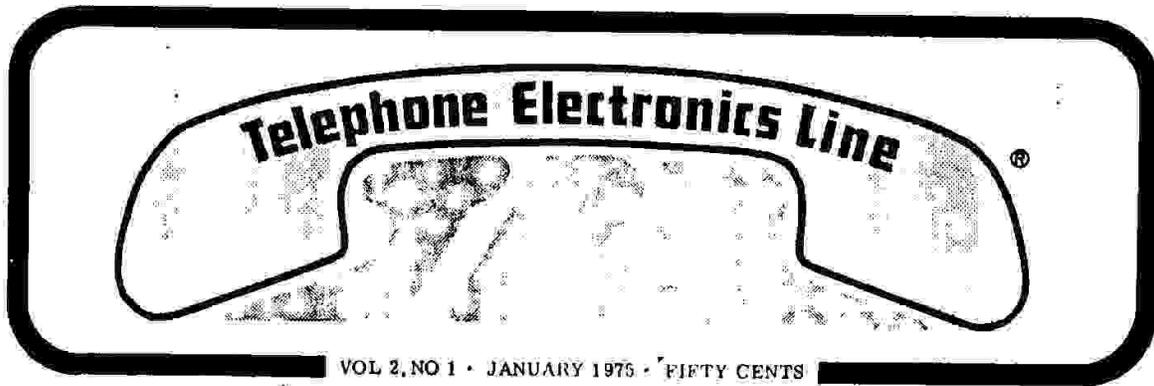


THE INTRICACY OF CREDIT CARD FRAUD



VOL 2, NO 1 • JANUARY 1975 • FIFTY CENTS

NEW YEAR '75

**MODERN
PHONE PHREAKING:**
More sophisticated
yet more vulnerable

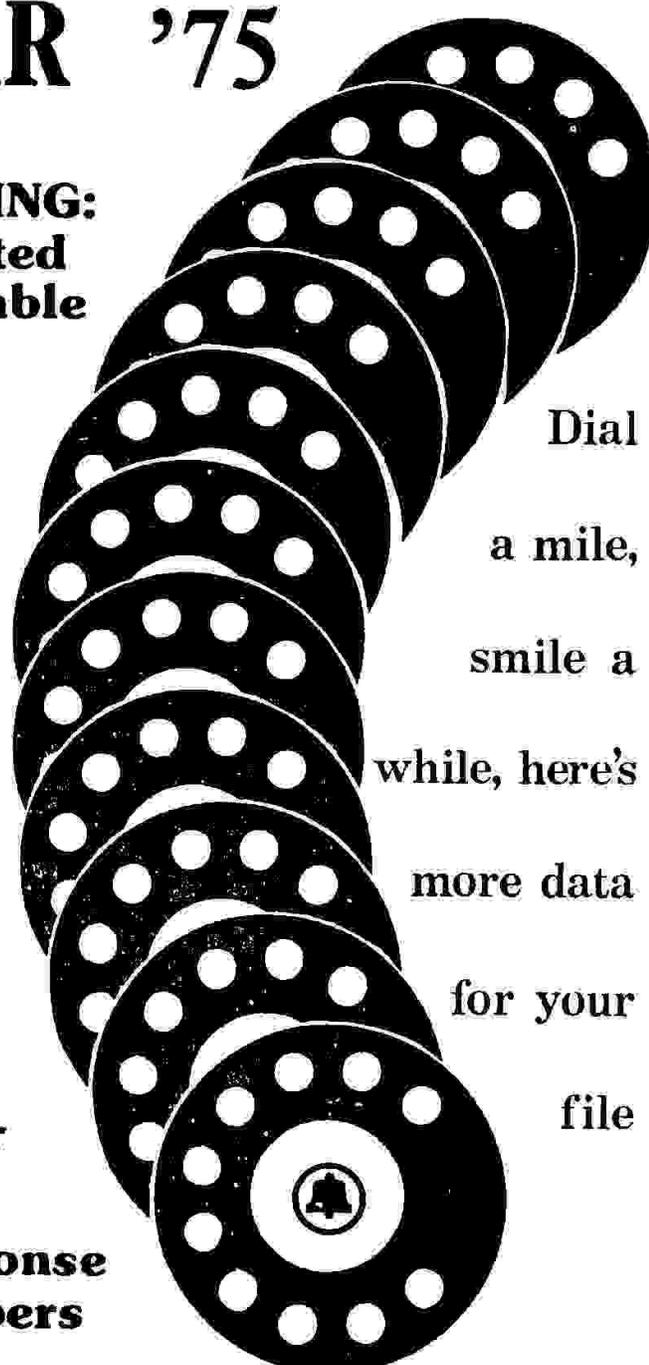
DETECTION:
How to avoid it

TOLL:
A general
introduction

**CONSTRUCTION
PROJECT:**
The Hold Button

AREA CODE 900:
It's more than a
mass calling number

**PLUS: Reader Response
Code & Test Numbers**



Dial

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while, here's

more data

for your

file



Published Monthly

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The Old Tel

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.

We continue to grow with your support. In fact, we'll be expanding in volume 33% 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!



**Wishes You A
Happy New Year**

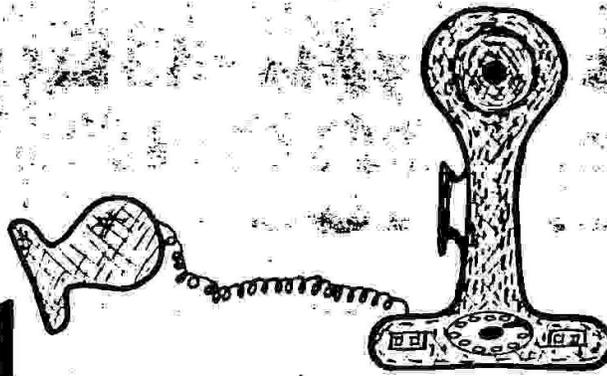
If it's TEL, it's swell!

