

# MERRIMACK VALLEY WORKS NEWSLETTER



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A black and white photograph showing a close-up of a person's hand holding a fiber optic cable. The hand is positioned on the left side of the frame, with the thumb and index finger gripping the cable. From the end of the cable, several bright, starburst-like light rays emanate outwards, creating a dramatic effect. The background is dark and out of focus.

**Starring in Chicago —  
World's First Full-  
Service Lightwave  
Communications System  
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# World's First Full-Service Lightwave Communications System to be Evaluated in Chicago

The world's first lightwave communications system to provide a wide range of telecommunications services to customers will be evaluated in Chicago this year.

During the evaluation, a cable of hair-thin glass fiber lightguides will run about 1-½ miles under the streets of Chicago, carrying Bell System customers' voice, data, and video signals on pulses of light.

The system evaluation will begin by mid-year under the direction of Bell Laboratories and AT&T, in cooperation with Illinois Bell and Western Electric.

AT&T Chairman John D. deButts, in announcing the evaluation, said, "We are optimistic about the potential of lightwave communications for reducing costs and providing new future telecommunications capabilities." He added that the installation will help the Bell System further evaluate the potential of this new technology under actual operating conditions - another step toward assuring that such systems will be economical and reliable.

Last year a complete experimental lightwave system was tested successfully at the joint Bell Labs-Western Electric facility in Atlanta under simulated field conditions.

Bell Labs-designed lightwave communications components such as lasers and light emitting diodes (LEDs), signal detection devices, and glass fiber lightguides will be used in the system evaluation. A lightguide cable will carry voice, data and video signals for about a half mile between the Brunswick building - a modern office building in Chicago's Loop - and an Illinois Bell central office (Franklin); then, between the Franklin office and a second central office (Wabash) about a mile away, the lightguide cable will carry video signals, as well as other voice and data signals normally carried between those two offices. The video signals in Chicago will originate from Bell System Picturephone<sup>®</sup> Meeting Service rooms at a customer installation in the Brunswick building and at Illinois Bell's headquarters.

Installation of the lightwave system is expected to begin shortly. A single half-inch diameter cable, containing 24 lightguides made by Western Electric, will be installed in standard telephone company ducts and manholes.

Each lightguide to be used in the Chicago system will be connected at one end to a transmitter module that includes a solid-state laser or LED light source, both smaller than grains of salt. (Although LEDs are less powerful sources than lasers, tests have shown they will be adequate for the relatively short transmission distances in this application). The other end of each lightguide will be connected to a receiver module containing a tiny photodetector device that converts light pulses to electrical signals compatible with those transmitted within the nationwide telecommunications network.

The basic material of the lightguides is silica, the most common form of which is sand - one of the earth's most abundant materials. Extremely pure silica, with exceedingly closely controlled additives, is used to produce lightguides so transparent that, if the deepest ocean were as clear, you could see the bottom.

In the Chicago system, a single pair of lightguides in the cable will be able to carry 576 simultaneous conversations or an equivalent mix of voice and various types of data signals. Separate pairs of lightguides in the same cable will be used to



**AT THE HELM** - Western Electric technician Mike Hyle monitors a pilot production operation at the Atlanta Works, where precisely fabricated glass rods called "preforms" are softened (above) and pulled into hair-thin fiber lightguides. A cable containing twenty-four lightguides will be used in the Bell System's lightwave communications installation in Chicago.

carry Picturephone<sup>®</sup> Meeting Service video signals. No "amplifiers" will be needed to boost signals along the route.

The planned system evaluation should be completed next year. It is one of several steps the Bell System will be taking to analyze the design, manufacturing, operational and economic feasibility of lightwave communications.

Initially, this technology might be used in various special applications. In the early 1980's, lightwave systems - where economically feasible - could be used to carry information between telephone switching centers in metropolitan areas, such as between Chicago's Franklin and Wabash central offices.

Ultimately, lightwave communications systems may be used throughout the entire telecommunications network for both local and long distance communications - to provide a full range of existing, as well as new, Bell System services.



## Retirements



**ALFRED N. GYNAN, JR.**, a planning engineer in the Apparatus Test Engineering & Test Set Design Department, retired on January 28 with more than 20 years service. He lives at 10 Strong Street, Newburyport.



