The Committee agreed with this suggestion and recommended in the tentative report amending paragraph S.2.4. to provide for depth and clearance requirements and to clarify existing requirements.

S.2.4. *Location.* — An indicator shall be located:

- (a) Midway between the sides of its compartment.
- (b) As nearly as practicable midway between the ends of its compartment, and in no case offset by more than 10 percent of the compartment length.
- (c) Adjacent to, but shall not extend into, that section of the compartment defined by a vertical projection of the fill opening.
- (d) At a depth, measuring from the top of the dome opening, not lower than 18 inches for fill openings of less than 15 inches in diameter, or, if other than circular, an effective area of not less than 175 square inches, and not lower than 24 inches for larger fill openings.
- (e) To provide a clearance of not less than 2 inches between indicators.
[Amended 1972]

On the basis of written suggestions and comments received during the open meeting, the Committee recommends the following changes from its tentative report.

Amend S.2.2. *Number of Indicators* by changing the number of indicators from 3 to 5.

Amend S.2.4. to read as follows:

S.24. *Location.* — An indicator shall be located:

- (a) Midway between the sides of its compartment.
- (b) As nearly as practicable midway between the ends of its compartment, and in no case offset by more than 10 percent of the compartment length or 6 inches, whichever is less.
- (c) Adjacent to, but shall not extend into, that section of the compartment defined by a vertical projection of the fill opening.
- (d) At a depth, measuring from the top of the dome opening, not lower than 18 inches for fill openings of less than 15 inches in diameter, or, if other than circular, an effective area of not less than 175 square inches, and not lower than 24 inches for larger fill openings.
- (e) To provide a clearance of not less than 2 inches between indicators.
[Amended 1972]

2. *Bottom Loading.*—The Committee received a communication concerning the problems involved with vehicle tanks equipped for bottom loading. Bottom loading cannot be accomplished through a manifold discharge line if the vehicle tank is equipped with check valves to prevent the flow of liquid from one compartment to another. Problems also exist in calibration when the tank is calibrated to the emergency valve. The Committee desired to resolve these problems and recommended in the tentative report the addition of the following specification paragraph:

S.4. Design of Intake Lines for Bottom Loading.—When a vehicle tank is equipped with means for bottom loading, the intake lines shall be independent and entirely separate from the discharge lines. [Added 1972]

Renumber present paragraphs S.4. as S.5. and S.4.1. through S.4.3. as S.5.1. through S.5.3.

It was the Committee's intention in the tentative report to call attention to the problems associated with bottom loading. On the basis of comments received, the Committee withdrew its recommendation in the tentative report and recommended the addition of a new subparagraph S.1.6.1. to paragraph S.1.6. as follows:

S.1.6.1. On Vehicle Tanks Equipped for Bottom Loading.—On equipment designed for bottom loading, the compartment capacity may include the piping of a compartment to the valve located on the upstream side of the manifold and immediately adjacent thereto or, if not manifolded, to the outlet valve, provided that on or immediately adjacent to the marking as specified in S.4. the following words or a statement of similar meaning shall be affixed: "Warning: Emergency valves must be open before checking measurement." [Added 1972]

The Committee is aware that bottom loading cannot be accomplished through a common manifold equipped with one-way check valves installed to prevent flow from a full compartment to an empty one. It is the Committee's view that one-way check valves are not necessary to comply with the requirements of S.3. Equipment designed with either emergency valves or those valves located adjacent to the manifold that will allow discharge only from one compartment at a time or all compartments simultaneously is in compliance with this requirement.

The Committee was informed that there is equipment presently in service that does not meet this requirement. The Committee recommends that the enforcement officials consider this as a nonretroactive requirement for the existing equipment and that all new equipment placed in service after July 1, 1973, be designated to meet this requirement. This effective date was added in order to validate equipment for which orders had already been placed for delivery in March or April of 1973 and which would still not have this piping.

(Following extensive discussion on the foregoing item, a motion was made and seconded to table this item until the API has had an opportunity to work more extensively with the states that are actively involved in the calibration of this equipment.)

LINEAR MEASURES

T.2. *For Metal Tapes.*—In response to a suggestion that this paragraph exclude tension requirements for tapes not actually used under tension, the Committee in its tentative report included a provision for flexible metal tapes of 16 feet or less that are not normally used under tension, and in its final report amended the paragraph to include flexible metal tapes of 25 feet or less.

T.2. *For Metal Tapes.*—Maintenance and acceptance tolerances in excess and in deficiency for metal tapes shall be as shown in table 2. Tapes of 25 feet or over shall be tested at a tension of 10 pounds. Tapes less than 25 feet shall be tested at a tension of 5 pounds. However, flexible metal tapes of 25 feet or less that are not normally used under tension shall be tested with no tension applied. All tapes shall be supported throughout on a horizontal flat surface whenever tested. [Amended 1972]

ODOMETER CODE

In response to a suggestion that paragraph A.1. be amended to include ambulances, hearses, buses, and other such vehicles, the Committee recommends the following amendment to paragraph A.1.:

A.1.—This code applies to odometers that are used or are to be used to determine the charges for rent or hire of passenger vehicles and trucks and buses rated by the manufacturer at 10,000 pounds gross vehicle weight or less. (When official examinations are undertaken on odometers that form the basis for the payment of fees or taxes to, or the preparation of reports for, governmental agencies, and in similar cases, the requirements of this code shall be applied insofar as they are applicable and appropriate to the conditions of such special uses.) [Amended 1972]

In its tentative report, the Committee also added a definition for passenger vehicles, and in its final report included the phrase “recreational vehicles.”

passenger vehicles. Vehicles such as automobiles, recreational vehicles, limousines, ambulances, and hearses.

OTHER ITEMS

1. *Conference Endorsement.*—As announced in the Introduction to the Tentative Reports, the Office of Weights and Measures has referred to the Committee on Specifications and Tolerances the

following four documents for review and recommendation to the Conference for adoption:

- (1) NBS Handbook 105-1, Specifications and Tolerances for Field Standard Weights
- (2) NBS Handbook 105-2, Specifications and Tolerances for Field Standard Measuring Flasks
- (3) NBS Handbook 105-3, Specifications and Tolerances for Metal Volumetric Field Standards
- (4) Scale Manufacturers Association Recommendation on Pit Type Scales for Weighing Vehicles, Axle Loads, and Livestock

The first three documents represent a series of NBS handbooks pertaining to weights and measures reference and field standards. Handbook 105-1 was originally issued in 1969 and is now under revision. Handbooks 105-2 and 105-3 were issued in 1971.

The SMA document was originally developed by this Association for submission to NBS for consideration as a Voluntary Product Standard.

Copies of all of these documents are available from OWM for anyone interested in reviewing them prior to the Conference. Those who review the documents should send in any comments or suggestions they may have to the Conference Executive Secretary.

2. *Cryogenic Liquid-Measuring Devices.*—The Committee recommends that the following Code for Cryogenic Devices be included as a tentative code in Handbook 44. This code is the result of extensive effort and cooperation by the State of California, the Compressed Gas Association, the Cryogenics Division of the National Bureau of Standards Boulder Laboratories, the NBS Office of Weights and Measures, and others over the past several years.

1972

TENTATIVE CODE

CRYOGENIC LIQUID-MEASURING DEVICES

(This Tentative Code has only a trial or experimental status and is not intended to be rigidly enforced. The requirements are designed for observation and study prior to the development and final adoption of a Code for Cryogenic Liquid-Measuring Devices.)

A. APPLICATION

A.1.—This code applies to devices used for the measurement of cryogenic liquids, whether such devices are installed in a permanent location or mounted on a vehicle. Insofar as they are clearly appropriate, the requirements and provisions of the code may be applied to devices used for the measurement of other liquids that do not remain in a liquid state at atmospheric pressures and temperatures.