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Editorial



By Jack Kranyak

Commercial Telephone Service (CTS) is a new concept which works very much in the same manner that television in America does. (As far as basic format is concerned). There are numerous opinions involved—both pro and con—however, at the present time, little has been done to design or develop such a system.

Imagine if CTS were employed in your city. There would be no telephone installation charges, repair charges, or toll charges. If CTS were employed nationwide, there would be plenty of free unlimited communication for all. Every telephone call would have an announcement that would "appear" on the conversation, sponsored by a local merchant. Your local calls would have local announcements, while toll or long-distance calls might be sponsored by National Airlines or Coca Cola.

Sound absurd? Not really. This concept has probably been employed by small telephone companies in the past, without success, probably due to a lack of interest with larger companies. If you ever watch American television, you will find that most stations are sponsored by commercials every five or ten minutes. Depending in the station and the viewer, programs sponsored by these merchants may range from very entertaining and amusing to extremely dull and frustrating. Personally, I find most television shows are a waste of time and very non-educational. The occasional "specials" are the only worthwhile programs to view. (This is not an endorsement to degrade America's television and is not intended to do so).

On the other hand, the commercials may very well be another story. They inform the television viewer on current product availability and economic situations. They demonstrate advertising techniques and consumer gullibility. In addition, they bore the hell out of some suckered souls who try to watch the program in between commercials.

Now, if advertising were employed in the telephone industry as presently done with television, what effects would there be on the consumer and what changes would be made in the system?

In the first place, the consumer is already blessed with commercials on television. Why would it be so difficult to accept the idea of commercials on the telephone? In addition, there would be no invasion of privacy on the conversation since the advertisement would be a recorded announcement played through individual couplers into each line separately. In addition, many different announcements (one recorded right after the previous one) on a continuous loop of tape would be used, preventing the same message from being played over and over again.

The mechanical workings of such a system would not be difficult to employ. One idea would consist of the following: Every subscriber line would have a step-up transformer connected to the Tip and Ring terminals—the two wires which constitute a telephone line. This will permit low-level audio signals from the announcement machine to be stepped-up to a higher voltage and placed across the line. Since the telephone line is current limited, a high voltage signal will produce a loud, clear audio transmission. It will also step-down

signals that the subscriber produces, such as conversation or Touch Tone signals, travelling in the opposite direction (coming from the line and going into the announcement machine) to a level where it will be lost in the transformers. Although to a certain extent, this would be impossible according to formulas and theory, practical limitations will permit this type of setup to work. (Many audiophiles will testify to this when they find that their high-fidelity amplifier has a reduced bass response and a lack of treble. The blame: Their amplifier uses transformers which provide a lack of efficient coupling, and consequently have a loss in transmission).

Therefore, we learn that transformers placed across every subscriber line will couple the line to the announcement machine with good results. It will also block signals creeping back into the system and isolate the lines from themselves where no crosstalk or backtalk will be heard.

Two modifications that might prove to be advantageous are: 1). Using individual amplifiers on each line instead of transformers where cost is not a factor. This will provide maximum coupling and individual gain and output control for varied subscriber loop lengths. 2). Using either the transformers or amplifiers on line-link or trunk-link circuits, instead of on each subscribers line. This too, is a cost factor which must be taken into consideration. It would cost less to have one coupling device on each line-link or trunk-link circuit rather than on each subscriber line. Since the line-link or trunk-link circuits link calling parties to called parties, when all of these circuits are busy, there would be no facilities to connect anyone together anyway. By placing the couplers to these circuits, the announcement, will go to the actual connection rather than wait on a vacant subscriber line until someone uses the phone.

There are a few limitations that CTS would introduce into the industry. Probably the most noticeable of these would put many keypunch operators out of a good job. The only billing that would be necessary is to the few advertisers who are having their announcements played on the lines. The telephone company has equipment which already calculates trunk usage for various planning and load-balance purposes. This same equipment could be used to base advertising rates. In addition, the postage that would be saved by sending at least one First Class piece of mail to each customer each month would total a considerable fortune.

Statistically, if the telephone companies were set up for CTS in the first place, based on present operating costs, there would be no more of a financial burden in operating this system than our old subscriber billing system. Again, this calculation would be derived from current expenditures on the existing system and those predicted in CTS. No actual figures will be released in this case since this is a hypothetical situation. However, it is relative to any workable telephone network, and might be interesting to see such a system in operation. It is not often that you hear what you normally watch on television on the telephone. Remember, the next best thing to being there in person is talking on the phone by long distance, whether it is courtesy of National Airlines, Coca Cola, or Ma Bell! *

TOLL: A GENERAL INTRODUCTION

By Robert Klien

In recent issues, Traffic Service Position Systems have been explored and outlined in great detail.

Now, I will attempt to outline the operations of the toll operating offices.

The physical layout of the board is best explained by referring you to Vol. 1, No. 1 of TEL (Nov. '74). A picture within that Tel issue depicts the toll board quite accurately. On each toll board, there are rows upon rows of jacks. These are called "strips" and are identified by their purpose such as a 34 tandem strip, a directory assistance strip, a no-test strip, etc. The strips are physically identified on the board by small paper strips covered with plastic in special in-laid strip holders directly above the actual jack bank. They are usually color-coded as to purpose, priority, and actual function. There are also small light indicators between label strips and jack banks in the form of round lights and bar lights. The bar lights are usually used for long-distance purposes. These lights, in the form of thin vertical strips over each individual numbered trunk, are computer-controlled to indicate which trunks are available for use. An operator will plug her cord into a lighted trunk before trying an unlighted circuit.

The other lights are round and usually used on incoming trunk circuits, such as coin, residential, etc. They light whenever someone picks up his phone and dials the operator. These lights are usually white.