**ARTHUR R. THERRIEN**, Box 180, RFD West Kingston, N.H., retired on February 20. He was a guard in the Plant Protection & Telephone Service Department with nearly 33 years service.

**JAMES P. JAMESON** retired on February 21 with more than 31 years of company service. He lives at 3 Cole Avenue, Bradford, and was a Section Chief in the Printed Wiring Board Department.



**FRANCIS A. ADDONIZIO**, a bench hand in the Substrate Metalization and Glazing Department, will retire on February 28. He has more than 20 years of Western Electric service, and lives at 6 Fairfield Street, Haverhill.



**ADOLPH WYKA**, 417 Washington Street, Haverhill, retired on January 31 with more than 21 years with Western Electric. He was a machine operator in the Substrate Metalization and Glazing Department.



**IRENE M. CAPOZZOLI**, 759 Broadway, Haverhill, a coil winder in the Toroidal Coil Department, will retire on March 1. She has more than 20 years service.

**WILFRED J. NADEAU**, a bench hand in the A-6 Monolithic Crystal Filter Department, retired on February 15. He lives at 15 Waverly Road, North Andover, and had more than 15 years service.

**FLORENCE R. DESROCHER**, P.O. Box 5, Derry, N.H., will retire on March 4. She has 25 years of service, and is a tester in the Misc. Carrier Networks & Rep. Trans. Net. Department.

**LENA B. BLOUIN** will retire on March 21. A tester in the N2, N3 Carrier Plug-in Unit Department, she has more than 21 years of company service, and lives at 2 Melrose Street, Amesbury.



**MARIE O. BERGERON** will retire on March 14 with more than 25 years of Western Electric service. She is a layout operator in the D1, DID, D2 Channels & Systems Department, and lives at 203 Hampstead Street, Methuen.

**JEANNETTE L. MOTTRAM**, a wireman in the D2, T2M12, VIF, DT, T4M, M13, 1ARDT Panels & Bays A & W, Insp. & Test Department, will retire on March 21. She lives at 68 North Street, Andover, and has 20 years service.



**LAWRENCE R. CHAMPAGNE**, an electrician in the Machine & Plant Maintenance Department, will retire on March 31 with more than 32 years of company service. He lives at 32 Maynard Avenue, Bradford.

**NELLIE J. LEVESQUE**, 68 Boxford Street, Lawrence, a bench hand in the Quartz Crystal Unit Assembly Department, will retire on March 31 with more than 15 years service.

**NORMAN G. RAINVILLE** will retire on March 31 with more than 19 years service. He lives at 41 State Street, Lawrence, and is a merchandise service clerk in the Non-Stock Customer Service, Repairs Editing, Order Input, Key punch Reproduction and Teletype Department.

# THE BELL SYSTEM: MANY UNITS, ONE GOAL: SERVICE

*(Editor's Note: This is the first in a series of stories interpreting the roles and interaction of the various units of the Bell System. This article focuses on the System itself.)*

Ask your friends what they think about the Bell System, and they're likely to retort: "As compared to what?"

And that is precisely why it is so frustrating, so difficult to explain or even define the Bell System and its "integrated structure" - the common ownership and direction of research, manufacturing and operations in the interest of the customer.

"Being unique, the Bell System cannot be compared with any other enterprise," says Alvin von Auw, AT&T vice president and assistant to chairman John D. deButts.

The Bell System, comprised of 23 operating telephone companies, Bell Laboratories, Western Electric, AT&T Long Lines and the AT&T headquarters staff, employs 939,000 men and women and operates a telecommunications network connecting 122 million phones within its own system. Total plant investment exceeds \$73 billion.

Among corporations, it literally has no peer in terms of assets or the number of employees. Providing an essential public service, the Bell System is heavily regulated - its interstate services by the Federal Communications Commission and its local and intrastate operations in 48 states by state utility commissions.

From time to time throughout its history, the Bell System's structure has been challenged, as it is today by the Justice Department's pending antitrust suit, which seeks to splinter the System.

"Telephone service being so largely taken for granted, there is simply not a general appreciation among the public of the unique character of the Bell System network and the need for trillions of parts to work together effectively with others that are added to the network," observes von Auw.