A.2.—This code does not apply to the following:

- (a) Devices used for dispensing liquefied petroleum gases (for which see Code for Liquefied Petroleum Liquid-Measuring Devices).
- (b) Devices used solely for dispensing a product in connection with operations in which the amount dispensed does not affect customer charges.
- (c) Devices used solely for dispensing liquefied natural gas.

A.3.—See also General Code requirements.

S. SPECIFICATIONS

S.1.—Design of Indicating and Recording Elements and of Recorded Representations.

S.1.1. Primary Elements.

S.1.1.1. General.—A device shall be equipped with a primary indicating element and may also be equipped with a primary recording element.

S.1.1.2. Units.—A device shall indicate, and record if the device is equipped to record, its deliveries in terms of gallons, cubic decimeters (liters), pounds, kilograms, cubic feet of gas (NTP), or decimal or multiple subdivisions thereof.

S.1.1.3. Value of Smallest Unit.—The value of the smallest unit of indicated delivery, and recorded delivery, if the device is equipped to record, shall not exceed the equivalent of:

(a) For Small Delivery Devices

- (1) One-tenth gallon
- (2) One-half cubic decimeter
- (3) One pound
- (4) One-half kilogram
- (5) Ten cubic feet of gas

(b) For Large Delivery Devices

- (1) One gallon
- (2) Five cubic decimeters
- (3) Ten pounds
- (4) Five kilograms
- (5) One hundred cubic feet of gas

S.1.1.4. Advancement of Indicating and Recording Elements.—Primary indicating and recording elements shall be susceptible of advancement only by the normal operation of the device. However, a device may be cleared by advancing its elements to zero, but only if

- (a) the advancing movement, once started, cannot be stopped until zero is reached. Or
- (b) in the case of indicating elements only, such elements are automatically obscured until the elements reach the correct zero position.

S.1.1.5. Return to Zero.—Primary indicating elements shall be readily returnable to a definite zero indication. Means shall be provided to prevent the return of primary indicating elements, and of primary recording elements if these are returnable to zero, beyond their correct zero position.

S.1.2. Graduations.

S.1.2.1. Length.—Graduations shall be so varied in length that they may be conveniently read.

S.1.2.2. Width.—In any series of graduations, the width of a graduation shall in no case be greater than the width of the minimum clear interval between graduations, and the width of main graduations shall be not more than 50 percent greater than the width of subordinate graduations. Graduations shall in no case be less than 0.008 inch in width.

S.1.2.3. Clear Interval Between Graduations.—The clear interval shall be not less than 0.04 inch. If the graduations are not parallel, the measurement shall be made

- (a) along the line of relative movement between the graduations and the end of the indicator, or
- (b) if the indicator is continuous, at the point of widest separation of the graduations.

(See also S.1.3.6)

S.1.3. Indicators.

S.1.3.1. Symmetry.—The index of an indicator shall be symmetrical with respect to the graduations with which it is associated and at least throughout that portion of its length that is associated with the graduation.

S.1.3.2. Length.—The index of an indicator shall reach to the finest graduations with which it is used, unless the indicator and the graduations are in the same plane, in which case the distance between the end of the indicator and the ends of the graduations, measured along the line of the graduations, shall be not more than 0.04 inch.

S.1.3.3. Width.—The width of the index of an indicator in relation to the series of graduations with which it is used shall be not greater than

- (a) the width of the widest graduation, and
- (b) the width of the minimum clear interval between graduations.

When the index of an indicator extends along the entire length of a graduation, that portion of the index of the indicator that may be brought into coincidence with the graduation shall be of the same width throughout the length of the index that coincides with the graduation.

S.1.3.4. Clearance.—The clearance between the index of an indicator and the graduations shall in no case be more than 0.06 inch.

S.1.3.5. Parallax.—Parallax effects shall be reduced to the practicable minimum.

S.1.3.6. Travel of Indicator.—If the most sensitive element of the primary indicating element utilizes an indicator and graduations, the relative movement of these parts corresponding to the smallest indicated value shall be not less than 0.20 inch.

S.1.4. Computing-Type Devices

S.1.4.1. Printed Ticket.—Any printed ticket issued by a device of the computing type on which there is printed the total computed price shall have printed clearly thereon also the total quantity of the delivery and the price per unit.

S.1.4.2. Money-Value Computations.—Money-value computations shall be of the full-computing type in which the money value at a single unit price, or at each of a series of unit prices, shall be computed for every delivery within either the range of measurement of the device or the range of the computing elements, whichever is less. Value graduations shall be supplied and shall be accurately positioned. The value of each graduated interval shall be 1 cent.

S.1.4.3. Money Values.—Mathematical Agreement—Any digital money-value indication and any recorded money value on a computing-type device shall be in mathematical agreement with its associated quantity indication or representation to within one cent of money value.

S.2. Design of Measuring Elements.

S.2.1. Vapor Elimination.—A pressure activated (pumpless) metering system shall be equipped with an effective vapor eliminator or other effective means to prevent the passage of vapor through the meter where such vapor will cause overregistration of or tend to damage or degrade the meter. Vent lines from the vapor eliminator shall be made of metal tubing or some other suitably rigid material.

S.2.2. Directional Flow Valves.—Valves intended to prevent reversal of flow shall be automatic in operation.

S.2.3. Maintenance of Liquid State.—A device shall be so designed that the product being measured will remain in a liquid state during passage through the meter.

S.2.4. Automatic Temperature or Density Compensation.—A device may be equipped with an adjustable automatic means for adjusting the indication and registration of the measured quantity of product to the quantity at the normal boiling point of the specific cryogenic product.

S.2.5. Provision for Sealing.—Adequate provision shall be made for applying security seals in such a manner that no adjustment or interchange may be made of

- (a) any measurement element,
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries, and
- (c) any automatic temperature or density compensating system.

Any adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

S.3. Design of Discharge Lines and Discharge Line Valves.

S.3.1. Diversion of Measured Liquid.—No means shall be provided by which any measured liquid can be diverted from the measuring chamber of the meter or the discharge line therefrom, except that a manually controlled outlet that may be opened for purging or draining, or for the purpose of precooling the metering system, shall be permitted. Effective means shall be provided to prevent the passage of liquid through any such outlet during normal operation of the device and to indicate clearly and unmistakably when the valve controls are so set as to permit passage of liquid through such outlet.

S.3.2. Discharge Hose.—The discharge hose of a device shall be of the completely draining dry-hose type.

S.4. Marking Requirements.

S.4.1. Limitation of Use.—If a meter is intended to measure accurately only liquids having particular properties, or to measure accurately only under specific installation or operating conditions, or to measure accurately only when used in conjunction with specific accessory equipment, these limitations shall be clearly and permanently stated on the meter.

S.4.2. Discharge Rates.—A meter shall be marked to show its designed maximum and minimum discharge rates.

S.4.3. Temperature or Density Compensation.—If a device is equipped with an automatic temperature or density compensator, the primary indicating elements, recording elements, and recorded representation shall be clearly and conspicuously marked to show that the quantity delivered has been adjusted to the quantity at the normal boiling point of the specific cryogenic product.

N. NOTES

N.1. Test Liquid.—A meter shall be tested with the liquid to be commercially measured or with a liquid of the same general physical characteristics.

N.2. Vaporization and Volume Change.—Care shall be exercised to reduce to a minimum vaporization and volume changes. When testing by weight the weigh tank and transfer systems shall be precooled to liquid temperature prior to the start of the test to avoid the venting of vapor from the vessel being weighed.