The operator has a series of cords on her board for plugging traffic and verification purposes. Each cord "set" consists of a front cord, a back cord, and two lights to indicate call status for whatever circuit that particular cord "set" is plugged into. Typically, an operators board would have 20 such sets. For usual identification purposes, each cord set is marked by color. From the left, the first cord set would be coded with silver cords, white plugs, and white indicator lights. The subsequent set would have red cords, red plugs, and red indicator lights. The cords are long enough to stretch easily to the farthest jack and weighted with a special pully arrangement to allow easy and fast retraction. The cord set, in idle position, rests with both plugs straight up. The holes for the cords are only large enough to accommodate the cord itself. The plugs rest snugly against the smaller hole, held by the weight arrangement. Additionally each cord set is provided with 2 or 3 keys, of double pole, double throw on-off-on switches, used for applying ringing voltage to the front or back cords, applying talk voltage, or opening the circuit to the MF keyer for dialing on the front or back cord. Each operator is also provided with a special multifrequency keyer, which dials on trunk circuits in a method similar to our touch tone dials.

When a residential customer dials operator, a light goes on all the toll boards, on the incoming toll strip, which is identified further by a small strip denoting the first 3 digits of the customer calling such as 870, 876. An operator who is not actively engaged in a call will take her back cord and plug it into the lighted jack. While the customer waits for the operator, an audible ring-tone is sent to the customer to tell him that his call is going through.

When the operator plugs in, the light goes out on the board and the light representing the back cord stays off, while the light for the front cord goes on. The customer's phone is off the hook, while the front cord is still hung-up, it isn't con-

nected. The light is on when the phone is on the hook, off when it is off the hook.

After she plugs in, the operator will flip a key that applies talk voltage through that circuit to her headset apparatus. When the operator answers, the customer specifies the type of call or assistance needed and the operator responds accordingly.

A typical situation is; a customer claims that he has dialed a long-distance number 4 or 5 times and cannot reach the party. The operator asks for the number he is calling and the one he is calling from. She writes this information on a traffic routing ticket. Since the tickets are read electronically into billing computers at special billing centers, the operator will also mark "odd" which means he will be charged for a direct distance call. She locates the appropriate trunk strip, and a trunk marked by a thin vertical light indicator, and plugs her front cord into that circuit. Then she turns on the MF activation key, which opens a circuit from that particular cord set to the MF key unit, and depresses the KP key. A light marked ST lights to indicate that further keying can be initiated. The operator then depresses numbered keys on the MF unit, dialing the number as we do on touch tone. After she completes the ten digits she depresses the key marked ST which initiates completion of call on the far end. The light on the keying unit (ST) will go out. The light on the cord set for the front cord will stay lighted until the far end answers and then supervises (reverses). If the number called is a special Telephone Company number, or is muted, the light will stay lighted even though the ringback tone is stopped, the call answered, and conversation is going on. Operators call a line that has supervised "dark supervision" and a non-reversed line or a still unanswered number "light supervision". The operator (in a normal reversed call) will note when her front light goes out (to indicate call completion) and pull her special timer lever on her calculagraph timer mechanism which marks the time at present on the ticket, and proceeds to another call.

On 3rd party calls (calls billed to a 3rd number) the operator, after dialing the required number will call that third number to obtain billing verification. If that number is busy she will write "BY-3" on her ticket. If that number rings, but does not answer she will put "DA3" on the ticket. In either of the above cases, she will allow the call to go through unopposed. If that 3rd party answers, she will ask the answering party if they will accept the billing on a call being placed now, charged to that number and initiated by Mr. so and so.

If the party says that it's all right, she will put "V-3" on her ticket and proceed with another call, after timing that ticket. If the party refuses the charges or the operator gets a recording, such as a disconnected number, she will interrupt the call, split the parties, and ask the customer for the 3rd number again. If it is the same number, she will tell him the circumstances, and try to arrange for other types of billing. If the customer is using a fraudulent name or number, she will charge the called party. If calls are billed to a 3rd number, and it is done fraudulently, that person can complain to his "Rep", who will have special agents investigate the billing. The method of investigation is to call the Customer Name And Address Bureau Office associated with the called area, and obtain the party's name whose number was dialed and billed to the 3rd number. Then, if the 3rd party

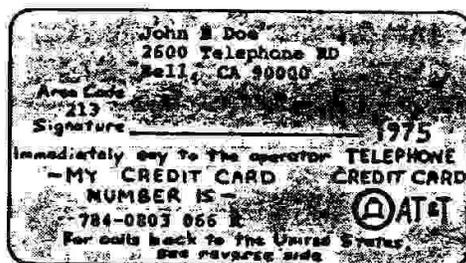
continued on page 9

The intricacy of CREDIT CARD FRAUD

By Robert Klien

Due to the recent reader response, I have decided to write an article about an important facet in the telephone system by which you can do as well as observe. Namely: CREDIT CARD FRAUD.

The title, "CREDIT CARD FRAUD" is used to indicate that misusing credit cards for fraudulent purposes is illegal, a violation of section 502.7 of the California State Penal Code. I do not recommend that you use them, nor do I condone their usage. In these lines, I have omitted actual credit card numbers, but have included the actual code used. None of the credit card numbers printed here are real—all are fictitious.



Pictured in the above illustration is an example of a typical credit card. Note the position of the name as opposed to the 10 digit code above. I have found that pasting a cut-out of this card (above) on cardboard is a good reference, and carrying it in my wallet even a quicker guide to the right answer. Note the use of the code above. The code consists of the following elements: the 7-digit telephone number of John E. Doe + a Revenue Accounting Office (RAO) code, determined by John Doe's home area code and first 3 digits of his telephone number. The RAO code currently runs from 001 to 599. RAO codes that are not within these parameters are rejected by any operator + a letter code which consists of any letter of the alphabet selected on the basis of a random, non-repeating code. Ten such letters are lined up which are then selected on the basis of a specific key check digit in the telephone number.

A typical example of a credit card number is: 784-0803 066 R. The letter code used is a 1975 series letter, and the code is non-existing in real life, although the number is an existing one in the 213 area. Existing codes may be found by

probable numbers with the operator. To do this requires access to a Direct Distance Reference Guide (DDRG) to obtain the RAO code and a knowledge of the current letter code.