To understand the System, one must recognize that its primary mission, providing quality telecommunications service, cannot be neatly partitioned or isolated into distinct, autonomous bits.

Service, says von Auw, is a continuum. Like the movement of time, there is no starting or stopping point in the whole process of providing service, from the perception of a need, to the development and delivery of advanced communications systems to millions of homes and businesses

throughout America.

"Most employees," the AT&T officer reasons, "appraise the integration of the System's units on the basis of how it helps them meet their service commitments to their customers.

"To some employees, the virtues of the System's integrated structure are more apparent than to others, depending largely on the nature of the jobs they perform. Employees most likely to appreciate the advantages of the integration of research, manufacturing and operations are those who work directly with the facilities that Bell Laboratories designs and Western Electric makes."

Here is how the System's functions are apportioned among its specific units:

- To the operating companies goes the primary assignment of providing telephone services and facilities within their respective territories with the aid and services received from AT&T under long-standing contracts.

- To Western Electric, the responsibility of manufacturing, purchasing, repairing and distributing communications apparatus, equipment and supplies and installing central office equipment for the Bell System.

- To the Bell Telephone Laboratories, the task of performing research, development and design work.

- To the Long Lines Department of AT&T, the operation of the interstate network.

- And to the AT&T General Departments, leadership in all matters relating to the management of the nationwide integrated communications system and its continued improvement. This is accomplished by a centralized staff that performs services for the System units and represents the System's interests before national forums, such as the FCC and Congress.

Von Auw perceives a significant change in the relationship between AT&T and the operating companies.

"There was a time when the associated Bell companies were each autonomous and absolute - and here I'm quoting Theodore Vail (first president of AT&T) - 'on matters pertaining to their territories alone.'

"That is still our doctrine, the problem being that no one can think of very many matters that apply to one company alone.

"What has happened," von Auw observes, "is that the operating companies have perceived that need for consistency in their operations. More and more we must act as one. At the same time company presidents have had greater participation in deciding how we should all act as one Bell System."

Since the Bell System has no equivalent to which it can be compared, it's difficult to "prove" there might not be a better way to provide telephone service.

However, as the AT&T officer points out, "there are not many outfits a hundred years old that are serving better, earning better, innovating better than ever before in their history.

"That's what the Bell System is doing in 1976, and it's doing it because the performance of each of the System's units is continuously enhanced by its relationship with all the others."