N.3. Test Drafts.

N.3.1. Gravimetric Test.—Weight test drafts shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate, and shall in no case be less than 2,000 pounds.

N.3.2. Transfer Standard Test.—When comparing a meter with a calibrated transfer standard, the test draft shall be equal to at least the amount delivered by the device

in two minutes at its maximum discharge rate, and shall in no case be less than 50 gallons or equivalent thereof.

N.4. Density.—Temperature and pressure of the metered test liquid shall be measured during the test for the determination of density or volume correction factors when applicable. Liquid Density and Volume Correction Factors (with respect to temperature and pressure) published in NBS Technical Note 361, Revised, *Liquid Densities of Oxygen, Nitrogen, Argon, and Parahydrogen*, shall apply:

N.5. Testing Procedures.

N.5.1. Normal Tests.—The “normal” tests of a device shall be made over a range of discharge rates that may be anticipated under the conditions of installation.

N.5.2. Special Tests.—Any test except as set forth in N.5.1. shall be considered a special test. Tests shall be conducted, if possible, to evaluate any special elements or accessories attached to or associated with the device. A device shall be tested at a minimum discharge rate of

- (a) 50 percent of the maximum discharge rate developed under the conditions of installation, or the minimum discharge rate marked on the device, whichever is less, or
- (b) the lowest discharge rate practicable under conditions of installation.

“Special” tests may be conducted to develop any characteristics of the device which are not normally anticipated under the conditions of installation as circumstances require.

N.6. Temperature Corrections.—Corrections shall be made for any changes in volume resulting from the differences in liquid temperatures between time of passage through the meter and time of volumetric determination of test draft.

T. TOLERANCES

T.1. Tolerances Values.—Maintenance and acceptance tolerances for cryogenic liquid-measuring devices, whether or not a device is equipped with an automatic temperature or density compensator, shall be as follows:

T.1.1. On Normal Tests.—The maintenance tolerance on “normal” tests shall be four percent (4%) per indicated unit on underregistration and two percent (2%) per indicated unit on overregistration. The acceptance tolerance on “normal” tests shall be two percent (2%) per indicated unit on underregistration and one percent (1%) per indicated unit on overregistration.

T.1.2. On Special Tests.—The maintenance and acceptance tolerances shall be four percent (4%) per indicated unit on underregistration and two percent (2%) per indicated unit on overregistration.

UR. USER REQUIREMENTS

UR.1. Installation Requirements.

UR.1.1. Discharge Rate.—A device shall be so installed that the actual maximum discharge rate will not exceed the rated maximum discharge rate. If necessary, means for flow regulation shall be incorporated in the installation.

UR.1.2. Length of Discharge Hose.—The discharge hose shall be of such a length and design as to keep vaporization of the liquid to a minimum.

UR.1.3. Maintenance of Liquid State.—A device shall be so installed and operated that the product being measured shall remain in the liquid state during passage through the meter.

UR.2. Use Requirements.

UR.2.1. Return of Indicating and Recording Elements to Zero.—The primary indicating elements (visual) and the primary recording elements, if these are returnable to zero, shall be returned to zero before each delivery.

UR.2.2. Condition of Discharge System.—The discharge system, up to and including the meter, shall be precooled to liquid temperatures before a “zero” condition is established prior to the start of a commercial delivery, where vapor will cause overregistration of or tend to damage or degrade the meter.

UR.2.3. Vapor Return Line.—No vapor return line from the supplier’s tank to the receiving container shall be used during a metered delivery.

UR.2.4. Drainage of Discharge Line.—Upon completion of a delivery, the vendor shall leave the discharge line connected to the receiving container with the valve adjacent to the meter in the closed position and the valve at the discharge line outlet in the open position for a period of at least

- (a) one minute for small delivery devices, and
- (b) three minutes for large delivery devices,

to allow vaporization of some product in the discharge line to force the remainder of the product in the line to flow into the receiving container.

UR.2.5. Conversion Factors of Values.—When the metered cryogenic liquids are expressed in terms of pounds, kilograms, or cubic feet in addition to gallons or liters, liquid density, pressure, temperature, and unit conversion values of NBS Technical Note 361, Revised, *Liquid Densities of Oxygen, Nitrogen, Argon, and Parahydrogen*, shall be used. For unit conversions:

- (a) lb/gal values shall be used as the pound equivalent when converting from gallons to pounds;
- (b) NTP Volume Correction Factor Value shall be used as the gas equivalent at NTP when converting from liquid volume (gallons) to the equivalent gas volume (cubic feet); and
- (c) Liquid Volume Correction Factor Values shall be used to adjust the measured liquid volume to NBP.

UR.2.6. Temperature or Density Compensation.

UR.2.6.1. Use of Automatic Temperature or Density Compensators.—If a device is equipped with an automatic temperature or density compensator, this shall be connected, operable, and in use at all times. Such automatic temperature or density compensator may not be removed, nor may a compensated device be replaced with an uncompensated device, without the written approval of the weights and measures authority having jurisdiction over the device.

UR.2.6.2 Written Invoices.—Any written invoice or printed ticket based on a reading of a device that is equipped with an automatic temperature or density compensator shall have shown thereon that the quantity delivered has been adjusted to the quantity at the normal boiling point of the specific cryogenic product.

UR.2.6.3. Printed Ticket.—Any printed ticket issued by a device of the computing type on which there is printed the total computed price, the total quantity of the delivery, or the price per unit, shall have shown thereon also the other two values (either printed or in clear hand script).

UR.2.6.4. Ticket in Printing Device.—A ticket shall not be inserted into a device equipped with a ticket printer until immediately before a delivery is begun, and in no case shall a ticket be in the device when the vehicle is in motion while on a public street, highway, or thoroughfare.

DEFINITIONS OF TERMS

The terms defined here have a special and technical meaning when used in the Code for Cryogenic Liquid-Measuring Devices.

cryogenic liquids. Fluids whose normal boiling point is below 123 kelvin (-238°F).

cryogenic liquid-measuring device. A system including a mechanism or machine of the meter type designed to measure and deliver cryogenic liquids in the liquid state by a definite quantity whether installed in a permanent location or mounted on a vehicle. Means may or may not be provided to indicate automatically, for one of a series of unit prices, the total money value of the liquid measured.

cubic foot. A standard cubic foot of a cryogenic liquid in gaseous state is defined as that volume of gas which, at a temperature of 70°F and under a pressure of 14.696 pounds per square inch absolute, occupies one cubic foot.

dry hose type. A type of device in which it is intended that the discharge hose be completely drained following the mechanical operations involved in each delivery.

large delivery device. Devices used primarily for single deliveries greater than 100 gallons, 1,000 pounds, or 10,000 cubic feet.

liquid volume correction factor. A correction factor used to adjust the liquid volume of a cryogenic product at the time of measurement to the liquid volume at NBP.

NBP. Normal boiling point of cryogenic liquid at 14.696 psia.

NTP. Normal temperature and pressure of 70°F and 14.696 psia, respectively.

NTP density and volume correction factor. A correction factor used to adjust the liquid volume of a cryogenic product at the time of measurement to the gas equivalent at NTP.

small delivery device. Any device other than a large delivery device.

transfer standard. A measurement system designed for use in proving and testing cryogenic liquid-measuring devices.

The Committee expresses its appreciation to all who have contributed to and participated in the committee deliberations. The Committee urges all weights and measures officials and other affected parties to promptly communicate with the Committee on all matters of concern. It is only in this manner that the Committee can consider all problems and fully evaluate all situations prior to issuing its reports.