The letter code for 1974 was:

1N	6S
2X	7Q
3Z	8F
4A	9U
5G	0J

This means that a 1974 code of 788-4444 066 would have a letter code of "A", as the 5th digit is the key digit in our list.

The letter code for 1975 is:

1E	6A
2M	7W
3U	8Z
4J	9H
5Q	0R

This means that a 1975 code of 788-4444 066 would have a letter code of "J", as the 4th digit is the key digit in our list.

Here is the 1974-75 letters side-by-side.

NE	SA
XM	QW
ZU	FZ
AJ	UH
GQ	JR

We know that RAO codes go from 001 to 599—not below or above. Only the middle 4 digits of the 10-digit code are used as check digits. EXAMPLE: 784-0803-066 R, 0803 as 4th, 5th, 6th, 7th.

ZAQUJ In both 74 and 75
 NXGSF In '74 but not in 75
 EMWHR Replacing not used letters of 74.

Try now, to break the code. If you can establish a formula or equation, send it in to us and we will test it to determine its validity. We also will be working on the trying to bring you more and more of your telephone companies secrets.

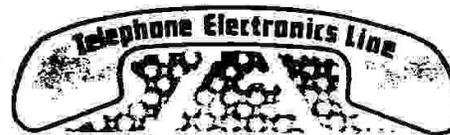
Good luck on your new project. I would suggest that you collect as many good ones as you can, using them at remote pay-places. Advise friends to whom you speak of the method of communication and alert him to head off investigations confronting him concerning illegal communications by the company.

Any information, additions, or corrections would be appreciated. When writing, please refer to the volume number and # of the TEL issue, as well as the article's name. *

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Coming Next Month:

Tone Boxes (Blue & Red)
 DDD Overseas
 Answering Machine Survey
 Telephone Systems
 Dial Speed Measuring
 Phone Booth Special



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Modern Phone Phreaking

By Donald Simmons

From technology's standpoint, many advances have been made in today's phone system, and with these advances come advances in anti-technology; or the Phone Phreak.

In earlier days, a "Black Box" or Mute Box, capable of allowing the user to get calls for free without charging the calling party, were widely used. Along with this, the "Blue-Box", a Multifrequency Oscillating Device which reproduces the sound of electronic coinbeeps (2200Hz) generated by the new Western Electronic single slot pay telephones (IC types).

Armed with these 3 basic devices, an average Phone Phreak can cause thousands of dollars worth of free telephone calls, interception, and endangering of communications. It is entirely feasible (and has been done) to tie up all the trunks leading into and out of an entire city such as Bakersfield in less than 45 minutes, rendering it hopeless due to lack of communications.

With more skills, and knowledge of very complex and secret codes, it is also possible to tie up all overseas circuits, satellites included, to declare secret Military conversations, or even to monitor calls to and from the White House. The ultimate would be, with the proper frequencies and codes put in place, to activate the standby alert, and deactivate the Conrad Emergency Defense Systems.

Because the abilities mentioned above are so dangerous most illegal calls should be based on some elaborate precautions.

1. Tell No One that you have tools, or are a Phone Phreak. Nobody knows about you, then you will not become suspect due to tips, rumors, and the like.
2. Don't Blue Box from your home telephone. This is too dangerous due to the advent of certain detection techniques.
3. If you Blue Box, do so from Pay Phones only. Select your pay-phones on a random basis so as not to leave a pattern as a basis for your capture.

Some very cautious Phreaks even install thermite bombs in their Blue Boxes, which, when detonated, will reduce the Box to "Metal Soup" laced with "Plastic Spices". This, no electronic components exist to be reconstructed in a lab and then used as evidence for conviction.

In any case, the Phone Phreaks can and do take advantage of each advancement in the Bell System's elaborate technology. With every new device or service introduced by the Bell Systems, the Phone Phreaks introduce their counterpart designed to break it down. The Phreaks even have a network of Bell System employees/spies as good as or better than the Special Agents posing as Phone Phreaks. It is notable, however, that Phone Phreaking becomes harder with each passing day. Rising complexity of the telephone network demands a corresponding rise in the technical competence of the Phone Phreak, a fact which tends to take it out of the hands of the general public and leave the illegal stuff up to the technically skilled. In the long run, most outstanding Phone Phreaks find that crime does not pay indefinitely. *

Gentlemen:

I am a new subscriber to your wonderful little magazine, and I am hoping that there is a way in which the pages of it can be used for what I believe should be a very constructive purpose.

You see, at the outset Thomas Edison could have taken the same attitude Bell System has taken all along concerning what they term as "foreign equipment". From the purely technical standpoint, the arguments used against interconnecting equipment with telephone lines would be far more valid if applied to power company lines. However, very wisely did this industry start off in a much different direction, with the result that the number and variety of pieces of equipment which use electricity grew at a fantastic rate such that the use of electricity doubles every ten years.

The obvious result is that it made a vast number of business and job opportunities which are, today, simply an accepted part of our society, and has contributed toward the building of what has been termed the richest nation in the world. A spirit of extremely good cooperation existed all around and a very good safety code was developed, and everything was done to disseminate as much scientific and technical information on electricity as possible to interested students, even down as far as the Junior High School level. People were encouraged to invent and develop new ideas and new businesses.

Setting forth this as an example to the telecommunications field, it is my hope that the Bell System can be persuaded to do a 180 degree turnaround and to adopt a similar philosophy; to disseminate as freely as they possibly can to

interested students, all the way down to the Junior High School level knowledge of the science of telephony, and to encourage inventing in this field. You see the development of new ideas and new pieces of equipment which will work in conjunction with the telephone system. These developments should be taking place in a spirit of full cooperation and should serve to greatly increase usage of the system. Much more so during those "off-peak" times when phone companies practically beg people to make long-distance calls, creating many new business and job opportunities for a great many people. This could do much to help this country get out of it's present economic situation, helping to create many more hard-working taxpayers to help our Uncle Sam carry his present burden. I am hoping you can give my ideas some thought, as I am sure some of the top-level management in the phone system read it also.