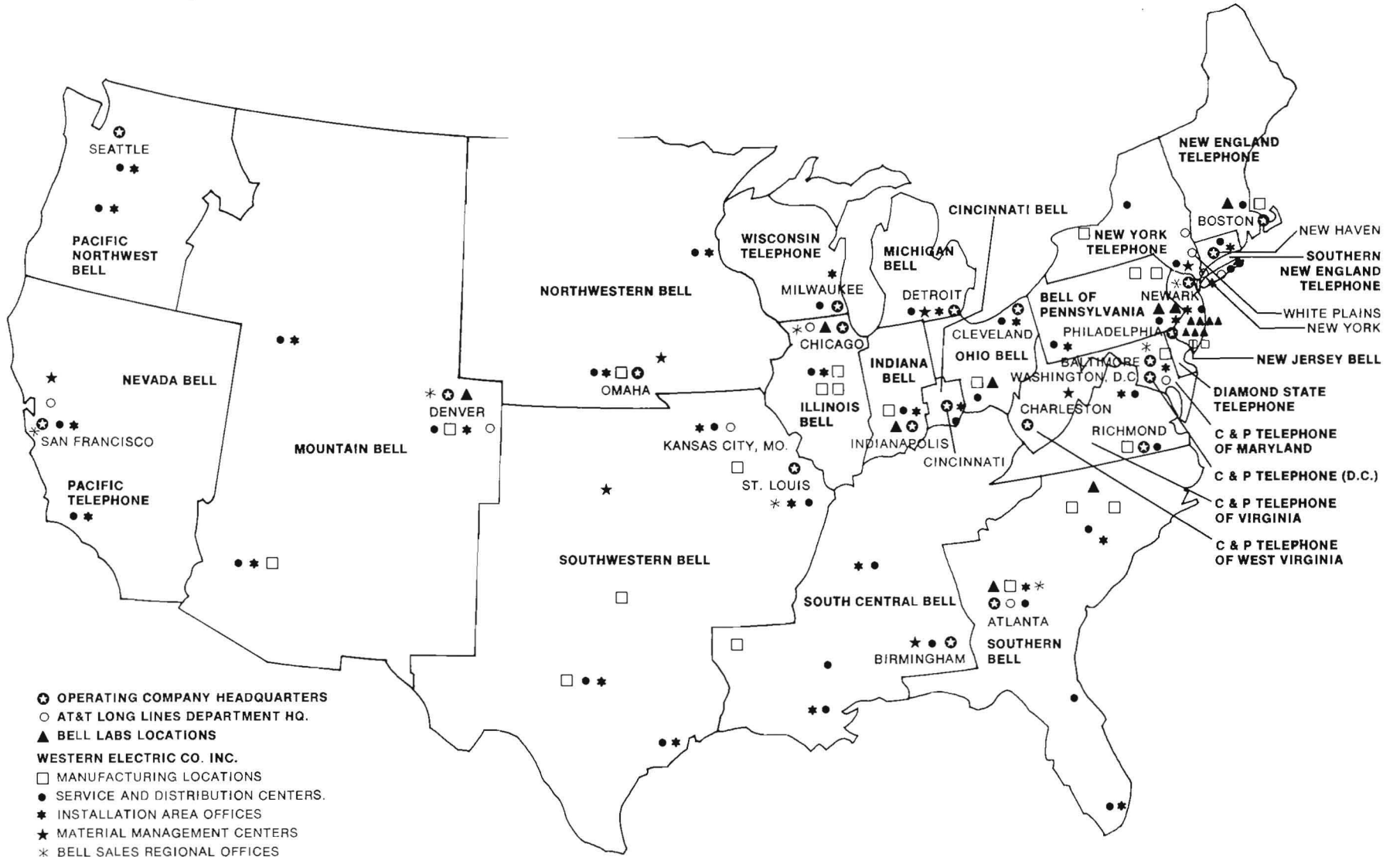
## CHECK A BUCK

When preparing your Massachusetts income tax forms, please note that there is a line that enables you to contribute one dollar to the new system of campaign reform - public financing of state-wide elections. The system will go into effect in the 1978 elections. Sixty per cent of the money in the fund will be used in the primaries, and forty per cent in the general election. It applies only to candidates for constitutional offices. These offices are Governor, Lt. Governor, Attorney General, State Secretary, Treasurer, and Auditor. Equal amounts of money will be given to all candidates for the same office, provided they also raise a matching amount of funds in small contributions, not exceeding \$250, from private sources. They must also have an opponent. This will prevent frivolous candidates from receiving public monies. Election fund money will go directly to the candidates, not through political parties.





Bell System



# NEW TRENDS IN PHYSICAL EXAMINATIONS

by Jerry Cassuto, M.D., General Medical Director, Western Electric

(Editor's Note: This is the first of two articles on a medical subject of general interest to employees and their families.)

Some rather surprising medical data have come to hand recently. As a result, physicians are reassessing some of their long-cherished beliefs about medical services in general, and the routine physical examination in particular. To understand the significance of what has been happening, a little background is helpful.

Up until the 1950's the main task of the physician in society had been in the active intervention in acute illnesses and, it was hoped, their cure. The chief reason the average life span of Americans in 1900 was only between 45 and 50 years of age was because of the high toll taken by acute illnesses and their short- and long-term complications. These killers were influenza, pneumonia, tuberculosis, infectious diarrhea of children, strep infections and their subsequent rheumatic fever and kidney diseases. For centuries, the efforts of the medical community had been directed towards curing or, failing that, at least alleviating the symptoms of these scourges. Then, in the mid-1930's, sulfa drugs were introduced. Ten years later, penicillin had appeared on the scene. By the mid-1950's, the antibiotic revolution was upon us. It changed the face of world medicine for good and, probably, forever: infectious diseases finally met their matches in (especially in the case of bacterial diseases) the discovery of specific antibiotics. They were immensely more efficient and successful in combating these diseases than man's natural disease-combating tendencies had ever been.

