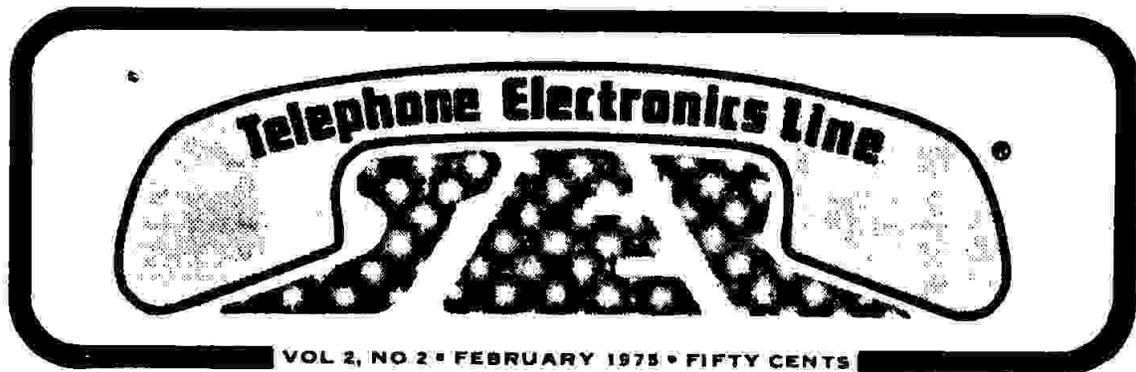


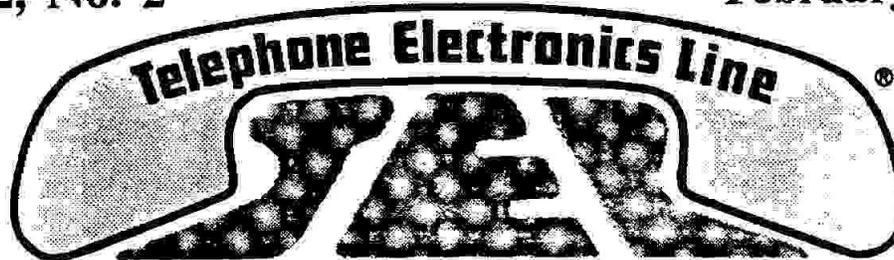
// LEARN WHAT THOSE LITTLE
CODE NUMBERS AT THE TOP OF
YOUR TELEPHONE BILL MEAN
TO YOU.

// HOW ARE YOU SO SURE THAT
YOU WILL GET A DIAL TONE
EVERY TIME YOU PICK UP THE
TELEPHONE HANDSET?



Isn't it a pity
when no one's at home...
...in such a large city
to answer their phone-





Published Monthly

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The Old Tel

We continue to grow with your support. In fact, we'll be expanding in volume 25% by next issue. In addition, you will enjoy following the multi-color diagrams, and larger cleaner type. We ask that you become an agent for TEL and sell a subscription to someone you know!



If it's TEL, it's swell!

Telephone Electronics Line will accept payment by check, money order, postage, cash, domestic or foreign. Due to the present size of our circulation and operating procedures, we will be unable to bill you. Therefore, full payment must accompany subscription order which is refundable if not fully satisfied. Make all documents payable to TEL for \$6.00 in the U.S. and for \$8.00 in Canada and all other countries.

DUE TO READER RESPONSE AND NUMEROUS REQUESTS CONCERNING THE MAILINGS OF TELEPHONE ELECTRONICS LINE, WE HAVE DECIDED TO INITIATE A SPECIAL SERVICE THAT WOULD SPEED THE DELIVERY EACH MONTH OF TEL AND DISGUISE THE FRONT COVER AND THE CONTENTS INSIDE. THIS WOULD BE OF ADVANTAGE TO YOU IN TWO WAYS: FIRST, IT WOULD INSURE DELIVERY OF TEL JUST A FEW DAYS AFTER THEY'RE OFF THE PRESSES AND SECOND, CURIOUS POSTAL AUTHORITIES WOULD NOT HAVE A CHANCE TO GLANCE AT THE EYE-CATCHING FRONT COVERS OF TEL.

THIS SERVICE IS CALLED FIRST CLASS MAIL. FOR A FLAT RATE OF \$12.00 PER YEAR (NO MATTER WHERE IN THE WORLD), WE WILL MAIL EVERY ISSUE IN A PLAIN MANILA ENVELOPE WITH NO SPECIAL MARKINGS ON IT, EXCEPT YOUR ADDRESS.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

TAD TELEPHONE ANSWERING/RECORDING DEVICES

BY FRED BLECHMAN

This is a fast world we're in today, and the telephone is an essential part of business and social life. A missed call can cause a small businessman to lose a large order. A housewife could miss a social appointment change. A salesman could miss contact with an important prospect. A professional could lose a client.

The Telephone Answering Device (TAD) answers your phone when it rings and let's the caller hear your programmed message. Just as the caller hears YOUR voice, you hear HIS. You receive the message he leaves, first hand, and can judge his frame of mind as accurately as if you were actually talking with him. You hear ALL he says, and exactly WHAT he says, with no third person involved.

Small businessmen, salesmen, professional men, busy housewives and scores of others depend on the telephone. The TAD fills in when you step out by automatically taking the messages, orders or appointments that would otherwise be missed. For the small businessman, the TAD may save the expense of secretarial help or prevent loss of business and prestige when the telephone goes unanswered. Calls from salesmen, distributors or customers can be answered automatically, and accurately, any time of the day or night. For the professional, reliable and accurate messages mean good relations with patients or clients and proper handling of emergency situations. Executives, when in conference or absent from their desk, can advise the caller of later availability. Salesmen can accept orders when out "prospecting". Housewives can route important calls to a neighbors phone or check messages and return calls immediately after shopping or dropping off the children at school. Young people can schedule social appointments without waiting at home for a call. In short, a TAD can be an asset to anyone who has a telephone - 24 hours a day, 7 days a week, without complaint, vacation, coffee breaks, or errors!

ANSWERING SERVICES

"Yeah", you say, "but how about a Telephone Answering Service?". An Answering SERVICE is an operator who takes messages and repeats it to you when you call back. The problems with this, however, are the "human" element. The message repeated back to you can be incomplete or incorrect - it's amazing how much can get lost in the "translation"! Also, a busy operator keeps the caller or subscriber waiting while she handles other calls at her switchboard. And, who wants to leave a personal or complicated message with an operator? The TAD repeats the EXACT message, with the voice and emphasis of the caller. Not only that, but a TAD will usually pay for itself within a year as compared to the monthly cost of an Answering-Service.

COMPARISON CHART

Okay, let's say that now you're convinced you can't live any longer without a Telephone Answering Device. How do you find out about them? Where can you get them, and how much do they cost? What are some of the features that are really worth something, and what "features" are just "window dressing"? Well, to solve your dilemma, we've provided an in-depth Comparison

Chart that shows the details of 25 units.....and to help you understand the chart, we're going to discuss each column briefly:

COLUMN 1

Manufacturer or Distributor: Write here for more information, and the location of your local distributor. For any unit selling above \$250, you should ask for a demonstration. On less expensive units the profit is often too low to allow direct selling, so they are usually sold by mail, with a guarantee of satisfaction.