James A Davis
Philadelphia, PA 19120

Dear James,

You have an excellent idea. The current situation with Telephone Company rules and regulations still stands where it stood years ago—nowhere—as far as the customer is concerned. What you have brought to our attention is unfortunately true and prevents many new opportunities and ideas to develop. The Telephone Company has perhaps too much control over the Peoples communications media and it is up to all concerned to protest and bring to the attention of the law-makers this problem. After all, telephone service is for the public who should be able to use it to the fullest.

LETTERS FROM THE READER

Dear Sirs,

When a relative asked to use my telephone I was not at all suprised as she was on the first leg of a very long trip. However, when she placed a person-to-person call to herself my eyebrows raised to say the least. It was soon clear that she was conveying information without it costing a single cent. Her two oldest children were at home and the call told them she had completed the first part of the trip and were safe at our home. They of course, told the telephone operator the called party was not at home. I soon found that a wealth of information could be conveyed in this manner providing a code of existing and non-existing names were compiled ahead of time. A call to the 3 months old baby for example, would advise of a two day stopover and everybody safe and well.

A system used by High School Students was also simple but effective. Each call was placed from a pre-designated pay telephone booth. The student would dial his or her home telephone number and let the telephone ring ONLY ONCE. As virtually no telephone calls are made with one ring, the parents would know the call was from the student and would immediately call the number of the pay telephone booth. The student of course was waiting to accept.

Edward V. Pellissier
Hickinson, DR 97833

Dear Sirs,

I am a new subscriber to TEL. I would like to contribute some information that might be newsworthy to your readers. There is a nationwide number that anyone can dial for the latest medical reports, transportation reports, news service for H.U.D., and National Dept. of Regional Councils. These numbers are:

U.S.D.T. 1-800-424-8807
H.U.D. 1-800-424-8620
N.D.R.C. 1-800-424-8500
A.M.A. 1-800-424-8620

The above numbers are all nationwide. You can call WATS information for further reference on these numbers. The number for WATS information is 1-800-555-0000. The U.S.D.T. changes its recordings every day along with the N.D.R.C., A.M.A. changes their tapes every Monday and I don't know when H.U.D. changes theirs.

Abbreviations used in this letter:

U.S.D.T.—United States Dept. of Transportation
H.U.D.—Housing And Urban Development
N.D.R.C.—National Dept. Of Regional Councils
A.M.A.—American Medical Association
WATS—Wide Area Telecommunication Service

Tod Harris
Potsdam, NY 13676

DETECTION: How to avoid it

By David Rees

Many of you have probably read various magazine and newspaper articles about people who were caught and convicted for the fraudulent use of a Blue Box. Naturally this leads us to ask, "How were these people detected, and what methods does the Phone Company use to catch Phone Phreaks in the act?" Actually, the Telephone Company has a hard time locating and collecting enough evidence to catch and convict a Phone Phreak, and is immensely difficult. The small percentage of Blue Boxes who are caught and convicted for the most part represents those who were not cautious or careful enough when committing the act of fraud by wire.

There are three major systems of detection used by the Tel. Co. in order to single-out the Blue Boxes from among the multitude of average telephone callers. Each method of detection will be discussed separately and a countermeasure will be suggested.

THE INFORMER

Probably the most effective and certain method of Phone Phreak detection used by the Bell System is the leak of information from a source one might call a flink, stool pigeon, informer, or some other derogatory phrase. Some famous last words for many Phone Phreaks are "I can trust him, he wouldn't tell anyone". Even the most trusted friends may decide to inform on you under the right circumstances. It is my understanding that the Bell System's favorite practice is to catch a Phone Phreak and offer "immunity" if he will inform on his Phone Phreak friends. When faced with such a choice, few will "take the rap" on their own. Armed with this information, the Security Agents for the Tel. Co. write up "Black Lists" containing information on who to watch and how carefully to watch them. On this basis, 2600 Hz detectors and other devices may be issued at the request of the Telephone Company.

THE 800 OVERDOSE

The Phone Company keeps a careful watch on everyone's calling records. They maintain a subroutine in the computer program which handles billing that looks for an unusually large number of 800 area code calls or 800 calls of unusual duration. When it comes across a record with these discrepancies, it is printed out with a special note to security agents. On a few occasions the Phone Company has made a computer print out of all 800 calls made from a particular number if that number has made more than fifteen 800 calls per month, or has been connected to an 800 number for periods of time longer than 15 minutes each. The most effective remedy for this method of detection is to make all Blue Box calls from pay-telephones. However, if you are set on making such calls from your home phone you should meet certain guidelines. Do not make too many Blue Box calls, or any of long duration. If you need to call for long periods of time, dial a nearby area code which has a very low rate associated with it and Blue Box it. Though it is not free, a call to New York from Los Angeles at Los Angeles to Anaheim rates represents quite a savings.

TROUBLE LOCATING EQUIPMENT

In most end offices and especially in major toll centers and long haul trunk facilities, there exists automatic trouble

continued on page 8

AREA CODE 900

By John Reynolds

-- it's not only a mass calling number

The event which highlighted the need for a special mass calling area code was the Nixon-Humphrey debate in Los Angeles. Only two telephone numbers were given on the screen to receive questions to be answered. This resulted in a very low number of completed calls to these numbers compared to the number of attempts made. A large number of callers were using circuits and reaching reorder. Area code 900 was designed to allow the customer to use as little central office equipment as possible before receiving reorder.

Starting with the originating end office, each office directs 900 calls to only two trunks. This process continues to the next higher class office until a 4A XBar machine is reached. At each 4A four trunks are available to the terminating office. If the terminating office is unable to handle this, four trunks from each major 4A, the number will be reduced even more. Thus, the number of available circuits can be controlled to prevent overloading the DDD network.