We cannot, however, give credit for the massive control of infectious diseases solely to antibiotics. Better hygiene, improved living conditions, an overall higher standard of living, immunizations, etc., were also significant factors. As a consequence, as the life span of Americans increased, diseases which previously had been found only rarely, now began to

assume the leading role as killers of Americans. They were the cardiovascular diseases (heart attacks and strokes) and cancers of various parts of the body. As we all know, though they can occur at relatively young ages, most cardiovascular diseases and cancers afflict persons over the age of 45. One can easily see, therefore, why such conditions were relatively unknown in the early 1900's, when our average life expectancy was only 45 years.

So, in the past 25 to 30 years, the medical community had to readjust its sights. Not that infectious diseases had disappeared but, rather, that their control was now almost routine. So, as the spotlight was focussed upon the new killers of Americans, an interesting realization was made. Once a person has had a heart attack or a stroke or a cancer develop, no "magic bullet," no antibiotic was available for it. As a matter of fact, not infrequently, the appearance of these conditions was either followed immediately by the patient's demise or, in many cases, by his death shortly thereafter. Therefore, medical attention became focussed not so much upon treatment of the condition once it had occurred but, rather upon concerted attempts at prevention or at least forestalling the occurrence of these conditions.

People were urged to seek their doctor's attention on a regular basis so that he could examine them and find evidences of these conditions early enough so that, for example, in the case of a cancer, prompt surgery would result in successful removal of the whole tumor. While in the case of cancers, one could often detect abnormal growth by careful physical examination of the patient, including x-rays, etc., the problem of cardiovascular disease prevention was more difficult because it was not something one could see or feel either by hand or x-ray. In the past 10 or 15 years, however, the statistical studies that had been conducted since the 1950's became significant enough that the medical community was able to outline (in sometimes disputed order of importance) the significant risk factors in cardiovascular disease. The current medical climate is that if real control of these risk factors can be achieved, then there is a very good chance that cardiovascular disease can be either prevented or staved off.

The various approaches to the preventive medical examination of patients have not yet crystalized into an ideal one. The concept of preventive medicine for healthy people in order to keep them healthy is still new enough that the medical community is trying various approaches to best serve the people. Some long-held concepts may have to be, if not discarded, at least given less prominence. Thus, the necessity for a yearly chest x-ray was almost the first commandment of medicine's ten commandments. The new findings in this area are quite interesting. True, one of the best ways for detecting tuberculosis is a chest x-ray, but tuberculosis among Americans is a disease that is rapidly declining in frequency. It is true that everyone should have a chest x-ray for tuberculosis at some time, but that he should have it every year is now being seriously questioned. As a matter of fact, if a person's x-ray is completely negative for tuberculosis one year and he were to contract the disease for the first time in the next twelve months, it is quite likely the next annual x-ray would not show this very early evidence of tuberculosis infection. A better way for determining early exposure

Continued on page 7



**NEW LOOK FOR WILLIEBELL** was provided by members of the Plant Construction & Services Department, who won him for having the most outstanding safety record for the fourth quarter of 1976. They immediately demonstrated their safety consciousness by outfitting the rambunctious raccoon in safety glasses and a hard hat. Shown are Section Chief Harold Roberts, Bob Desando, Department Chief Dave Batson, General Manager Dave Hilder, who made the presentation, Sam Saldi, Dave Champagne, George Hudson, Ray Lemieux, Joe Adams, Alan Conte, and Assistant Manager Ron Lindquist.



**PHYSICAL EXAMINATIONS** *from Page 6*

to tuberculosis is the simple PPD test, or as it used to be called, "the scratch test." The injection of a very small quantity of modified tuberculin protein in the forearm, and examination of that area three days later, turns out to be the most sensitive of all methods for the detection of recent exposure to tuberculous infection.

Chest x-rays, however, reveal more than just tuberculosis. Congenital abnormalities of the heart and the major blood vessels often can be detected but, since such conditions are congenital, once found or found to be absent there is no need for a yearly look.

Cancer of the lungs is another important condition diagnosed by chest x-ray. However, new studies show that cancer of the lung is so extremely rare in nonsmokers that there may be more danger to a nonsmoker from the yearly exposure to x-ray than from the likelihood of missing a cancer that would develop in such a person. Therefore, modified recommendations regarding x-rays go something like this: everyone should have one as a baseline. Nonsmokers may very well not need one for two or three or more years. The performance of a PPD test once a year will screen for tuberculosis. Those with chronic lung problems, smokers or those who have other symptoms including heart involvement which could lead to heart enlargement, should, on the other hand, continue to have yearly x-rays of the chest.