COLUMN 2

Model Name & Number: Sometimes you'll find identical machines under different names. For example, the Ansaphone 540 (no longer available from Dictaphone, except from existing inventories) has shown up more recently (with improvements) as the Sanyo Answer Man and the Code-A-Phone Model 360. Also, model changes occur frequently; since the Chart was drawn up, Phone-Mate 400 to a Phone-Mate 400s, with a switch to disable the monitor, an improvement at no extra cost. So watch for model changes.

COLUMN 3

Suggested Retail Price: The prices shown are those furnished by the sources listed. However, prices vary around the country, especially on the higher-priced units, where there may be some room for bargaining with the salesman - he may be willing to give up some of his commission to make the sale on the spot.

COLUMN 4

Maximum Outgoing Message: This could be very important to you. Under normal conditions of use, 18-30 seconds is plenty of time for you to tell the caller, in your voice and words, that you are not in, and to leave a message. But you may want this unit to give a sales pitch, recite your business hours, give a message-of-the-day, redirect calls to where you'll be at certain times,

announce a schedule or menu, or any of a thousand uses that might take several minutes.

COLUMN 5

Variable Length Outgoing Message: Here, again, it depends on your intended use. A fixed outgoing message time is usually fine; but variable length gives you a lot more flexibility. With variable length your incoming message can start immediately at the end of your outgoing message, as long as it may be.

COLUMN 6

Maximum Incoming Message: If all you expect to receive is a name, phone number and short message, 24 - 30 seconds is good enough. But if you expect detailed information, long orders, dictation, field reports, etc., then look for a longer incoming message.

COLUMN 7

Maximum Messages: This may confuse you but, it's based on the most messages of the shortest length. For machines that shut-off automatically after a person hangs up (see col. 8) we've used 30 seconds as the average message length, incoming. **NOTE:** Columns 5,6, & 7 reflect manufacturer's data, which change with technology. Those machines using standard cassettes (Footnotes A&H) may have longer capability than specified if C-120 or C-180 cassettes are used. Figures shown are based on C-90 cassettes.

COLUMN 8

Voice Activated: This feature provides automatic shut-off about 12 seconds after caller stops speaking or hangs up. It allows the incoming caller to leave his whole message, instead of perhaps cutting him off, as the fixed-time units might. This might be very essential for your use.

COLUMN 9

Automatic Level Control: This boosts the volume on a soft-spoken caller, or bad connection, and cuts the volume down when it's too

strong. This is certainly a desirable feature, especially since some people are scared to death of talking to a machine, and either hang up or speak very low. Improves outgoing messages, too.

COLUMN 10

Call Received Indicator: When you return, after leaving your TAD to answer the phone, you'd like to know if there are any messages. Without some form of call indicator, all you can do is rewind the tape and play it back. With some type of indicators (light or flag), you can only tell that at least one message has been recorded, but you can't tell how many. With a tape counter, there are a certain number of digits the counter moves for each message, so you can tell the number of calls received, and you can "fast forward" to the next call on hang-ups. A call counter, of course, counts the number of calls received. The Code-A-Phone indicator is described as "an elapsed time indicator that shows the volume of calls recorded", whatever that means (probably a tape counter).

COLUMN 11

Records Phone Conversations: While some of the units can be gimmicked-up to record both sides of a telephone conversation, the Chart only indicates those where the manufacturer's literature show this as a feature. In some units, a beep-tone every 15 seconds or so alerts the caller that he's being recorded, to conform to FCC regulations. This recording feature can be mighty handy for technical and legal discussions that get confused and involved. In most cases the monitor also allows group listening in this mode of operation, which lends itself to great training for telephone solicitors — everyone listens, and then the tape is played back for discussion in a training class.

COLUMN 12

Remote Call-Back: Found only on

the more expensive machines, this feature allows you to call into your TAD from any telephone in the world and hear any messages. You may also, with some units, change your outgoing message remotely. This is a luxury feature, but might be necessary for *YOU*.

COLUMN 13

Dimensions: "Wide" is across the front of the unit, "Deep" is the distance from front to back, and "High" is top to bottom. If desk space is an important factor, a narrow, deep unit may be best.

COLUMN 14

Features and Remarks: There are many features common to all the units shown, except as noted. They all record incoming messages, monitor through a speaker or earphone, have a silencing switch to "kill" the monitor when you want real silence, operate on regular 117 volts AC, plug directly into the phone jack (more on that further on), have variable incoming message length, and have fast-forward and fast-rewind controls. The footnotes cover other features, and are mostly self-explanatory. Note F refers to a special feature of the Phone Butler which allows it to be used as an "electronic bulletin board" for anyone in the family to leave a message for another family member on the tape.

OTHER QUESTIONS ?

That pretty well takes care of explaining the Chart. But here are the answers to some other typical questions that might be in your mind:

What about service and guarantees? Well, since there are many units now being offered by mail, you can always send those back for service. Keep the shipping cartons. Units purchased locally usually have a service center. It's a good idea to deal with an established firm; if in doubt check with Better Business Bureau
(continued on page 12)

When the Phone Company turns a deaf ear

By Ken McEldowney

Pacific Telephone has lots of "customer reps" and pours tons of money into "public information" media ads, but they don't tell you much about such little mysteries as how to decipher your phone bill, how to find out your company credit rating, or how to avoid paying a \$25 deposit, how to get it back and how to fight back successfully.

...rewith, some solutions to some PT&T mysteries.

HOW TO GET NEW PHONE SERVICE WITHOUT A \$25 DEPOSIT

The phone company likes to have a deposit from its new customers to provide protection against non-payment of bills. For most people it's hard to come up with the \$25.00. If the phone company thinks you have good credit, they won't require the deposit. But you must be able to answer "yes" to at least one of the following questions:

- 1. Have you had satisfactory service with Pacific Telephone or another phone company in California within the last two years? If satisfactory they mean no disconnections for non-payment or no outstanding bills. All you need to do is remember your old number.
- 2. Do you own your own home or other real estate in the city where you live?
- 3. Have you been continuously employed for two years or remained on a pension?
- 4. Have you had satisfactory telephone service in another city in the last two years?
- 5. Do you have a friend with a phone company "B" credit rating who will guarantee \$25 of your bill?

If all fails, the service representative has the authority to give you deposit-free service with "personal knowledge of the applicant's ability to pay." In other words, talk a good story.

If you completely lose out and have to pay the deposit, it will be carefully explained to you that it will be returned with interest after a year. In fact, if you pay your bills on time

during the first six months, the service representative has the authority to return your money then, but usually doesn't. Demand the money back after six months. If your service rep refuses, ask to speak to his or her supervisor. Keep pushing.

TOP SECRET: WHAT DO THE NUMBERS AT THE TOP OF YOUR PHONE BILL MEAN?

In mid-June, American Telephone and Telegraph, at the prodding of the Federal Communications Commission, sent out a letter urging its member companies to indicate a "pay by" date on their bills.

PT&T still doesn't, but if you know its code you can figure out how long you have to pay before the threats start. At the top of your payment card are three sets of three-digit numbers with the crucial information you need.