D. E. KONSOER, *Chairman*, Wisconsin

T. F. BRINK, Vermont

J. C. MAYS, Dade County, Florida

K. J. SIMILA, Oregon

W. S. WATSON, California

O. K. WARNLOF, *Staff Assistant*, NBS

H. F. WOLLIN, *Exec. Secy.*, NCWM

Committee on Specifications and Tolerances

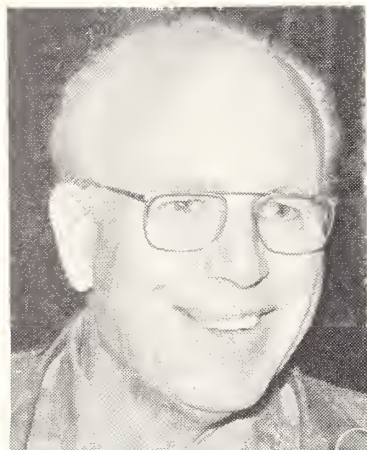
(Mr. Konsoer moved for adoption, and after a second from the floor, the report of the Committee on Specifications and Tolerances as amended was adopted in its entirety by the Conference by voice vote.)

(On motion of the committee chairman, seconded from the floor, the Conference by voice vote authorized the Executive Secretary to make any appropriate editorial changes in the language adopted by the Conference, so long as the requirements thus adopted are strictly adhered to.)

REPORT OF THE EXECUTIVE COMMITTEE

Presented by E. H. BLACK, *Chairman*, Director of Weights and Measures, Ventura County, California

(Wednesday, July 12, 1972)



The Executive Committee of the National Conference on Weights and Measures met in open session on Monday, July 10, 1972, at 11:00 a.m. Discussion was held on the following items:

1. *Plans for the 58th National Conference.*—The Executive Committee presented the following general arrangements for the 58th National Conference:

Site:	Minneapolis, Minnesota
Hotel:	Radisson
Dates:	July 22-27, 1973
Rates:	\$17 single; \$21 double; \$50-up suites

The Committee is in agreement with these arrangements and recommends action accordingly by the Incoming Executive Committee.

2. *Future Conference Sites*—In line with the approved plan of holding the Conference each even year in Washington and outside of Washington each odd year, the Committee was advised by the Executive Secretary that serious consideration is being given to holding the Conference in San Diego, California in 1975. Texas, as well as several other locations, is being considered for 1977. The Committee agrees with these preliminary plans.

3. *Format for Conference Program.*—The Committee feels that this year's format of holding open forum sessions will greatly increase the effectiveness of the Conference and urges all delegates to voice their viewpoints by writing to the Incoming Executive Committee Chairman during the year. Endorsement is given to the plan of inviting foreign weights and measures officials to attend and participate in the Conference.

4. *Home Study Course.*—The Committee strongly recommends that Conference endorsement be given to the new Home Study Course and that weights and measures officials take advantage of the availability of this material to improve themselves professionally.

5. *Report of Associate Membership Committee.*—Report given by M. S. Godsman, Committee Chairman.

The Associate Membership Committee held three meetings during the past year. The first meeting was during the Southern Conference at San Antonio; the second at the time of the interim meeting of the Specifications and Tolerances Committee at the National Bureau of Standards, Gaithersburg, Maryland; and the third on Monday of this Conference week. Several items which will result in positive action by the Committee were discussed at these meetings.

At the meeting in San Antonio during October, plans were made and executed for a coordinated effort by industry to assist and support the NBS Office of Weights and Measures in securing additional funds for future program expansion.

In November, the Committee, with the assistance of Everett Black and Earl Prideaux, and other officials of the Western Weights and Measures Association, assisted in the coordination of an industry appeal for the Ray Rebuffo Educational Fund.

The meeting in Gaithersburg, Maryland, in February was primarily for the purpose of discussing plans for a Conference reception on Wednesday night, July 12, in accordance with new Conference format. Arrangements for the Industry Equipment Display and plans for the 1973 Conference were also reviewed with Harold Wollin.

On May 3, the Chairman, M. S. Godsman, C. W. Campbell, Secretary-Treasurer, and J. F. Speer met with Mr. Wollin and personnel of the Shoreham Hotel to make final plans for the Wednesday night reception. Mr. Campbell corresponded with industry for appraisal of plans and to solicit funds. The Monday meeting at this Conference was to finalize actions by industry hosts at the reception and discuss other matters before the Committee. Recommendations as to the membership of this Committee for next year will be presented to the Incoming Executive Committee at its meeting on Friday morning.

Special recognition should be given to Chuck Campbell, Toledo Scale Company, for his outstanding contributions and effort in the work of this Committee. Our thanks also to Everett Black and Harold Wollin for their assistance during this past year.

6. *Changes in Committee Structure.*—In the interest of strengthening the Conference's ability to serve its members, and to bring about uniformity, it was suggested during the open meeting that consideration be given to appointing subcommittees within the Executive Committee that would be given responsibility in areas such as policy, program finances, etc. The Committee would like to go on record as highly endorsing this suggestion. To provide the necessary continuity for the subcommittee structure, the Committee recommends that the Executive Committee be made a standing Conference

committee with membership increased to twelve members and put on a rotation basis of three-year terms. The Committee further recommends that the Incoming Executive Committee be directed to take the necessary action to properly structure the Conference Organization and Procedures to reflect these changes.

The Committee wishes to thank those delegates who offered written comments on the items under consideration and those attending the open meeting for their comments and guidance.

E. H. BLACK, *Chairman*
E. W. BALLENTINE
W. E. CZAIA
J. H. LEWIS
H. K. SHARP
C. C. MORGAN
J. I. MOORE
R. W. BUCHANAN
M. DENNIS
G. L. JOHNSON
J. H. JOHNSON
W. B. KELLY
A. J. LADD
J. L. O'NEILL
W. I. THOMPSON
C. WOOTEN
C. S. ZMUDZINSKI
R. N. SMITH, *Staff Assistant, NBS*
H. F. WOLLIN, *Exec. Secy., NCWM*

Executive Committee

(Mr. Black moved for adoption, and after a second from the floor, the report of the Executive Committee was adopted in its entirety by the Conference by voice vote.)

REPORT OF THE COMMITTEE ON NOMINATIONS

Presented by MATT JENNINGS, *Chairman*, Director, Division of Marketing, Tennessee Department of Agriculture

(Thursday, July 13, 1972)



The Committee on Nominations met on Tuesday, July 11, for the purpose of selecting a slate of nominees for all elective offices and for the ten elective memberships of the Executive Committee. In the selection of nominees from the active membership, consideration was given to attendance records, geographical distribution, Conference participation, and other factors deemed by the Committee to be important.

The Committee on Nominations submits the following names in nomination for office to serve during the ensuing year and at the 58th National Conference on Weights and Measures:

Chairman: G. L. Johnson, Kentucky.

Vice Chairmen: J. R. Bird, New Jersey; G. L. Delano, Montana; R. A. Tharalson, Minnesota; H. E. Smith, San Mateo County, California.

Treasurer: C. C. Morgan, Gary, Indiana.

Chaplain: J. I. Moore, North Carolina.

Executive Committee: J. C. Blackwood, Arkansas; J. C. Boyd, Iowa; W. T. Deloge, Fitchburg, Massachusetts; S. E. Favour, Phoenix, Arizona; K. G. Hayden, District of Columbia; R. W. Horger, Santa Clara County, California; M. L. Kinlaw, North Carolina; C. B. Noblin, Mississippi; C. H. Vincent, Texas; R. W. Walker, Clark County, Indiana.