And so with some of the other "routine" procedures. The Mayo Clinic recently reported that it may not be necessary to perform yearly proctoscopic examinations. Rather, every other year may be enough with the interim performance of a yearly stool guaiac or two. The stool guaiac test is the test for bleeding in the gastro-intestinal tract, and some of these recent studies indicate that it is an excellent way to screen for gastro-intestinal cancers. Whether one such test is sufficient or whether two or even three are necessary is currently being debated, but again this area shows the state of flux in the medical approach towards preventing diseases.

A recent result of the statistical studies has yielded information that may, on the surface, have seemed obvious all along: the frequency of finding significant diseases in a patient increases as the patient ages. This rather simple fact can have wide-ranging implications, however, in view of the scarcity of medical resources as manifested by long waiting

# PIONEER CORNER

The Pioneer office recently received the following letter from the Lawrence Salvation Army:

*Dear Friends:*

*Words cannot really express our appreciation to each of you for your part in our Christmas doll dressing project. The dolls were beautifully dressed and caused the eyes of many little girls to light up with pleasure and surprise!*

*We know that dressing the dolls involves time, effort and expense but we pray these were compensated for by joy which always comes when one does something for others.*

*Thank you for your labor of love.*

*Sincerely yours,  
Elsie Fleming  
Major*

\* \* \* \*

We think we have a bestseller on our hands, and the book hasn't even hit the bookstores yet. The title is "The Telephone Book: Bell, Watson, Vail, and American Life, 1876-1976," by H.M. (Hank) Boettinger, and it'll be on sale soon. Watch for a flyer from the Pioneer office.

## SUGGESTIONS

### Awards paid in January

Alvin B. McArthur . . . . .	\$75.00
Daniel A. Tuccolo . . . . .	.60.00
Walter R. Graham . . . . .	.55.00
Ernest Pellerin . . . . .	.55.00
John Fields . . . . .	.50.00
Clinton L. Rand . . . . .	.50.00
Robert E. Greenwood . . . . .	.37.50
Howard B. Higgins . . . . .	.37.50
Raymond A. Windle . . . . .	.37.50
Ernest J. Courcy . . . . .	.25.00
Nahum J. Adams . . . . .	.18.75
Anthony F. Akscyn . . . . .	.18.75
Andy G. Chakarian . . . . .	.18.75
Frank S. Chapinski . . . . .	.18.75
IRichard L. Farr . . . . .	.18.75
Melvin W. Maddox . . . . .	.18.75
Raymond A. Marquis . . . . .	.18.75
Stephen P. O'Donnell . . . . .	.18.75

times in doctors' offices, long waiting times for admissions to hospitals for elective procedures, etc. The application of this finding to the practice of medicine is in order. The advice to have a yearly physical, therefore, should be modified to having a yearly physical if you're over age 45 or so. From age 30-45, a comprehensive physical every two or three years may be sufficient. For those under 30, one every three or four years may be all that is required. Since these are new suggestions and since the medical community, in the final analysis, is interested in the patient's continued good health, a modification of the above suggestions has been proffered that recommends having multiphasic screening examinations in intervals between the comprehensive physical examinations. These multiphasic screening examinations would include such items as blood tests and urinalyses that would not require the lengthy physician contact of a comprehensive examination. Naturally, any abnormality which turns up during the multiphasic screening examination or interim health survey would be referred to a physician for in-depth analysis.

### WHAT'S YOUR HANDLE?

If you have a CB unit and would like your name and handle published in the next issue of the NEWSLETTER, send the information to NEWSLETTER, Dept. 02040, by company mail.

### In Memoriam

Roland Grover, retired, 96 Bascomb Road, Andover, January 9.  
 Aura Gillis, retired, 37 Woodcock Ave., Haverhill, January 25.  
 Sigmund Podlozny, Duolateral Coil and Filter Department (C60), January 26.

## MERRIMACK VALLEY WORKS NEWSLETTER

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BERNIE MOOERS  
Editor



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