HOW CAN YOU TELL YOUR TELEPHONE CREDIT RATING?

Count the days between the different notices. If Box F has all zeros and there are only ten days between the postmark date on the envelope and the date in Box E (which you have to convert to a regular date using the key), then you have a "E" rating. If all three boxes (E, F, and G) have numbers, and there are 20 days between the postmark and Box F, then you are a "C". If all three boxes have numbers and there are 60 days between the postmark and Box F, you are a "B."

HOW DID YOU GET STUCK WITH YOUR CREDIT RATING AND WHO ELSE HAS THE SAME ONE?

Your credit rating depends a lot on arbitrary decisions by your service representative. But your actual rating is crucial in determining when you get your deposit back and, even more important, whether you have two months, 20 days or ten days to pay your bill before the threats start:

Credit rating A: Very rare. Limited to big politicians, media big shots, state of California and similar deities. They never get shut off for non-payment. If worst comes to worst, a real person decides it's time to call about the bill.

(continued on page 11)

| | | | | | | | | | | |
|--|-----|-----|----|---|-----|------|---|--|-----------------|----------|
| A | B | C | D | E | F | G | H | I | J | K |
| 8841129 | 917 | 213 | 05 | 0 | 006 | 7202 | 2 | BALANCE FROM LAST BILL | Total due | 15 Feb 7 |
| | | | | | | | | \$6.01 | Pay this amount | ↓ |
| | | | | | | | | If amount being paid differs - enter here. | | |
| <p>Please return this payment card with your check</p> <p>IF YOU PAY IN PERSON BRING THE BILL ALSO</p> <p>PLEASE DON'T FOLD OR STAPLE THIS CARD</p> | | | | | | | | | | |
|  | | | | | | | | | | |
| <p>PACIFIC TELEPHONE P.O. BOX 7665 VALLEY ANNEK VAN NUYS, CALIF. 91451</p> | | | | | | | | | | |

GUIDE TO YOUR PHONE BILL, OR WHAT YOUR PHONE COMPANY REALLY THINKS OF YOU:

YOUR PHONE NUMBER.

If there's an "R" after here, it's a residential phone; a "B" means business.

An Internal Phone Company accounting number with no particular importance to customers.

YOUR BILL CODE.

The Pacific Telephone Company will send out a reminder to pay your bill, if they think you're not paying enough of you. Written in federal government style, with the date changing consecutively throughout the year. For example: Nov. 1 is the date 135. Jan. 1 is 001. (Exception: see F.)

F. Date of the five-day shutoff notice. If all you find is 000, then the date in box E is the five-day shutoff notice date.

G. Date the computer tells your business representative to call saying that your service will be cut off.

H. If there's an "R" it's a residential phone.

I. Date of bill, month and day.

J. Balance from last bill, cleverly shaded to make it hard to read.

K. Total amount due.

DIAL TONE SPEED MEASUREMENT (part one)

By Jack Kranyak

THIS ARTICLE IS THE FIRST IN A SERIES OF ARTICLES DEALING WITH TELEPHONE COMPANY PLANT ENGINEERING AND MAINTAINANCE. IT IS PRIMARILY INTENDED FOR KNOWLEDGEABLE ENTHUSIASTS AND PLANT EMPLOYEES WHO HAVE A BACKGROUND IN THIS FIELD. EACH MONTH A NEW TOPIC WILL BE INVESTIGATED AS WE PROGRESS INTO THE FIELD OF TELEPHONY.

Dial Tone Speed Measurement

PRINCIPAL USES

Dial tone speed measurements serve as an important criteria or basis for the following:

1. Quality of dial service
2. Load balancing and line assignment procedures
3. Establishing office capabilities
4. Traffic engineering of components affecting dial tone speed.
5. Detecting and controlling overloads
6. Validating data
7. Indexing

DIAL TONE SPEED AS A MEASUREMENT

The measurement of dial tone speed is recommended for all types and sizes of local dial offices including CDO's. For this purpose, a dial tone speed register circuit (SD-98403-01, for example) is recommended for all Panel, No. 1 Crossbar, No. 5 Crossbar and observed Step by Step (SXS) offices. It is also recommended for larger CDO's. In No. 1 ESS, the basic traffic measurement routines include dial tone speed.

The measure of dial tone speed (DTS), in reference to this article, is the per-cent of calls that wait for dial tone longer than three seconds (% DTS over 3"). Three seconds is used as the period of delay because studies have shown that about 50% of the customers fail to wait for dial tone when this interval is exceeded. In addition, other observations have shown that those who were satisfied had a delay as a group of 1-1.5% over 3" whereas the unsatisfied group had a delay of 3.5% over 3".

NEED FOR ACCURACY

If dial tone speed is to be effectively used in all of its applications, its measurement must be accurate, complete, and timely. In addition, because sampling is used and results are combined, the required mathematical procedures must be accurately followed.

MEASUREMENT ERROR

The accuracy with which measurements of dial tone speed show actual average service received by the customers is largely determined by the magnitude of the sources of error inherent in the following:

1. Source variation of the item measured
2. Selection of Representative Lines
3. The sampling rate (number of tests)
4. The accuracy of the 3 second timer in the DTS Register Circuit.

All of these collectively determine the confidence interval that can be expected in dial tone speed measurement.

Dial Tone Speed Register Circuit

MEASURING DIAL TONE SPEED

The DTS measuring circuit measures dial tone speed by using spare subscriber line equipment that are assigned in a prescribed manner as test lines to terminals of the DTS Register

Circuit. The test lines, one at a time and in sequence, are made to appear to the dial tone equipment as a normal request for dial tone and normal response to this is made by the central office equipment. The DTS Register Circuit is arranged to recognize the return of "dial tone", and by a timing circuit to determine whether or not dial tone is returned within three seconds.

At the end of each test, the DTS Register Circuit restores the test line to the "On-Hook" condition and steps to the next test line which is tested in the same manner. This sequence continues until all lines to be tested have been used. The sequence is then repeated throughout the study period.

Each time a test is made a "T" register is scored: each time a test fails to receive dial tone within three seconds, a second, associated "D" register also scores. The % DTS over 3" is computed for the study period (usually one hour) as follows:

$$\% \text{ DTS over 3"} = \frac{\text{D Registrations} \times 100}{\text{T Registrations}}$$

EFFECTS OF DTS REGISTER CIRCUIT ON OFFICE LOAD

As each dial tone speed test call is terminated automatically immediately after dial tone is received or, if dial tone is not returned, shortly after 3 seconds, no significant load is placed on the dial tone servers. This allows the DTS measurements to be made at all times without affecting customer service. However, it is suggested that allowance for the calls be made when engineering No. 5 Crossbar Dial Markers.

Improvements were made of the DTS. One such modification employed the use of a synchronous timer arrangement for accurately establishing the three second delay period and for producing a fixed number of tests in a given study period (about 900 per hour). Other arrangements have been made to time the three second interval such as a cold cathode tube, without success, and have been modified to accept the rectangular type housing for the synchronous timer.