We have listed the prefixes and their locations along with the MF central office codes. Most of the time the access to area code 900 will be turned off and you will not get through. The charge to call a 900 number is the same as a regular number in that area code. **THESE NUMBERS ARE NOT FREE!** If you know of any valid numbers please send them in and we will publish them. Try everything with area code 900. Many times the circuits will route you to strange places. Recently in Los Angeles you could call any regular number with 900 and get that number in LA, but at no charge. This has been corrected but you can try it where you live. *

CO code	State	City	Bus. Ofc. Code	NPA Opr. Code	V	H	RAO Code	Actg. TC Code
220	IN	Indianapolis	11	317+	6272	2992	080	3865
222	CA	Sacramento	15	916+	8304	8580	160	7059
230	FL	Tampa	11	813-053	8173	1147	531	7881
232	MD	Baltimore	11	301+	5510	1575	011	0441
240	FL	Jacksonville	21	904+	7649	1276	056	3949
242	DC	Washington	10	202+	5622	1583	032	8440
243	NM	Albuquerque	27	505+	8549	5887	102	0083
247	CA	Fresno	28	209+004	8669	8239	289	2907

260	AZ	Phoenix	22	602+	9135	8748	064	6361
263	PA	Philadelphia	18	215-	5251	1458	041	6339
280	PA	Harrisburg	15	717-	5363	1733	027	3405
330	FL	Ft Meyers	10	813-046	8359	0904	315	2787
333	PA	Pittsburgh	10	412-	5621	2185	030	6407
340	FL	Tallahassee	33	904-038	7877	1716	056	7869
370	OH	Akron	12	216-042	5637	2472	050	0043
390	GA	Macon	58	912+046	7364	1865	316	4777
421	WA	Seattle	34	206+	6336	8896	163	7361
434	ND	Fargo	11	701+	5615	5182	133	2637
450	FL	Oriando	32	305-022	7954	1031	180	6049
478	CA	San Francisco	10	415-055	8492	8719	158	7217
520	CA	Los Angeles	32	213+	9213	7878	184	4672
521	CA	Los Angeles	32	213+	9213	7878	184	4672
540	GA	Atlanta	22	404+	7260	2083	035	0335
541	NC	Charlotte	10	704+	6657	1698	319	1359
550	FL	Miami	15	305-007	8351	0527	044	5165
567	CA	San Diego	10	714-042	9468	7629	164	7198
571	NC	Greensboro	16	919-037	6400	1638	036	3215
576	MO	Kansas City	14	816+	7027	4203	144	4081
578	OH	Cleveland	10	216-	5574	2543	082	1539
591	IL	Chicago	15	312+	5986	3426	097	1409
045	ONT	Hamilton	53	416-036	5097	2504	478	9081
670	QUE	Quebec	11	418-	3682	1896	471	9211
690	OR	Portland	10	503+	6799	8914	131	6559
697	ONT	London	90	519+	5264	2657	484	9101
749	OH	Cincinnati	10	513+	6263	2679	077	1447
762	CA	Oakland	13	415+	8486	8695	167	5885
770	SC	Columbia	29	803+	6901	1589	189	1639
790	QUE	Montreal	24	514+	4127	1992	470	9205
842	CA	Bakersfield	18	805-029	8947	8060	255	0433
850	MI	Detroit	10	313+	5536	2828	083	2101
870	ONT	Toronto	45	416+	4981	2488	476	9152
880	AZ	Tucson	26	602-059	9345	6485	064	8101
890	WY	Cheyenne	10	307-022	7203	5958	137	1401
921	WV	Charleston	21	304+	6152	2174	034	1349
924	WI	Milwaukee	10	414+	5788	3589	088	5249
928	WI	Madison	10	608+	5887	3796	201	4801
931	MA	Boston	13	617+	4422	1249	008	0817
937	CA	Santa Ana	37	714-023	9267	7798	182	0189
985	NY	New York	23	212+	4997	1406	074	5757
987	CT	Hartford	18	203-022	4687	1373	020	3425
999	NY	New York	23	212+	4997	1406	021	5757

DETECTION continued from page 7

detection equipment. In Crossbar 5 offices and 4A toll tandems, the trouble recording equipment consists of an elaborate sensory network of wires and relays associated with all common control equipment in the office. This network is linked to a diagnostic device which punches appropriate holes in an IBM card to indicate to the switchman or office attendant the location and nature of the problem. In electronic switching offices (ESS, EAX, etc.) the central computer which controls all switching in the office is equipped with diagnostic subroutines which constantly check for various trouble conditions.

All of this weighs heavily against those who make fraudulent calls. In ESS offices, clearing a trunk (clear forward) with 2600 Hz causes the teleprinter in the office to print out a "spot reversal" indication about that line. In addition, it prints out the calling number as well as the called number. When noticed by a switchman this spells out trouble. In some 4A and 4M TDLL centers the equipment looks for this "spot reversal" condition on its trunks. Also indicated is the incoming trunk number which can be traced back by calling the originating office or checking billing records at a later date.

If you box from your home phone, the inevitable result is that you will eventually be detected.

The safest way to Blue Box is from a pay telephone. When doing this, it is suggested to pick your pay telephones on an entirely random basis. Do not make calls from an isolated and pre-selected group of pay phones with in your specific area. Move around a great deal and try to use phones well outside the neighborhood in which you live. Some unfortunate Phone Phreaks who frequent a specific group of pay phones have been nailed by stake-outs of FBI agents.

When you box from the pay phone, assume that the conversation is not private. If you happen to be detected by a Tel. Co. Switchman, he may trace the call and notify security to come and apprehend you. This is a cumbersome process, however, and it usually takes more than 30 minutes.