Matt Jennings, *Chairman*, Tennessee
S. H. CHRISTIE, JR., New Jersey
C. C. MORGAN, Gary, Indiana
J. E. BOWEN, Newton, Massachusetts
J. D. WALTON, Dallas, Texas
J. C. BOYD, Iowa
F. D. MORGAN, Utah

Committee on Nominations

(There being no further nominations from the floor, nominations were declared closed and the officers nominated by the Committee were elected unanimously by voice vote.)

REPORT OF THE COMMITTEE ON RESOLUTIONS

Presented by N. M. Ross, *Acting Chairman*, Chief Weights and Measures Inspector, City of Omaha, Nebraska

(Friday, July 14, 1972)



The Committee on Resolutions wishes to express the appreciation of the 57th National Conference on Weights and Measures to all who contributed in any way toward the conduct of a successful meeting. A special vote of thanks is extended to the following:

1. To the Honorable Robert W. Cairns, Deputy Assistant Secretary for Science and Technology, Department of Commerce, for his excellent keynote address and interest in the concerns of the National Conference on Weights and Measures.
2. To Dr. Lawrence M. Kushner, Acting Director of the National Bureau of Standards, for his excellent presentation and his recognition of the importance of weights and measures administration in the United States.
3. To Dr. F. Karl Willenbrock, Director, Institute for Applied Technology, National Bureau of Standards, for his participation in and active support of the National Conference on Weights and Measures.
4. To Everett Black, Conference Chairman, for his efforts over the year.
5. To all participants in the forums of the Conference for their valuable contributions to the program.
6. To all committees for having given generously of their time and efforts in the preparation and presentation of their reports.
7. To the governing officials of all state and local jurisdictions for their manifest interest in weights and measures work.
8. To Mr. David S. Hinton, Assistant Convention Sales Manager, and the staff of the Shoreham Hotel for their many courtesies in contributing to the enjoyment and comforts of the delegates.
9. To representatives of business and industry for their liberal cooperation and hospitality.
10. To the staff of the National Bureau of Standards for planning and administering the many details involved in the work and program of the National Conference.

The following resolutions are presented in their entirety for consideration of the members of the Conference:

Resolution on OIML

Whereas, the National Conference on Weights and Measures, on behalf of its state, county and local member officials, and associated representatives of business, industry, consumer organizations and the Federal Government urgently recommends that the United States become a member of the Organization of International Legal Metrology (OIML), and

Whereas, in the view of the Conference, U.S. participation and leadership can greatly assist in two specific areas: First, harmonization of weights and measures legislation and technology will assist the private sector in competing internationally without encountering non-tariff restraints to trade, based on national quantity regulations; second, and equally important, our citizens may be assured that ever-increasing amounts of imported goods are represented accurately and honestly at the point of foreign manufacture or packaging, and

Whereas, it is our belief that cooperation with foreign weights and measures officials, through membership in OIML, will yield positive results similar in effectiveness to those we attribute to our own organization, the National Conference on Weights and Measures: Therefore, be it

Resolved that for this reason, we solicit the Senate of the United States of America to favor the treaty authorizing U.S. membership in OIML.

Resolution on the Metric System

Whereas, the National Conference on Weights and Measures and its membership of state and local weights and measures officials unanimously support the adoption of the metric system as the legal system of measurement in the United States, and

Whereas, the legal adoption of the metric system by the United States is under active consideration and that such adoption will necessitate a program of metric education at all levels of our education system: Therefore, be it

Resolved that the National Conference on Weights and Measures strongly urges the National Education Association to encourage its membership to begin a program of instruction in the metric system as a regular part of the curriculum at all levels of the education system.

N. M. ROSS, *Acting Chairman*, Omaha, Nebr.
J. M. CHOAMIN, Middlesex Co., N. J.
A. W. FENGER, Minnesota
L. A. GREDY, Indiana
D. L. GRIFFITH, West Virginia
R. W. HORGER, Santa Clara County, Calif.

Committee on Resolutions

(On motion of the Committee Chairman, seconded from the floor, the report of the Committee on Resolutions was adopted by voice vote.)

REPORT OF THE AUDITING COMMITTEE

Presented by R. J. SILCOCK, *Chairman*, County Inspector of Weights and Measures, Vigo County, Indiana

(Friday, July 14, 1972)



The Auditing Committee of the 57th National Conference on Weights and Measures met on July 11, 1972, for the purpose of reviewing the financial records of the Conference Treasurer, C. C. Morgan. The Committee finds these records to be in accordance with the Conference procedure and correct.

R. J. SILCOCK, *Chairman*, Vigo Co., Ind.
J. C. BLACKWOOD, Arkansas
T. A. CONSIDINE, Baltimore, Maryland
R. N. SMITH, *Staff Assistant*, NBS

Committee on Auditing

(On motion of the Committee Chairman, seconded from the floor, the report of the Auditing Committee was adopted by voice vote.)

REPORT OF THE TREASURER

Presented by C. C. Morgan, City Sealer of Weights and Measures, Gary, Indiana

(Friday, July 14, 1972)



Balance on hand July 1, 1971 \$ 1,481.82

RECEIPTS:

Registration, 349 at \$25.00	\$8,725.00
Trade Party	2,230.00
Luncheon Tickets	1,603.00
 Subtotal	 12,558.00
 Total	 \$14,039.82

DISBURSEMENTS:

Franklin Press	\$ 21.00
Atwood Transport Lines, Inc.	222.00
The Shoreham Hotel, Reception, Luncheon, Dance, Executive Committee, Breakfast, Speaker's and Meeting Room Expense	5,908.25
C. W. Campbell, Associate Membership Committee on Specifications and Tolerances	300.00
1,502.00	
Committee on Education, Admin- istration and Consumer Affairs	1,361.85
Committee on Laws and Regulations	1,211.60
Committee on Liaison with the Federal Government	632.40
Conference Chairman	325.00
Franklin Press, Printing	289.00
Dr. Shotzberger and Mr. Brooks, Speaker's Expense	312.00
Ladies	4.00
Miscellaneous Registration and Operating Expense, Cash	103.75
Bank Charges	6.94
 Subtotal	 \$12,199.79
 Balance on hand July 1, 1972	 \$ 1,840.03

Depository: Bank of Indiana

(Signed) C. C. Morgan, Treasurer

(On motion of the Treasurer, seconded from the floor, the Report of the Treasurer was adopted by the Conference.)

SUMMARY OF THE INCOMING EXECUTIVE COMMITTEE MEETING

Presiding Officer, G. L. JOHNSON, *Conference Chairman*, Director,
Division of Weights and Measures,
Kentucky Department of Agriculture

(Friday Morning, July 14, 1972)



The newly elected Executive Committee held a breakfast meeting on Friday morning for the purpose of considering plans for the 58th National Conference on Weights and Measures and to discuss and take action on matters referred to it by the outgoing Executive Committee. A summary of the discussion and decisions that were reached follow:

1. The Committee was pleased to have Dr. F. Karl Willenbrock, Director, Institute for Applied Technology, NBS, attend the meeting and participate in the discussion. Dr. Willenbrock commented on matters pertaining to the relationship of the National Bureau of Standards to the National Conference and expressed his support of the activities and objectives of the Conference. He discussed various steps that were being taken at NBS to analyze weights and measures programs and to determine improved ways and means by which the states could be assisted in meeting program needs.
2. The Committee adopted a motion to hold the 58th Conference in Minneapolis, Minnesota, at the Radisson Hotel on July 22-27, 1973.
3. The Executive Secretary was instructed to proceed with plans and arrangements for holding the National Conference in Washington, D. C., in 1974 and in San Diego, California, in 1975. The Committee also discussed preliminary plans for the 1976 Conference in Washington, D. C., and considered ways in which the Conference program could correlate with the nation's bicentennial celebration. A recommendation was made for the State of Texas to be considered as a possible site for the 1977 Conference.
4. A motion was adopted to retain the present registration fee of \$25 for the 1973 Conference.
5. The Committee authorized the Executive Secretary to make necessary arrangements for the interim meetings of the four Conference standing committees. The payment of expenses incurred in holding the interim meetings and other committee expenses as approved by the Executive Secretary was also authorized.
6. The Committee was in agreement that the program for the 58th National Conference should follow the general format of the past

several years. No decision was made on the selection of topics and speakers or on the scheduling of events, as these will be determined at a later date, depending on developments in the field of weights and measures during the coming months. The Committee will encourage members of the Conference to send in suggestions as to program topics and speakers.