Test line terminations: T & D Registers

TERMINATING AND ACCESSING TEST LINES

All versions of the circuit use 206-type selectors on which to terminate the test lines and to access them. A selector has 5 arcs of 20 terminals each, thus providing for 100 terminations. One selector is provided when 100 line capacity is suitable; a second optional selector provides for the maximum capacity of 10 arcs with 200 terminations. The initial 206-selector switch is identified as the "A" switch and arcs as A2 to A6; the second as the "B" switch with arcs B2-B6. A third 206-type selector, designated as C switch, is used for control purposes.

Within the arcs, the terminals are numbered 1-20; therefore, terminals are identified by switch, arc, and terminal. I. E., A2, Terminal 3; B4, Terminal 5; ETC...

Less than or all of the 100 or 200 terminals may be used as required. However, it is not recommended that more than

(CONTINUED ON PAGE 10)

Dear Tel,
I have just received and read your sample copy, Volume 1 and Number 2, and enjoyed it enough to want to subscribe. Enclosed, find my check for \$4.00. Frankly, it amazes me that you have the guts to publish and the luck or whatever to put out two issues. I hope you can survive for a whole year, in the business sense of the word.

My interest in your publication is based in my own background in telephone games, which goes back to 1964-65. At that time, I became interested in telephone billing, and finished an unofficial visit to a central office. From scant information I picked up there, basically about the use of 2600 Hz supervisory tone, and by listening to my own phone, I constructed a "Blue Box" which was fun-but not for long; Telco Security had my number, so to speak, in about 4 months. I got off rather easily because at the time, ten years ago, there were no specific laws regarding simulating the signalling. (Laws were passed right after, and because of, this incident.)

The unhappy ending of my career as phone freak - the term wasn't invented yet - brings me to a note of caution that I would like to extend to present day freaks. It is this:

If you want to Blue Box it, don't ever access long lines by calling information or 800 or 900 area codes. This is the surest way to be caught, especially if you consistently call from the same phone.

I would suggest trying call diverters or other local numbers that will not be discernible on your phone's billing records. The trouble with information calls and 800 - or 900 - calls is they appear on your billing record - but not the bill you receive - and hours of calls to this type of number raises suspicions. In

addition, information calls never drop supervision legitimately but if you use any information call to access long lines, then make another call you will drop supervision, and that is most suspicious.

Now here, for the general welfare, are a few suggestions and numbers. First the numbers in the 412 (Western Pennsylvania) Area.

XXX-0000 1000 Hz test tone in very old exchanges. In ESS exchanges such as 391, test starts with several bursts of Rev. Batt. then goes to busy.

XXX-0062 Gives overflow signal in most exchanges.

XXX-0068 1000 Hz Test Tone in Most Exchanges.

XXX-0085 Rev. Batt. Test in Most Exchanges.

XXX-0092 Loop Arouns

XXX-0093 0093

XXX-0096 Permanent Busy

391-8999 An unusual item. I don't know what this is and would appreciate your suggestions. This number is non-supervising.

985-WXZ-6 Rings back when you hang up. To use this number, suppose you are calling from 396-9101. Dial 985-9101, wait for dial tone, then dial 6 and hang up. NOTE: The 985 number is different in other area codes. In 312, it is 571. Also, some older equipment gives dial tone after dialing only 985 (not 985-WXZ). When using this number, if you dial some other four digits than WXZ you get

a busy. Also a comment: since this number gives back a dial tone, it seems to have great potential, but I have never found other uses for it.

Suggestion 1. A fascinating project for the beginner in telephone experimenting is to make a list of unlisted exchanges. Use your directory to eliminate the unlisted exchanges in your area, then dial the others, followed by a four digit dummy number like -1212. Depending on the equipment in your exchange, you will note a pattern to the responses. For example some exchanges you dial may give a busy signal, while others give a recording. Pay special attention to those that vary from the norm. One exchange you may find this way is 954, which at least here in the east is the information exchange for the old DTMX network, now sold to Telco.

Suggestion 2. Do the same experiment with area codes. You will probably find 1 or 2 "unlisted" codes in your area, including 903 (Mexico).

Suggestion 3. Collect central office (Exchange) codes from around the country, and look for missing codes. There should be interesting stuff here although my discoveries have been meager. I have long suspected that there is a nationwide means to dial toll-free, set up by using unlisted exchanges, but I have never found it.

And, finally, a personal note. I would like to obtain Vol 1, #1 of your magazine. Please advise if this is available.

Yours truly,
Paul Carlson
108 Allison Road
Pittsburgh, Pa.

Coming Next Month
HOW THE TELEPHONE WORKS OVERSEAS DIALING TECHNIQUES PAY PHONE SPECIAL C. O. OPERATIONS IRS SYSTEM LABORATORY SYNTHESIS OF DMT & DET

Gentlemen,
I recently came across the following information. To make a free call from any place in the world to any place in the world, all one needs is a TOUCH-TONE line and a 2600 Hz audio signal. Simply dial any "800" WATS number. Then, after you have finished dialing and before the call goes through, inject the tone-it need not even be hooked into the line, just play it into the mouthpiece. This will clear the line. Then, just dial the number you wish to call. This method is particularly good since it is undetectable and neither you nor the holder of the WATS line gets billed.

Letters
From the reader

I find your magazine quite good but would appreciate more construction plans and possibly a classified ad department where readers could exchange ideas and equipment. Keep up the good work.

S. H. HANARONECK, NY

and a 7-digit number preceded by a KP (Key Pulse) and followed by a ST(S)Start. These frequencies consist of the following: 200 Hz, 300 Hz, 1100 Hz, 1300 Hz, 1500 Hz, and 1700 Hz. TOUCH TONE frequencies are not the same as these and are: 697 Hz, 770 Hz, 852 Hz, 941 Hz, 1209 Hz, 1336 Hz, and 1477 Hz. The nationwide telephone network is the multifrequency (two-tone) 2600 Hz will clear the long-distance line but unless you have the M-F tone. These tones consist of frequencies mentioned proper M-F tones, the trunk will not respond and no call will go in pairs (combinations), two at a time, consisting of an area code through. You have the right idea but the wrong tone.

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JACK KRANYAK
Executive Publishing Director

JOHN REYNOLDS DONALD SIMMONES
BILL HOMUTH ROBERT KLIEN
TEL Staff Writers

Editorial and main offices at:
22055 Burbank Blvd., Woodland Hills CA 91364
(213) 384-1129

Dear Sirs:
Many thanks for the December issue of TEL, kind of reminds me of a TAP made respectable - whatever, more power to you! It seems I was missed for the November issue, Vol. 1 No. 1, and I do wish to have a "complete" collection.

Things are taking shape up here, two or three busts by Telco plus FBI and some interesting news is developing out of some of it. It seems that now with the so-called "disclosure" laws permitting the defendant to view before trial all the evidence to be presented against him, Ma Bell may be caught with her drawers down - an important decision may soon be reached with regards to invasion of privacy by Telco employees. Others come forward with a volume of additional evidence to support the claim of illegal invasion of privacy. Contrary to the many press articles appearing across the country in recent weeks, the phone companies do not have a legal right to use their powerful position as a surveillance tool without court order. Local radio and television news services are taking an interest in this, too - the next few weeks should prove interesting to that portion of the public still too naive to think that Ma Bell is as benevolent and Simon-pure as she pretends to be!