Beware that a recent law permits the Phone Company to use 60 seconds of tape-recorded conversation without your knowledge or permission in court if used as evidence in your conviction. Both parties may be convicted on an equal basis if both parties were aware that they were involved and the cause of avoiding lawful toll charges. *

TEL Tips

From the reader

STOP THOSE CRANK CALLERS

Build a beeper box to emit a duplicate of the Telephone Company recording beep. That's it. People freeze up when they think they are being recorded, especially storm window salesmen. Once they are off balance it is easy to either play with them or get them off your line. This is much more economical than actually recording and a lot more fun.

HOW TO MAKE YOUR OWN JACKS

Recently many phone companies switched from a square receptacle to a round receptacle for terminals and jacks. At the present time jacks that will fit the new rounds boxes are almost impossible to find. There is a way however, to make your own jacks.

First, obtain a round cover plate and metal ring. These can be obtained from your repairman "to cover those holes you found when you moved in." The ring can be installed in a sheetrock or paneled wall by routing with two daisy 1/8" hollow wall anchors. Then the center is cut or drilled out with a hole saw. Make sure the anchors are flush with the wall surface before installing the ring. Now you are ready to mount the cover plate, terminal or jack.

The jack itself is made by drilling four appropriately spaced holes in the plastic cover plate. You may have to buy a surface mounted model to use as a template. Be sure that you have the correct holes on top as the many Japanese jacks are marked upside down.

Next manufacture the contacts by winding a long spring on a heavy coat hanger or similar rod. This jig must be slightly smaller than the plug prong as the spring will expand after winding. Use spring brass wire. Wind a second spring, but in the opposite direction. These two springs will nest together and form your contact.

Cut four lengths of this nested spring(s). Insert in a plastic straw. On either end of each contact assembly unwind about 0.25 inch of wire. This will hold the spring in later steps.

Now place a commercial or Telco plug through your drilled cover plate. Slide the four contact assemblies on the four prongs on the back. Put a ring of masking tape or similar material around these contact assemblies and pour in a potting compound, epoxy, etc. This will be the back of your jack and so it must fit into the hole in your wall. Be sure the compound you picked will adhere to the plastic cover plate. After drying the plug is removed. Make sure the plug does not get glued into the jack. You may try silicone spray on the prongs.

Solder your connections directly to the spring or use Fahnestock clips for quick installation and removal.

EXTRA PHONES

OK, you don't want to become an electronic whiz, you just don't want to be caught with a phone in each closet and the bathroom to boot. The best way to get caught is to go to extremes in the first place and screw up your line and the second is to have wires leading all over your residence from the protector. A repairman will be suspicious of the latter especially if you have only one official phone. Take your line(s) from the middle of theirs and hide the connection under insulation (repairmen hate insulation) or under the family cat or anywhere--just hide it. If possible, use approved connectors and grey tape to allay suspicion. Another method of concealment is to install a maze of wires to each room as a camouflage.

Back to extremes. If you don't want to construct an electronically safe connector there is an alternative... go mechanical. Install a switch in each of your 40 phones to turn off the bells as a minimum precaution. Safer is a switch to take the unit off line completely. Use a DPST miniature slide switch on the bottom of the unit. These switch levers are easily filed down so that they do not hang down so far as to switch themselves on as the phone is moved. Better yet, install the line switch on the cradle so that the phone is on line only when the handset is being used.

Remember a little precaution is better than a large backcharge and possible loss of service.

OPERATOR-May I have the Area Code for...

The next time you have nothing to do you can call your friendly "O" operator and ask her for the area codes of these communities. All of these exist and Ma Bell has an area code for each one.

Georgia	Florida	California
Arp	Bell	Agnew
Ball Ground	Belle Glade	Angels Camp
Camp Dixie	Camp E-chock-o-tree	Azusa
Chickamauga	Chosee	Ben Hur
Climax	Cocoa	Bowles
Dial	Fruitland	Brawley
Dry Pond	Fruitville	Butte City
Experiment	Geneva	Earp
Fairyland	Hole Sound	Fern
Fish	Holiday	Happy Camp
Fry	Kissimmee	Lucern
Gay	Little Torch Key	Mecca
Good Hoper	Old Town	Nice
Loco	Plant City	Nut Tree
Meansville	St. Cloud	Olive
Pitts	State Prison Farm	Perris
Social Circle	Sugerloaf Key	Pollock Pines
Temperance	Titusville	Railroad Flat
Ty Ty	Treasure Island	Tranquility
Zenith	Venice	Volcano

Try not to get your fish and your fry or your fruitville and your fruitland confused. *

TOLL continued from page 4

still doesn't know that person, they will call that party and try to find out who called at that time and date. If they do find out they will try to locate that person, and bill and/or prosecute him.

For all you phone enthusiasts, there are certain numbers that exist as test numbers for the Telephone Company that are always busy. They may be found by logistical dialing and certain knowledge of Telephone Company test codes. For example, the permanently busy number dialed on crossbar and ESS systems in New York is 212-XXX-9970. XXX represents the first 3 digits of the X-bar or ESS system.

The New York code will also work in most parts of N. Y. S. using different area codes and prefixes. I would suggest for your security purposes, that you always use pay-telephones on a random basis, and that you make a list of all working prefixes and area codes that are permanently busy. Also alter your usage of them on a random basis in conjunction with your random selection and usage of pay-phones. If a random pattern is produced, even in times called, the Phone Company will be discouraged from investigating, as they have no one to talk to. The called party can always claim that they recieved a prank call and they leave their phone off the hook. This claim will be supported by the random nature of the calls. A last word concerning 3rd party calls, be sure to instruct your distant friend whom you are calling on how to deal with the Telephone Company. *

Back Issues are available for \$1.00 each. Un-revised, untouched, original copy sent by first class mail in a manila envelope. Specify Nov. (TSPS) or Dec. (Toll fraud) copy.