7. Mr. Lee J. Moremen, Chairman of the Associate Membership Committee, met with the Executive Committee to discuss matters relating to the affairs of the associate members of the Conference. He stated that the associate membership is very pleased with the excellent cooperation and working relationship that exists between industry members and weights and measures officials of the National Conference. He offered the assistance of his Committee in working with the Executive Committee in the development and conduct of the Conference program for next year.

8. The Executive Committee supports the action that was taken this year with respect to the endorsement by the National Conference of various recommended publications such as handbooks, "standards," and other documents relating to subjects in the field of weights and measures. The principal aim of such endorsement is to foster nationwide recognition and acceptance of technical and administrative publications containing weights and measures requirements and procedures. The Committee views this action as another important step that should continue to be taken by the Conference in promoting uniformity in weights and measures programs.

9. In response to a recommendation by the outgoing Executive Committee, the Executive Secretary was directed to study a change in the Conference Organization and Procedures that would provide for the Executive Committee to be made a standing committee of the Conference and to establish subcommittees within the Executive Committee to be responsible for such matters as policy, programming, finances, etc. The Committee is to receive a report on this study in the ensuing year for consideration and action at the next annual meeting of the Conference.

PERSONS ATTENDING THE CONFERENCE

State, City, and County
Weights and Measures Officials

ALABAMA

- State A. C. DISMUKES, Inspector of Weights & Measures,
State Dept. of Agriculture, P. O. Box 3336,
Montgomery 36109 (205: 269-7721)
- City Sealers of Weights and Measures:
- Birmingham 35203 W. B. HARPER, Bur. of Weights and Measures, 710
20th St., N. (205: 252-0251)
HOWARD ARCHER, Inspector

ARKANSAS

- State J. C. BLACKWOOD, Director, Weights & Measures Div.,
Dept. of Commerce, P. O. Box 4506, Asher Station,
Little Rock 72204 (501: 371-1759)
- B. W. SULLIVANT, Laboratory Metrologist, 4608 W.
61st St., Little Rock 72209 (501: 562-4384)

CALIFORNIA

- State W. S. WATSON, Chief, Bureau of Weights & Measures,
Dept. of Agriculture, 1220 N St., Sacramento 95814
(916: 445-7001)
- County Sealers of Weights and Measures:
- Alameda P. E. NICHOLS, 333 5th St., Oakland 94607 (415: 874-
6736)
- San Diego S. R. MILLER, P. O. Box 588, San Diego 92112 (714:
239-7711, Ext. 336)
- San Mateo H. E. SMITH, 702 Chestnut St., Redwood City 94063
(415: 369-1441, Ext. 2227)
- Santa Barbara J. E. WILEY, JR., 1108 Santa Barbara St., Santa
Barbara 93104 (805: 966-1611, Ext. 353)
- Santa Clara R. W. HORGER, 409 Mathew St., Santa Clara 95050
(408: 299-2105)
- Solano S. BURK, 560 Fairgrounds Dr., Vallejo 94590 (707:
644-1133, Ext. 284, 285)
- Ventura E. H. BLACK, 608 El Rio Dr., Oxnard 93030 (805: 487-
5511, Ext. 4460).

COLORADO

- State E. PRIDEAUX, Chief, Weights & Measures Section,
Div. of Inspection & Consumer Services, 3130 Zuni
St., Denver 80211 (303: 892-2845)

CONNECTICUT

- State W. B. KELLEY, Senior Inspector, Weights & Measures
Div., Department of Consumer Protection, State
Office Bldg., Rm. G-17, Hartford 06115 (203: 566-
4778)

J. SMUTNICK, Senior Inspector (203: 566-3388)
A. M. NELSON, Metrologist (203: 566-5230)

City Sealers of Weights and Measures:

Hartford 06103..... NATHAN KALECHMAN, City Hall, 550 Main St. (203: 566-6457)
Middletown 06457 GUY J. TOMMASI, City Hall (203: 347-4671)

DISTRICT OF COLUMBIA

District K. G. HAYDEN, Chief, Weights, Measures & Markets Branch, Bldg. Div., Bur. Building, Housing & Zoning, Dept. Economic Development, 1104 U St., S.E., Washington, D.C. 20020 (202: 629-4661)
Inspectors D. K. FORBES, Supervisor
J. T. BENNICK
W. A. MATTHEWS
E. E. MAXWELL
W. W. WELLS

FLORIDA

State S. D. ANDREWS, Director, Div. of Standards, Dept. of Agriculture, Mayo Bldg., Rm. 107, Tallahassee 32304 (904: 599-7333)
C. WOOTEN, Chief, Bur. of Weights and Measures
STAN J. DARSEY, Asst. Chief (904: 599-7339)

County Sealers of Weights and Measures:

Dade..... J. C. MAYS, Consumer Protection Div., Justice Bldg. Rm 903, 1351 N. W. 12th St., Miami 33125 (305: 377-5111)

GEORGIA

State O. C. MITCHELL, Asst. Director, Consumer Protection, Dept. of Agriculture, 19 Hunter St., Atlanta 30324 (404: 656-3628)
T. E. KIRBY, Asst. Director, Weights & Measures Div. Dept. of Agriculture, Atlanta Farmers Market, Forest Park 30050 (404: 361-6764)

HAWAII

State G. E. MATTIMOE, Deputy Dir., Div. of Weights & Measures, Dept. of Agriculture, 1428 S. King St., P. O. Box 5425, Honolulu 96814 (808: 941-3071)

IDAHO

State L. D. HOLLOWAY, Supvr., Wts. & Meas. Div., Dept. of Agriculture, 2150 Warm Springs Ave., P.O. Box 790, Boise 83701 (208: 384-2345)

ILLINOIS

State J. P. KIRBY, Supvr., Feeds, Fertilizers, & Standards,
Dept. of Agriculture, 531 E. Sangamon, Springfield
62706 (217: 525-7655)

City Sealers of Weights and Measures:

Chicago 60602 T. R. HELLER, Consumer Services Supervisor, Dept.
of Consumer Sales, Weights & Measures, Rm. 808
City Hall, 121 N. LaSalle St. (312: 744-4008)
J. F. NOLAN, Asst. Comm'r (312: 744-4006)

INDIANA

State L. A. GREY, Dir., Div. of Weights & Measures, State
Board of Health, 1330 W. Michigan St., In-
dianapolis 46206 (317: 633-6860)

County Inspectors of Weights and Measures:

Clark R. W. WALKER, Rm. 314 City-County Bldg., Jef-
fersonville 47130 (812: 283-4451)
Gibson W. R. SEVIER, Court House Annex, Princeton 47570
(812: 385-2426)
Grant H. CLINE, P. O. Box 421, Marion 46952 (317: 664-5239)
Johnson W. E. HANDY, County Court House, Franklin 46131
(317: 736-5774)
Lake N. BUCUR, 119 E. 58th Ct., Apt. 56, Merrillville 46410
(219: 981-3261)
Laporte E. M. HANISH, 119 Tilden Ave., Michigan City 46360
(219: 879-9486)
Madison C. W. MOORE, City Bldg., Anderson 46051 (317: 534-
3328)
Marshall G. W. SCHULTZ, Rt. 1, Bremen 46506 (219: 546-2949)
Porter R. H. CLAUSSEN, Rm. 13 Court House, Valparaiso
(219: 462-5751)
St. Joseph C. S. ZMUDZINSKI, County-City Bldg., South Bend
46601 (219: 284-9751)
Tippecanoe W. McMURRAY, County Court House, P. O. Box 444,
Lafayette 47902 (317: 742-0626)
Vigo R. J. SILCOCK, Court House, Rm. 4, Terre Haute 47885
(812: 232-5746)

City Sealers of Weights and Measures:

Anderson 46011 E. GADBERRY, P. O. Box 2100 (317: 646-5814)
Gary 46407 CLEO C. MORGAN, 1100 Massachusetts St. (219: 944-
6566)
Indianapolis 46204 F. L. BRUGH, Rm. G-6, City-County Bldg. (317: 633-
3733)
New Albany 47150 O. O. BUSCHMANN, Dep. Inspector
W. ROSS COPELAND, Dep. Inspector
W. J. ROBERTS, JR., Dep. Inspector
E. G. SILVER, P. O. Box 362, City-County Bldg., Rm.
325 (812: 945-5357)
South Bend 46621 B. S. CICHOWICZ, 701 W. Sample St. (219: 284-9297)

IOWA

State J. C. BOYD, Chief, Standard Control, Weights &
Measures Div., Consumer Protection Service, Dept.
of Agriculture, Capitol Bldg., Des Moines 50319
(515: 281-5716)

KANSAS

State J. L. O'NEILL, State Sealer, Div. of Weights & Measures, State Board of Agriculture, State Office Bldg., Topeka 66612 (913: 296-3846)

City Sealers of Weights and Measures:

Kansas City 66101 D. L. LYNCH, City Hall, 805 N. 6th St. (913: 371-3300)

KENTUCKY

State G. L. JOHNSON, Director, Div. of Weights and Measures, Department of Agriculture, 106 W. Second St., Frankfort 40601 (502: 564-4870)

MAINE

State H. D. ROBINSON, Deputy State Sealer, Div. of Consumer Protection, Dept. of Agriculture, State Office Bldg., Augusta 04330 (207: 289-3841)
GAYLON KENNEDY, Metrologist

MARYLAND

State R. L. THOMPSON, Supt., Office of Weights & Measures, State Board of Agriculture, 360 Symons Hall, Univ. of Maryland, College Park 20742 (301: 454-3551)
L. H. DEGRANGE, Field Supervisor (301: 454-3552)
R. W. GLENDENNING, Inspector (301: 778-2237)

County Sealers of Weights and Measures:

Montgomery P. L. PETERSON, Wts. & Meas. Unit, County Office Bldg., 108 S. Perry St., Rockville 20850 (301: 279-1443)

CHARLES D. COOLEY, Inspector
W. RICE, Inspector

Prince George's R. J. CORD, County Service Bldg., Rm. 113, Hyattsville 20781 (301: 779-3850, Ext. 346)
R. O'CONNOR, Deputy Sealer
D. SAVAGE, Deputy Sealer

City Sealers of Weights and Measures:

Baltimore 21202 T. A. CONSIDINE, Division of Tests, 1103 Municipal Bldg. (301: 752-2000, Ext. 2845)

MASSACHUSETTS

State E. H. STADOLNIK, Head Administrative Asst., Executive Office of Consumer Affairs, Div. of Stds., State House, Rm. 194, Boston 02133 (617: 727-3483)

City Sealers of Weights and Measures:

Agawam 01001 L. D. DRAGHETTI, Town Administration Bldg., 36 Main St. (413: 786-0400)

Everett 02149 L. L. ELLIOTT, Rm. 2, City Hall (617:389-2100)

Fall River 02720 P. P. SULLIVAN, City Hall, North

Fitchburg 01420	W. T. DELOGE, City Hall, Main St. (617: 343-7012)
Newton 02159	J. E. BOWEN, City Hall (617: 244-4700)
Springfield 01103	R. E. CLARK, Municipal Bldg., Court St. (413: 736-2710)

MICHIGAN

State R. M. LEACH, Chief, Food Inspection Div., Dept. of Agriculture, Lewis Cass Bldg., 5th Floor, Lansing 48913 (517: 373-1060)

County Sealers of Weights and Measures:

Washtenaw R. A. HARTER, 4133 Washtenaw Rd., Ann Arbor 48104 (313: 971-6054)

City Sealers of Weights and Measures:

Dearborn 48126	J.A. HUGHES, Dept. of Licenses, Weights & Measures, 3951 Greenfield Rd. (313: LU 4-8501)
Grand Rapids 49502	T. P. McCARTHY, 301 Market St., S.W. (616: 456-3237)

MINNESOTA

State W. E. CZAIA, Director, Div. of Weights & Measures, Dept. of Public Service, 1015 Currie Ave., Minneapolis 55403 (612: 333-3249)
 R. THARALSON, Supervisor
 A. W. FENGER, Inspector
 O. LHOTKA, Inspector (612: 788-0783)

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Minneapolis 55415 J. G. GUSTAFSON, Dept. of Licenses, Weights & Measures, City Hall, Rm. 101A (612: 330-2080)

MISSOURI

State J. H. WILSON, Director, Weights & Measures Div., Dept. of Agriculture, Jefferson Bldg., Jefferson City 65101 (314: 636-7166, Ext. 17)

County Sealers of Weights & Measures

St. Louis L. A. RICK, 7900 Forsyth Blvd., Clayton 63105 (314: 889-2078)

City Sealers of Weights & Measures:

St. Louis 63104 DANIEL I. OFFNER, 1220 Carr Lane Ave., Rm. 145 (314: 453-3251)

MONTANA

State G. L. DELANO, Administrator, Div. of Weights & Measures, Dept. of Business Regulation, 805 N. Main, Helena 59601 (406: 449-3163)
 DICK DISNEY, Administrator of Centralized Services

NEBRASKA

City Sealers of Weights and Measures:

Omaha 68102 N. M. ROSS, Permits & Inspection Div., Interim City Hall, 908 S. 18th St. (402: 341-8122)

NEW HAMPSHIRE

State W. J. TUSEN, Chief Inspector, Bureau of Weights & Measures, Div. of Markets & Standards, Dept. of Agriculture, Rm. 201, State House Annex, Concord 03301 (603: 271-3700)

NEW JERSEY

State S. H. CHRISTIE, JR., State Supt., Office of Weights & Measures, Dept. of Law & Public Safety, Div. of Consumer Affairs, 187 W. Hanover St., Trenton 08625 (609: 292-4615)
 J. R. BIRD, Deputy Supt.
 A. DEL TUFO, Supvr. of Enforcement
 F. SCARPELLI, Supvr. of Technical Services
 C. P. CONRAD, JR., Senior Technician

County Sealers of Weights and Measures:

Bergen	J. A. POLLOCK, 66 Zabriskie St., Hackensack 07601 (201: 646-2729)
Burlington	E. D. GASKILL, 54 Grant St., Mt. Holly 08060 (609: 267-3300, Ext. 210)
Camden	A. J. FRANCESCONI, County Court House, Camden 08101 (609: 964-0242)
Cape May	A. D. GIDDING, 6807 Seaview Ave., Wildwood 08260 (609: 522-4861)
Cumberland	G. S. FRANKS, 1142 Landis Ave., Vineland 08360 (609: 691-0999) N. DiMARCO, Dep. Supt., 12M Weymouth Pl., Bridgeton 08302 (609: 451-8000)
Gloucester	R. J. MORRIS, County Bldg., 49 Wood St., Woodbury 08096 (609: 845-1600, Ext. 252) J. SILVESTRO, Asst. Supt.
Mercer	R. M. BODENWEISER, County Administration Bldg., 640 S. Broad St., Trenton 08607
Middlesex	J. M. CHOHAMIN, County Records Bldg., Kennedy Square, New Brunswick 08901 (201: 246-6297, 98)
Monmouth	W. I. THOMPSON, Rm. 302, Hall of Records, Freehold 07728 (201: 431-4000) J. A. BOVIE, Asst. Supt. W. G. DOX, Asst. Supt. R. TOMASULO, Asst. Supt.
Ocean	M. R. BURD, JR., 11 Hooper Ave., Toms River 08753 (201: 244-2121, Ext. 257)
Passaic	J. VATASIN, Administration Bldg., Paterson 07503 (201: 525-5000, Ext. 420)
Salem	R. B. JONES, P. O. Box 24, Salem 08079 (609: 935-3152)
Somerset	J. A. KRINEY, Jr., County Administration Bldg., Somerville 08876 (201: 725-4700, Ext. 268)
Sussex	J. M. HEATER, R. D. #3, Box 140, Newton 07860 (201: 948-5464)
Warren	G. E. CONNOLLY, Court House, Belvidere 07823 (201: 475-5087)

City Sealers of Weights and Measures:

Kearny 07032	J. POLLOCK, Town Hall, 204 Kearny Ave., (201: 991-2700)
Linden 07036	A. L. ESKA, N. Wood Ave., (201: 486-8429)
Paterson 07505	W. J. KEHOE, JR., 115 Van Houten St. (201: 278-1329)

NEW YORK

State J. F. TUCKER, Director, Bureau of Weights & Measures, Dept. of Agriculture & Markets, State Campus, 1220 Washington Ave., Albany 12226 (518: 457-3452)

County Sealers of Weights and Measures

Monroe L. P. ROMANO, 291 Westfall Rd., Rochester 14620 (716: 473-8058)
R. G. SPECHT, Inspector

City Sealers of Weights and Measures:

Glen Cove 11542 E. T. HUNTER, City Hall (516: 676-7877)
New York 10013 H. J. STERN, First Deputy Commissioner of Consumer Affairs, Dept. of Consumer Affairs, 80 Lafayette St. (212: 566-5817)
A. C. FREEDMAN, Counsel (212: 566-0432)
M. GREENSPAN, Chief Inspector (212: 566-8776)

NORTH CAROLINA

State J. I. MOORE, Supt., Weights & Measures Div., Dept. of Agriculture, P. O. Box 27647, Raleigh 27611 (919: 829-3315)
M. KINLAW, Supervisor of Weights and Measures
T. W. SCOTT, Inspector
W. H. PERRY, Liquid Fertilizer Specialist

NORTH DAKOTA

State A. HELGESON, Director, Dept. of Weights & Measures, Public Service Commission, State Capitol, Bismarck 58501 (701: 224-2412)

OHIO

State R. E. BOWERS, Chief, Div. of Weights & Measures, Dept. of Agriculture, Reynoldsburg 43068 (614: 866-6361)

County Sealers of Weights and Measures:

Auglaize F. WELLMAN, New Knoxville 45871 (419: 753-2021)
Clark J. S. POWERS, County Bldg., Springfield 45502 (513: 324-5871)
Sandusky B. NEUMEYER, Court House, Fremont 43420 (419: 332-4090)

City Sealers of Weights and Measures:

Akron 44304 A. J. LADD, 69 N. Union St. (216: 375-2612)
Cincinnati 45214 L. B. FRANK, 2147 Central Ave. (513: 352-3135)
Youngstown 44503 A. C. JULIAN, City Bldg., Health Dept., W. Boardman & S. Phelps St. (216: 744-8988)
R. CORBETT, Asst. Sealer

OKLAHOMA

State H. K. SHARP, Asst. Director, Marketing Div., Dept. of Agriculture, 122 Capitol, Oklahoma City 73105 (405: 521-3861)

OREGON

State K. J. SIMILA, Supt. of Weights & Measures, Consumer Services Div., Dept. of Agriculture, Agriculture Bldg., Salem 97310 (503: 378-3792)

PENNSYLVANIA

State J. L. JONES, Director, Bur. of Consumer Protection, Standard Weights & Measures, Dept. of Justice, Rm. B-130 Transportation & Safety Bldg. Harrisburg 17120 (717: 787-6359)
ROY W. BUCHANAN, Supervisor, Weights & Measures

County Sealers of Weights and Measures:

Allegheny W. D. SCOTT, Director, Bureau of Weights & Measures, Court House, Rm. 4, Pittsburgh 15219 (412: 355-4480)

City Sealers of Weights and Measures:

Allentown 18101 A. L. HEILMAN, JR., Weights & Measures Bur., Dept. of Public Safety, 425 Hamilton St. (215: 434-9601, Ext. 250)
Philadelphia 19107 S. F. VALTRI, Bur. of Weights & Measures, Rm. 622, City Hall Annex (215: MU 6-3475)

RHODE ISLAND

State E. R. FISHER, Sealer of Weights & Measures, Dept. of Labor, 235 Promenade St., Providence 02908 (401: 277-2756)

SOUTH CAROLINA

State E. W. BALLENTINE, Executive Asst., Dept. of Agriculture, P.O. Box 11280, Columbia 29211 (803: 758-2426)
C. T. SMITH, Director, Consumer Protection Div., Dept. of Agriculture
J. V. PUGH, Director, Metrology Div.
H. B. ALEXANDER, Consumer Specialist
G. S. HALL, Consumer Specialist

TENNESSEE

State M. JENNINGS, Director, Div. of Marketing, Dept. of Agriculture, Melrose Station, Box 40627, Nashville 37204 (615: 741-1561)

TEXAS

State R. T. WILLIAMS, Director, Consumer Services Div., Dept. of Agriculture, John Reagan Bldg., Box 12847 Capitol Station, Austin 78711 (512: 475-3140)
C. VINCENT, Asst. Dir., 115 San Jacinto, Austin 78701 (512: 475-4304)
C.E. FORESTER, Suprv. of Weights & Measures Section (512: 475-4357)

City Sealers of Weights and Measures:

Dallas 75201 J. D. WALTON, Weights, Measures, and Markets, City Hall (214: 748-9711)

UTAH

State F. D. MORGAN, Supervisor of Weights and Measures, Dept. of Agriculture, Rm. 412, State Capitol Bldg., Salt Lake City 84114 (801: 328-5421)

VERMONT

State T. F. BRINK, Director, Division of Standards, Dept. of Agriculture, Agriculture Bldg., Montpelier 05602 (802: 828-2436)

VIRGINIA

State J. F. LYLES, Supervisor, Weights & Measures Regulatory Section, Div. of Regulatory Services, Dept. of Agriculture and Commerce, 1 N. 14th St., Rm 032, Richmond 23219 (703: 770-2476)
J. C. STEWART, Asst. Supervisor
O. T. ALMARODE, Field Supervisor
R. E. BUNCH, Inspector
J. R. BUSACCO, Inspector
G. E. FERRELL, Inspector

County Sealers of Weights and Measures:

Arlington J. P. NOONAN, County Court House, Rm. 208, Arlington 22201 (703: 558-2343)

City Sealers of Weights & Measures:

Alexandria 22313 L. W. VEZINA, P. O. Box 178, City Hall, Room 227 (703: 750-6242, 6241)
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