If you are interested, can furnish you with a blow-by-blow account of his arrest and trial, including the Telco's "secret" techniques for detection, the Deenan recorder, etc. Nothing you really didn't know, but some interesting points emerged.....

Loops (supv.) within the 206 NPA in current operation:

| | |
|-------------|-------------|
| 527-2897, 8 | 932-0018, 9 |
| 941-0018, 9 | |

There are many more, but these work most of the time. Keep checking the Sears conference number (344-644X), it may open again one day, with a little help. The DC conference (404-059-2111) may still be afd into with difficulty, but simple access from 206 NPA is thru Montreal (use 514-958-4D) to get 4-A.

Both previous numbers are non-supp.

The venerable "Voice of Chester" is alive and well on 206-641-2382 (supv). Call number, wait for a re-ring signal then hit a TT 1-1-1 in rapid sequence. A recorded announcement will then describe the week's programs. Topics like Acupuncture, health foods, CIA, sexual customs, it's all there for the listening. Numbers given by the announcement are intended to be substituted for the 1-1-1 in the first example.

Equipment wise, there are many new CMOS designs in use in this area. They draw negligible power, combine completely automatic red and blue functions and are automatically sequenced with memory storage of several numbers. All this within a case about cigarette pack size seems incredible, but I assure you they work perfectly, and circuits are available. Incidentally, a recent article appearing in one of the leading electronics trade magazines states that soon many Telco exchanges may employ message format "discriminators" to eliminate illegal MF inputs, presumably hand keyed. The computer age is here, gentlemen -- let's make it work for us!

How about an article dealing with the infamous 1633 cycle tone? Several here are getting the "most" out of their TT phones, becoming 'operators', setting up conferences, loops and other fun things with the aid of nothing but their required TT pads. Would you like an illustrated 'how-to' article?

Let me know if you are in need of Autovon accessing info.

'Green Book' currently available thru the U. N. Bookstore in N. Y. Price is quite high, even for the single volume on switching, but maybe someone with a Xerox could make this valuable info more available to those who need it. Most here have a copy of the White Book Vol. 6, and it certainly comes in handy.

Would much enjoy talking with you people sometime, what's a good number, and a good time to call? Our bias off to you all, your newletter has a nice, alarmingly professional appearance, and we do realize the substantial effort and risks involved in its publication.

May 1975 see you proper in a very big way.

Yours truly,
Milo Fossil
Seattle, Wa.

Dial Tone Speed Measurement

(CONTINUED FROM PAGE 7)

one entity be assigned to one DTS Register Circuit. This is to assure optimum accuracy in measurement by reducing sampling errors through utilizing all tests for only one entity. Also, it is of particular importance where the two entities do not have equipments that are fully and mutually compatible with the DTS Register Circuit.

LOADING DIVISIONS:

PAIRS OF T AND D REGISTERS

Arrangements permit a separate pair of T and D registers to be associated with each arc, for a maximum of 20 test lines. Or, more test lines can be assigned to a single pair of T and D Registers by grouping, up to the entire 5 arcs on each selector switch (100 lines). This is done so that DTS may be measured separately for classes of service; for several loading divisions; for Dial Pulse and TOUCH-TONE, etc. This allows 5 pairs of registers (5 Loading Divisions) on the 200-line unit.

Arcs are associated with a particular pair of T and D Registers by the setting of the rotary switches in the older versions and by flexible cross-connections in later versions. Recognize that there can be only one Loading Division on one arc. Therefore, when there over 5 Loading Divisions, the 200-line unit must be used even though less than 100 lines are to be tested.

Of importance is that DTS may be measured separately for each class of service, or Loading Division; etc, it will be noted that the Traffic Service Observing Practice (TSOP) defines Loading Divisions and also specifies how the arcs and test lines are to be assigned from this viewpoint. Also, how the results computed and weighted are stipulated.

BYPASSING ARCS

Any or all arcs may be completely bypassed during a study period. This avoids the loss of tests where entire arcs do not have test lines terminated. Also, it allows testing to be concentrated on selected Loading Divisions when necessary or desirable.

The skipping of an arc is affected in the older versions by setting its associated rotary switch in position 6. In the later versions, by placing the associated toggle switch in the down position. Thus, there are 5 rotary switches or 5 toggle switches for 100-line units and 10 switches for 200-line units.

ACCURACY VS. TESTS PER HOUR

When done as the TSOP specifies, the weighted DTS of the entity is considered reliable, being based on between 850 and 1200 tests an hour depending which versions of the circuit is used and how the lines are assigned. It is important that all of the suggestions relating to obtaining the maximum number of tests possible, be followed as the number of tests has a direct bearing on the accuracy of the measurement as illustrated below.

When less than 850 tests are made in one hour, the reason will want to be determined. Where the tube-type timing circuit is used, this may denote the need for recalibration: for the synchronous timer, this may indicate a malfunction of timer. It may also mean improper use of skip, dwell and/or bypassing of arcs. In any event, it means an increased Sampling Error.

Some indication of the loss of accuracy when less than 850

tests are made in an hour is shown by the following table of Theoretical Limits of Sampling Error, for a 90% Assurance Level:

| Actual % Over 3" | Probable Range of % Over 3" Number of Tests (1Hour) | | | | |
|---------------------|--|------|------|------|------|
| | 200 | 400 | 600 | 800 | 900 |
| 1.0 | 2.0 | 1.8 | 1.6 | 1.6 | 1.5 |
| | .3 | .4 | .5 | .5 | .5 |
| 1.5 | 2.8 | 2.4 | 2.3 | 2.2 | 2.1 |
| | .5 | .7 | .8 | .9 | .9 |
| 8.0 | 11.2 | 10.3 | 9.9 | 9.6 | 9.5 |
| | 5.1 | 5.9 | 6.2 | 6.5 | 6.5 |
| 20.0 | 24.8 | 23.4 | 22.8 | 22.4 | 22.2 |
| | 15.6 | 16.8 | 17.4 | 17.7 | 17.9 |

Consideration will want to be given to the loss of accuracy particularly when as few as 200-400 tests are made in an hour. This is of concern when the DTS results for a small Loading Division is being reviewed. For example, in a No. 1 Cross-bar Office with three Loading Divisions as below, the measured values for Party and Coin are extremely unreliable indicators of their grade of service. However, recognize that the Weighted Entity value would be satisfactory since the entire 900 tests would be reflected.

| Class Of Service | Registration | TIME | | % Over 3" | | |
|------------------|--------------|----------------|-----|-----------|-------------|--------------------------|
| | | Busy Hour | T | D | As Measured | Probable Range (Approx.) |
| Ind. | | 10:00-11:00 AM | 700 | 5 | .7 | .4 to 1.0 |
| Party | | 7:00- 8:00 PM | 150 | 3 | 2.0 | .9 to 4.0 |
| Coin | | 1:30- 2:30 PM | 50 | 2 | 4.0 | 2.0 to 9.0 |
| | | | 900 | | | |

INCREASING ACCURACY FOR SMALL LOADING DIVISIONS

Where more accurate measurements for small loading divisions are required, this can be done by "skipping" the arcs for any loading divisions for which DTS measurements are not needed at the same time. In the above illustration, it will be noted that during the Coin B.H. of 1:30-2:30 PM, the coin class would be given the entire 900 tests. And, the results would be more accurate as below (assumes 4.0% over 3" measured in both cases):

| As Measured | % Over 3" | |
|-------------|--------------------------|------------|
| | Probable Range (Approx.) | |
| | 50 Tests | 900 Tests |
| 4.0 | 2.0 to 9.0 | 3.0 to 5.0 |

The improvement in accuracy is worthwhile. However, this procedure of skipping arcs is not recommended normally. This is because of the possibility of errors of setting the switches each study period causing a loss of data or the incorrect assignment of D and T Registers in the version with rotary selector switches.

