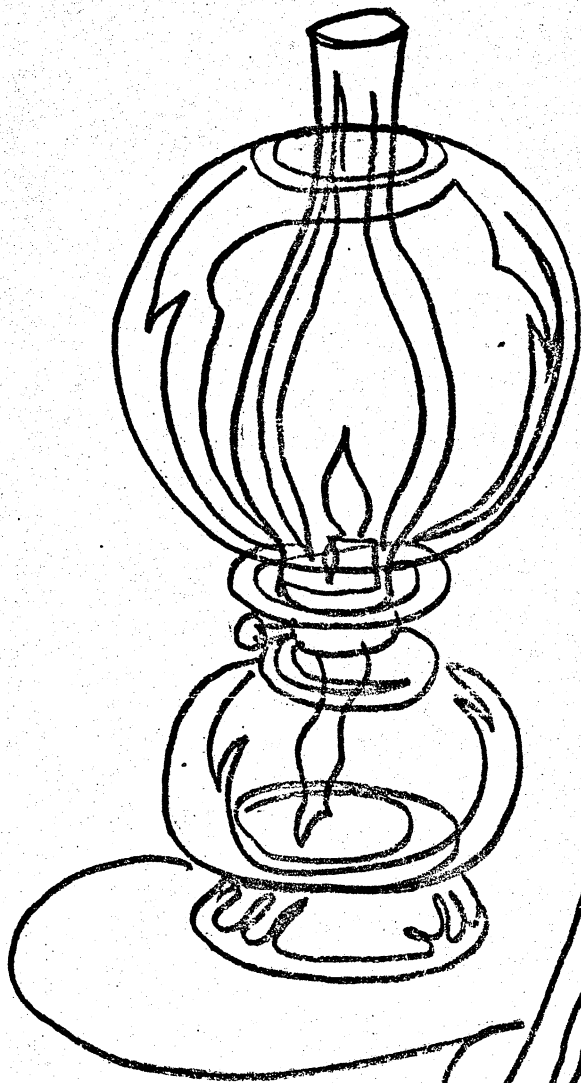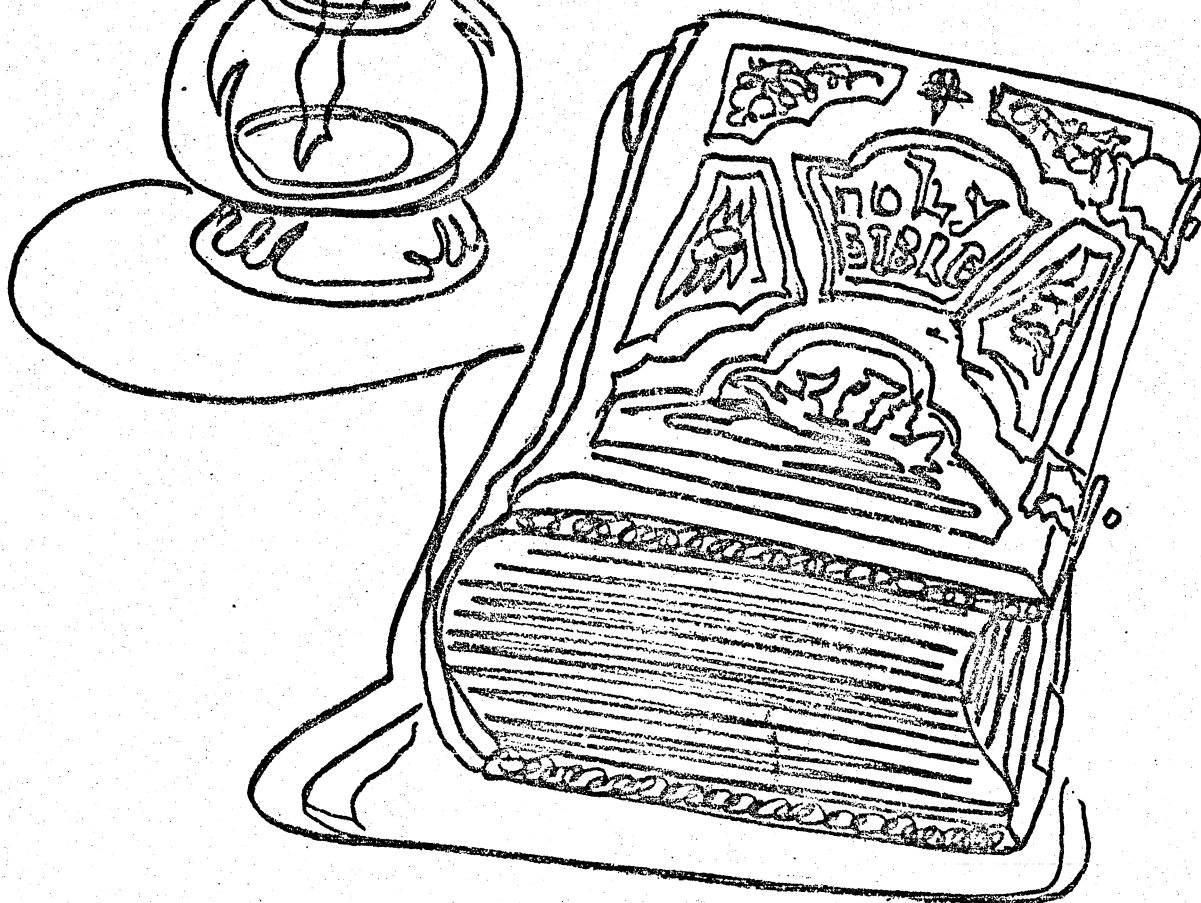# crown crier