Construction Project

By Jack Kranyak

THE HOLD BUTTON

INTRODUCTION

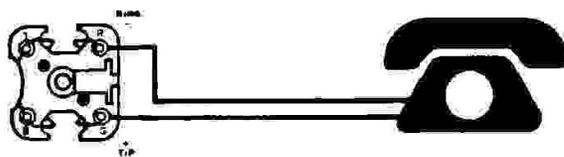
Have you ever attempted to run across the house and answer the extension phone before the calling party disconnects. This will unavoidably happen when someone calls, you answer the phone, and wish to speak on another phone in the privacy of your own bedroom. You have a choice of telling the calling party to hold on while you dash across the house and answer the extension and dash back to hang-up the first phone and dash a third time to speak with your party. Or, you can hang up the first phone and dash just once to the extension phone and answer it within fifteen seconds. (Most phone companies provide the called party with fifteen seconds of "reset" or "time-out" time after the phone is answered. Therefore you will probably notice that you can "hang-up" on your friend for as long as fifteen seconds and he will still be at the other end when you answer again). This can, at times, be very annoying if you have a large home and your extension phone is in the tree house out back. In addition, if you have an office with the same problem, it would be a poor idea to go darting and dodging through the corridors to answer the other phone all out of breath, hoping your client is still on the line!

SOLUTION: Call up your local telephone company business office and request a key-phone installation with hold features. Of course, you will want lamps that indicate who is on hold. The approximate time for such an installation to be ordered and installed may be as much as three or four weeks.

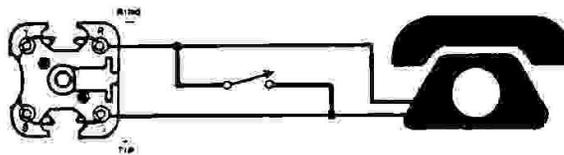
ANOTHER SOLUTION: Build one yourself. It will provide you with four accomplishments: a savings in time, a savings in cost, a knowledge of the telephone system, and the personal satisfaction you will get from doing it yourself. Not to mention outwitting Ma Bell at all of the above—it will take one evening to install and cost approximately five dollars. (Ma Bell will charge as much as \$250.00 to install it). You will learn what key-installers take a trainee course for six months to learn, in one evening, and you will have the ambition to go on to bigger and better things.

CIRCUIT DESIGN

Consider the telephone circuit. The telephone is connected to the line by two conductors:



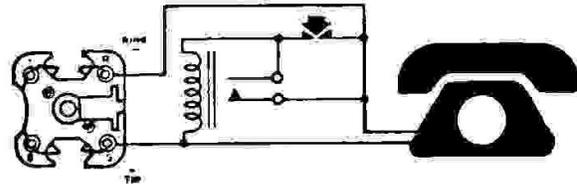
If you were to have a hold button in the circuit, it would look like this:



This type of hold circuit is by far, the simplest and easiest to install. It will put the party on hold when the switch is closed and take the party off hold when the switch is open. When the switch is in the hold position, the telephone may be hung up and the party on the other end will not disappear.

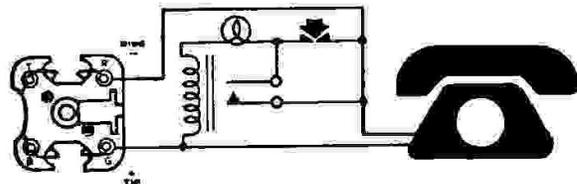
ITS DISADVANTAGE: You cannot operate the hold button from a remote location. You must have a hold button at every location you wish to activate the hold from. And all hold switches must be turned off to take a party off hold. This means that you still must run around the house flipping all the hold

switches that are on, to the "off" position in order to hang up and dial another number. This is the disadvantage that this particular hold button has, and may be corrected by employing the following circuit:



This circuit works on the principle that the 48 volts normally found on the telephone line will hold the relay down, thus holding the line, until the telephone instrument is answered, consequently robbing the relay circuit from sufficient power to be held down. It's a simple circuit and found to be quite effective. A separate hold may be installed at every location where holding features are required. One thing to remember: this type of hold operates on a voltage-sensitive system. (I.E. the voltage drop across the line when the telephone becomes off-hook and requires more power is insufficient to keep the hold relay down). Consequently, if there are excessive loads present on the line, or if too many holds are activated on the same line at once, the hold relay(s) will open.

If the party that calls you is placed on hold, becomes impatient and hangs up, the hold relay will turn off automatically fifteen seconds after the calling party hangs up. Your telephone will be in a normal condition ready for standard operation. If lamps are desired to indicate when a party is on hold, the following circuit will provide this option:



Be sure that a lamp requiring very minimal current is chosen, as this too is a factor in determining relay sensitivity. Another option includes blinking lamps. There are many methods used to produce this visual signal. The Phone Company uses a device known as an interrupter. The interrupter is an electromechanical device operated by a motor which turns cams that activate relay switches. The interrupter contacts would be wired in series with the lamp.

PARTS LIST

The basic parts that are required to build the hold button are a relay, a pushbutton switch, and a lamp.

The relay may vary from the standard 600 Ohm telephone-type relay. This is due to your location from the central office and various line loads on your telephone line. You must experiment with different types of relays and might try placing a potentiometer in series with the relay coil to adjust sensitivity. Probably most often, a 600 Ohm relay at 24 volts will do the job. Again, try experimenting with different relays until a satisfactory one is found. (A Radio Shack "Relay Surprise Pack", for example, is an excellent source of relays).

The pushbutton switch may be an SPST, momentary con. type.

The lamp may be any value, as long as relay operation is not effected. Usually, 2-3 volt 50ma is sufficient.

APPROXIMATE CONSTRUCTION TIME: One hour.

APPROXIMATE CONSTRUCTION COST: \$5.00. *

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%!

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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.

This book is still in the production stage and will include the latest laws and regulations up to and including the end of February. Know exactly when and where the telephone company has the right to enter your home to inspect their lines. Know exactly what illegal telephone equipment con-

sists of and when it is actually considered illegal. Know exactly what YOU, the telephone customer, may do to fight back at the phone company should there be any question in your service. In addition, technical aspects of the law will be discussed. This material has not been published in TEL.

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