The above procedure (while it does improve accuracy by reducing error due to sampling rate) in no way reduces the effects of the other three sources of measurement error listed previously. *

When the Phone Company turns a deaf ear

(continued from page 6)

Credit rating B: Preferred customer with established credit gained by six months of service without any five-day shut-off notices. If a deposit is involved, the service rep may not upgrade an account to "B." Full two months to pay your bill. Friendly reminder (gentle aquamarine notice: "Have you forgotten your payment?") followed by five-day warning (fiery red ultimatum: "Your payment hasn't arrived!").

Credit rating C: Higher classification for new customers. Purely arbitrary whether a person is put in "C" or "D". Odds are good that if you live in a not-so-desirable neighborhood you will automatically get a "D rating". "C" customers get 20 days to pay and a friendly reminder before the five-day warning goes out.

Credit rating D: All other new customers. They get only the five-day warning, and this comes just 16 days after the bill was originally mailed out by the phone company.

Credit rating E: Reserved for those who have had their service disconnected for nonpayment of phone bills. Five-day shut off notice comes a scant ten days after the bill was first mailed out.

WHAT DO YOU DO WHEN YOU GET THE FIVE-DAY SHUTOFF NOTICE?

If you receive a five-day shut off notice, call your service rep. Have a good story ready (you've been out of town, sick, etc.) and either make arrangements to pay the bill now or give a definite date when the bill will be paid. Set the date even if you can't stick to it. Giving a date shows you intend to pay and will keep your phone from being disconnected.

If you don't call, your service rep will try to reach you by phone on the sixth day after the date of the five-day notice. If there is no answer after two calls, the rep will shut off outgoing calls but still permit incoming calls. Again, call and try to make arrangements to pay. Your rep has to disconnect all service after five days of a partial disconnect, but superiors can authorize up to 15 days. Even if you drop a check in the mail immediately, call to protect yourself in case the mail delivery is slow.

If your service is totally shut off, your rep can require you to pay the total outstanding bill, a \$24 connect charge, plus a deposit equal to twice your average monthly bill over the previous three months. Again, this can be waived if you scream loud enough.

One final warning; everything gets noted on your record. If your phone is disconnected, your credit rating is going to drop to a "D" or an "E". If you give excuses every month, the rep will catch on. It's best to pay on time when you can and save your late payments for real emergencies.

HOLIDAYS FOR THE PHONE COMPANY ARE HIGHLY SELECTIVE.

The phone company has special long distance rates for holidays that are much lower than weekdays. In the coming year, July 4, Labor Day, Thanksgiving, Christmas, New Year's and Washington's Birthday are all special-rate holidays. But not Columbus Day or Memorial Day, which are both holidays for phone company employees, Mother's Day or Father's Day, when people would be prone to make calls to their family.

WHAT THE BILL DOESN'T TELL YOU THAT IT SHOULD.

In mid-June, AT&T urged its member companies to include on their bills the time of day of long distance calls and the duration of the calls. Unfortunately, even though these changes are on Pacific Telephone's drafting boards, they have yet to be made. Thus, the actual lengths of your long distance calls are not noted on your bill, so there is no way you can easily check to see if you were charged for more minutes than you actually spoke. Furthermore, the time the call was made is not noted on operator-assisted calls. If there is a mysterious operator-assisted call to Lodi on your bill, you don't have the advantage of knowing when they think the phone call was made to determine who, if anyone, actually made the call.

HOW TO GET THE MOST OUT OF YOUR TELEPHONE DOLLAR WHEN YOUR SERVICE IS CONNECTED.

The phone company is able to rack up extra profit because people take phone service for granted, and even if a person wants to get the cheapest service, he or she is not provided with the information to make an intelligent decision.

For example, when you order a phone, anything you get beyond a single-listed dial phone with a short cord is going to cost you. For example: a 25-foot cord will set you back \$7.50; a touch tone phone costs an additional \$5 to install plus \$1.60 each month; even an extra listing in the directory will cost you \$4.80 a year.

If you live alone, are new to the City or don't use the phone too much, it will pay you to get a measured service.

For \$2.50, you get 30 local calls. For \$3.75 you get 60. Unlimited service runs \$5.70. With the measured service, each local call past your allotment costs you 5¢. In other words, if you make less than 54 calls a month, it pays to get the \$2.50 service; less than 100 calls, get the \$3.75 plan. If you consistently make more calls than you thought you would, you can always switch to a different service at no extra charge, but it pays to try the limited calls alternatives.

WHEN SAYING HELLO TO NEW YORK CITY COSTS ONLY EIGHT CENTS MORE THAN SAYING HELLO TO WALNUT CREEK.

Over the years, the gap between the expense of a long distance call and one within the state or even within the Bay Area has narrowed to the point where it often has ceased to exist. For example, a one-minute call to New York City after 11 pm will only cost 35¢, while a three-minute (or shorter) call to Walnut Creek will cost 25¢ from downtown SF.

The following chart of phone charges for direct dialing from SF to New York City illustrates the cheapest times to make out-of-state calls:

| Time | First Three Min. | Each Addl. Min. |
|-------------------|------------------|-----------------|
| Sat. 8 am - 11 pm | 70¢ | 20¢ |
| Sun. 8 am - 5 pm | | |
| M-F 5 pm - 11 pm | 85¢ | 25¢ |
| Sun. 5 pm - 11 pm | | |
| Hol. 8 am - 11 pm | | |
| M-F 8 am - 5 pm | 1.45 | 46¢ |
| M-F 11 pm - 8 am | 35¢* | 20¢ |
| Sat., Sun., Hol. | | |

* First Minute

HOW TO GET RESULTS IF YOUR SERVICE REPRESENTATIVE TURNS A DEAF EAR.

The phone company has very set procedures but often can be made to grant exceptions if you complain clearly, loudly, and persistently. Each time your demand gets turned down, ask to speak to a superior. The higher you go, the more likely the person is to say "yes" or listen sympathetically. Above the service rep is the supervisor, then comes the manager.

If necessary, ask for the district manager, then the division manager. Ask for a personal interview, write letters with carbons. If you are still stymied, ask for the president, Jerome Hull. After you talk to his secretary, your last resort is to complain to the California Public Utilities Commission. (In SF it's 557-0350). Send carbons all around.

Make threats all up the ladder; state that monopolies like Pacific Telephone have to give the customer satisfaction; mention the US government's antitrust suit; say you will oppose their latest rate hike request unless you get satisfaction. Remember; complain enough and you will often get results. *

COMPARISON CHART — TELEPHONE ANSWERING / RECORDING DEVICES

| 1 MANUFACTURER OR DISTRIBUTOR | 2 MODEL NAME & NUMBER | 3 SUGGESTED RETAIL PRICE \$ | 4 MAXIMUM OUTGOING MESSAGE (SECONDS) | 5 VARIABLE LENGTH OUTGOING MESSAGE | 6 MAXIMUM INCOMING MESSAGE (SECONDS) | 7 MAXIMUM MESSAGES (TOTAL) | 8 VOICE ACTIVATED | 9 AUTO LEVEL CONTROL | 10 CALL RECEIVED INDICATOR | 11 RECORDS PHONE CONV. | 12 REMOTE CALL- BACK | 13 DIMENSIONS (INCHES) | | | 14 FEATURES & REMARKS |
|--|--------------------------------|---|--|--|--|-------------------------------------|-------------------------|-------------------------------|-------------------------------------|---------------------------------|-------------------------------|------------------------------|------|------|--|
| | | | | | | | | | | | | WIDE | DEEP | HIGH | |
| ACCURATE MERCHAND. INC. 400 Madison Ave. New York, N.Y. 10017 | TELE-TENDER MODEL K229 | 140 | 60 | YES | 45 | 90 | NO | YES | NO | YES | NO | 13 | 9 | 3 | A B C D |
| BEAIR ENTERPRISES 12924 Carissa Ave. Hawthorne, Calif. 90250 | MY SECRETARY MS-1 | 159 | 20 | NO | 25 | 108 | NO | YES | LIGHT | NO | NO | 12½ | 10¼ | 4½ | A E |
| BSR (USA) LTD. Consumer Prod. Route 303 Blauvelt, N.Y. 10913 | PHONE BUTLER TA-1000 | 100 | 20 | NO | 30 | 30 | NO | YES | LIGHT | NO | NO | 9 | 10 | 2¼ | E F G |
| CRAFT ELECTRONICS, INC. 830 Hempstead Turnpike Franklin Square, N.Y. 11010 | MARK I | 160 | 180 | YES | 60 | EXTERNAL RECORDER | NO | EXTERNAL RECORDER | EXTERNAL RECORDER | NO | NO | 9 | 10¼ | 3¾ | External Recorder Needed to Receive Messages. Voice-Activated Unit Available at \$130. |
| | MARK II | 219 | 180 | YES | 60 | 60 | NO | NO | NO | NO | NO | 14¼ | 10¼ | 3¾ | A B Voice-Activated/Automatic Level Control Unit Available at \$295. |
| | MARK III | 495 | 180 | YES | 2700 | 90 | YES | YES | NO | NO | YES | 14¼ | 10¼ | 3¾ | A B G |
| CROWN (Japan) RADIO CORP. 228 E. Harris Ave. So. San Francisco, Ca. 94080 | CTA-4100 | 100 | 120 | YES | 120 | EXTERNAL RECORDER | NO | EXTERNAL RECORDER | EXTERNAL RECORDER | NO | NO | 8½ | 10½ | 3¾ | External Recorder Needed to Receive Messages; Direct Connection to Phone Line is not Required. |
| | CTA-4400T | 240 | 20 | NO | 90 | 90 | NO | NO | TAPE COUNTER | NO | NO | 10 | 12¾ | 3¼ | A B C Direct Connection to Phone Line is not Required. |
| | CTA-4450 | 290 | 23 | NO | 90 | 90 | NO | YES | TAPE COUNTER | YES | NO | 15¼ | 11 | 4¼ | A B C D Direct Connection to Phone Line is not Required. |
| DICTAPHONE CORP. 120 Old Post Road Rye, N.Y. 10580 | ANSAPHONE 640 | 325 | 180 | YES | 2700 | 90 | YES | YES | TAPE COUNTER | NO | NO | 8½ | 8½ | 5 | C H |
| | ANSAPHONE 650 | 450 | 120 | YES | 1800 | 60 | YES | YES | TAPE COUNTER | YES | NO | 10½ | 14 | 4 | A B C D Question & Answer Programming Mode |
| | ANSAPHONE 590 | 695 | 180 | YES | 2400 | 80 | YES | YES | TAPE COUNTER | YES | YES | 12 | 12½ | 4 | D |
| DICTRAN INT'L CORP. 755 Folsom St. San Francisco, Ca. 94107 | DORO 311 | 345 | 720 | YES | 3600 | 120 | YES | YES | CALL COUNTER | YES | NO | 12½ | 11½ | 3½ | A B C D I |
| | DORO 320 | 695 | 720 | YES | 3600 | 120 | YES | YES | CALL COUNTER | YES | YES | 12½ | 11½ | 3½ | A B C D J K Can be Remotely Controlled by Touch-Tone Telephone. |
| FORD INDUSTRIES, INC. 5001 S.E. Johnson Creek Bl. Portland, Ore. 97266 | CODE-A-PHONE MODEL 360 | 200 | 120 | YES | 120 | 90 | NO | YES | NO | NO | NO | 10 | 12¾ | 3¼ | A B I Appears to be Identical to Sanyo Answer Man |
| | CODE-A-PHONE MODEL 525 | 425 | 18 | NO | 900 | 30 | YES | YES | YES | NO | NO | 14 | 11 | 5 | G Three Switch-Selected Outgoing Announcements |
| | CODE-A-PHONE MODEL 444 | 650 | 18 | NO | 1200 | 45 | YES | YES | NO | NO | YES | 14¾ | 9 | 4½ | G L |
| | CODE-A-PHONE MODEL 560 | 795 | 18 | NO | 1800 | 60 | YES | YES | YES | NO | YES | 14 | 12 | 5 | G J K Three Switch-Selected Outgoing Announcements |
| | CODE-A-PHONE MODEL 700 | 895 | 180 | YES | 7200 | 120 | YES | YES | YES | NO | NO | 11½ | 14 | 4¾ | B |
| | CODE-A-PHONE MODEL 800 | 995 | 180 | YES | 7200 | 120 | YES | YES | YES | NO | NO | 13 | 14 | 5 | B VOX Control (Tape Pauses when Speaker Pauses) |
| PHONE-MATE, INC. 335 Maple Ave. Torrance, Ca. 90503 | PHONE-MATE 400 | 140 | 30 | NO | 30 | 20 | NO | N/S | FLAG | NO | NO | 9½ | 12 | 3½ | E M N Q |
| | PHONE-MATE 800 | 170 | 30 | NO | 30 | 20 | NO | N/S | FLAG | NO | NO | 9½ | 12 | 3½ | C E N P Two Switch-Selected Outgoing Announcements |
| | REMOTE- MATE | 130 | 30 | NO | 30 | 8 PER CALL-BACK | NO | N/S | FLAG | NO | YES | 9½ | 12 | 2¾ | E N Remote Call-Back for use with Phone-Mates 400 & 800 |
| ROBINSON/OHMURA 1366 Ninth Ave. San Francisco, Ca. 94122 | SANYO ANSWER MAN | 259 | 120 | YES | 120 | 90 | NO | YES | NO | NO | NO | 10 | 12¾ | 3¼ | A B I Appears to be Identical to Code-A-Phone Model 360 |
| STENO-PHONE CORP. 1561 Hempstead Turnpike Elmont, N.Y. 11003 | XL-700 | 99 | N/S | NO | N/S | 60 | NO | YES | NO | YES | NO | 13 | 10½ | 3¾ | A B C E R |

or Chamber of Commerce. Guarantees vary from 90 days to a year; some units are sold with a service policy for additional cost. Be sure what's included.

Are these things legal? Sticky question, so let me quote from the Phone Butler Manual: "The use of accessory telephone equipment is perfectly legal. However, the telephone company has the right to require you to use one of their telephone couplers - this usually involves an installation fee of about \$20 and a monthly \$4 -\$5 rental. This may be required to protect their equipment, employees and to provide uniform service. You are under no obligation to inform the phone company that you have installed a telephone answerer, and you are under no obligation to rent a coupler from them unless they tell you there is trouble on your line resulting from it..... All the units described in this survey are wired directly into the phone lines, except the Crown units, which CAN be acoustically coupled. If you ask the phone company, you'll be told you must have a coupler. If you don't ask, and just do what everyone else is doing - wire in - you'll probably never be challenged.

What if you don't have a jack to plug into? Again, let's quote the BSR manual: "If your telephone is wired directly to a small box on the wall, and does not use a plug and jack, you may want to have the telephone company install a jack for you. To avoid the expense of the coupler, you should tell the phone company that you want one of your existing phones made "portable", with a plug and two or more jacks installed. Remember, the answering machine is perfectly legal". You can also install your own jacks with parts from electronic supply stores.

How about multiple-line or business phones? Most of the companies have simple adapters, at extra cost. If in doubt or confused, have your unit installed by the seller, probably at extra cost.

What about leasing Phone Company units? Check with your local phone company for units available, installation charges, and monthly charge. They have very reliable devices, and there is never a service charge—but you pay through the nose! When you buy a unit, you own it.

Can you buy a TAD on credit? The more expensive units can be leased or bought on monthly payments. Most dealers also sell on Mastercharge or Bankamericard.

Which unit is the best? That's a loaded question. You can't go by price alone, since you must consider which features are necessary for your use. The average user would probably find the Phone Butler, at \$100, a *BEST BUY*. If more elaborate features are required, the Sanyo Answer Man (or Code-A-Phone Model 360, which is identical, with a 90 day guarantee, as opposed to the 1 year Sanyo guarantee) is a very versatile unit. The Doro 320 will do just about anything you might want - but now you're up to a \$695 unit. The best procedure is to first decide which features you *MUST* have, look over the Chart for units with these features, and send for brochures or call a local dealer. Check the Yellow Pages in your local phone book, under "Answering Machines - Automatic" you're willing to find some dealers in your area. Get the unit you like best for the money you're willing to pay. Actually, only after owning or using a unit for awhile will you *REALLY* know what you want and need!

*

now available for the telephone experimenter

COMPLETE CONSTRUCTION PLANS

TELEPHONE PLANS: \$3.00 each.

Answering Device

Automatically answers the ringing line, plays a pre-recorded announcement, takes the calling party's message, and hangs up.

"Black Box"

Device that the FBI uses to wiretap and monitor telephone conversations silently, from a remote location from the phone.

Call Limiter

Stop those long-distance calls made by your friends! Device disconnects all long-distance calls from your telephone line.

Central Dial Exchange

Now you can call the other end of your house on your private telephone system. Great for the office without a PBX system.

Recorder-Actuator

Now you have the capability of recording telephone conversations automatically every time the phone is in use.

Schematics

The basic schematics and parts lists for commonly used telephones. Includes a description of the telephone network.

Telelink Burglar Alarm

Use the telephone line as a link to notify you when intrusion occurs. Great for babysitting purposes and remote applications.

Automatic Dialer

Automatically dials a stored number in its magnetic memory. Takes Touch-Tone or Dial and stores hundreds of numbers.

Call Diverter

Answers the ringing line automatically and dials a pre-recorded number to divert the original call to a remote location.

Conference Bridge

Automatically puts your friends on a giant conference as they call in. Have three or four way calls from your home phone.

Melodic Ringing Generator

Add harmony to your phone. This device eliminates conventional ringing and produces a melody with each ring cycle.

Remote Control

Before you leave work, call your home and utilize this device to turn on the stove and heat your dinner. Avoids burglars too!

Speakerphone

Enjoy hands-free conversation on the Speakerphone. Similar to Bell System type, but uses two-way transmission instead.

Voice Scrambler

Talk and listen to your friends in the normal manner, but good luck if someone else tries to monitor the conversation.

ELECTRONIC PLANS: \$5.00 each.

Biofeedback Conditioner

Monitor the fluctuations that your brain produces and learn to put yourself in any mood desired. Completely harmless.

Multifrequency Encoder Network

Control over telephone line from this pocket-size unit. Learn to manipulate your telephone and speed calling rates by 500%!

Horticulture Stimulator

Stimulate plant growth as much as 300%. Can be used on a particular section of the plant or on the entire plant itself.

MISC. PLANS:

Dodecahedron Speaker Enclosure \$7.50.

Unique twelve-sided enclosure enhances response from any speaker. Unusual design adds to any home decor. A must for the audiophile and design engineer.

Photographic Pinhole Camera \$3.00.

Small, compact, easy to build camera costs only the price of the film cartridge. Plan includes proper exposure setting tables and film types that produce best results.

THE LEGAL ASPECTS OF INTERCONNECTION

The complete reference book on the legal rights of the telephone customer. \$29.95, postpaid.

WE ARE VERY HAPPY TO ANNOUNCE THAT THIS BOOK IS NOW ENTERING THE FINAL STAGES OF PRODUCTION AND IS ALSO BEING MADE AVAILABLE FOR SALE. WE HAVE RECENTLY ACQUIRED COPIES OF THE TARIFF REGULATIONS DEALING WITH INTERCONNECTION, AND SOME VERY INTERESTING INFORMATION DEALING WITH THE NEW COURT RULINGS ON INTERCONNECTION ILLEGALITIES. WE WILL ALSO BE INCLUDING SOME OF THE INFORMATION GATHERED BY OUR STAFF OF TEL ENGINEERS AT THE

VARIOUS LEGAL LIBRARIES IN SOUTHERN CALIFORNIA. WE WANT YOU TO KNOW WHERE YOU ARE RIGHT AND THEY ARE WRONG, AND EXACTLY WHAT YOU CAN DO SHOULD A CONTEST ARISE. WE WILL GIVE YOU EXPERT, RELIABLE ADVICE, WHICH OUR TECHNICAL EXPERTS HAVE BEEN BUSY GATHERING. IN OTHER WORDS, WE WANT YOU TO KNOW WHAT TO DO, AND HOW TO DO IT. THIS MATERIAL IS UNIQUE IN CONTENT, AND WE HOPE THAT YOU WILL ENJOY READING IT AS MUCH AS WE ENJOYED WRITING IT FOR YOU!

ALL OF THE CONSTRUCTION PLANS ABOVE ARE AVAILABLE FOR \$24.95. WITH "LEGAL ASPECTS" BOOK \$49.95 AIRMAILED

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