"Give me that Old time religion"

HOLY BIBLE

Following is an excerpt from <u>EDN</u> (January 5, 1975) describing a recent contest entered by Gerald Stanley of our own Engineering Department and telling of his accomplishments therein:

Contest winners create designs capable of becoming standard IC's

Monochip creations show a degree of creativity that could advance the state-of-the-art. The 'best and the brightest' are described.

Hans R. Camenzind, Interdesign

With the monochip, the creation of a custom IC has become a straightforward task, no more difficult than designing an ordinary transistor circuit or a pc board. Interdesign's monochip method enables the designer to shrink the entire prototype cycle to less than three weeks—compared to at least six months for an ordinary custom IC.

Though the EDN/Interdesign Contest was created for neophyte designers, the winners showed a sophistication beyond normal competency. None of the contestants were IC design experts, nor had any of them ever designed an IC before.

A very distinguished panel of design experts was assembled for the difficult task of judging. Jerry Graeme of Burr-Brown, Paul Brokaw of Analog Devices, Durward Priebe of Hewlett Packard and

Jim Ball of Interdesign rated the designs on:
- Ingenuity—how ingenious a product is it?
- Interest—will it interest the readers of EDN?
- Technology—how does the design fit IC technology?
- Application—how is the monochip used?

Introducing the Grand Prize Winner

Doug Curtis entered the contest to achieve one of his life-long goals. He hopes to build a music synthesizer and his winning design was a radical, yet inexpensive, building block for it.

A music and speech major in college, Doug presently is unemployed by his own choice. Spending most of his youth in Europe, he recently toured America.

Rank	Winner	Design	Prize	Rank	Winner	Design	Prize
1	Douglas Curtis	Linear/Log Mult.	H.P. 65 Calculator	13	Frederick Hauer	Transmitter Control Circuit	Volt-Clock
2	Allan Hamilton	Op Amp	Tekelec Digital Voltmeter	14	Alan Faris	Programmable Gate	• •
3	Gerald Stanley	VU Meter	• •	15	Franklin Ramsey	Sweep Generator	• •
4	Benjamin Glass	Combination Lock		16	C. Balmer	PDM Demodulator	• •
5	Robert Brown & Steve Hall	Switching Regulator	• •	17	Harvey Morgan	Bandwidth Compressor	• •
6	Robert Howell	Control Circuit	DTS 1300 Voicecaster	18	Robert Calkins	Sample and Hold Amp.	• •
7	Donald Lancaster	Keyboard Encoder	• •	19	William Maserang	Pulse-Position Modulator	• •
8	Thomas Marker	PLL/Frequency Generator	• •	20	Bruce Cohen	Video Amplifier	• •
9	Charles Croskey	VCO	• • •	21	J.M. Rochelle	Transmitter	• •
10	Fred Kiko	Voltage Reference	• •	22	Ewan MacPherson	Logarithmic Transimpedor	• •
11	Brent Andreasen	A/D Converter	• •	23	Joseph Tobin	Clear Channel Detector	• •
12	Winston Clark	Quad Level Translator	• •	24	Arthur Berg	Pulse Width Converter	• •
				25	Don Leonard	Quad One-Shot	• •

LED's come into "VU"

Gerald R. Stanley

The age of the mechanical audio "VU" meter is destined to close. No longer must we tolerate the sluggish and fragile nature of an analog meter movement—not when responsive, reliable and inexpensive LED's are available. The Monochip technique greatly simplified the sequential display driver I created.

My design, a compact low-power display for a 7-element LED, uses a 15V regulated supply with LED's arranged in an ordered row and illuminated sequentially.

The LED drivers (**Fig. 5**) are all small npn devices with both collector terminals joined for minimum saturation resistance. However driver seven, a Darlington-coupled large npn device, does not fit this category. The availability of this device

Past problems, new solutions

This design eliminates common complaints about professional equipment:

- VU meters that do not indicate peak levels.
- Bulky VU meters that do not allow close placement in systems having a large number of channels. (In some systems, 16 or more channels must be within an operator's field of view.)
- Visibility of a black moving pointer that is too low to be sensible to an operator engrossed in the auditioning of a performance.

became apparent during layout and I seized it. A higher current (> 20 mA) output can be taken from the device, power supply permitting, if you desire to increase the visibility of the excessive audio level condition. □
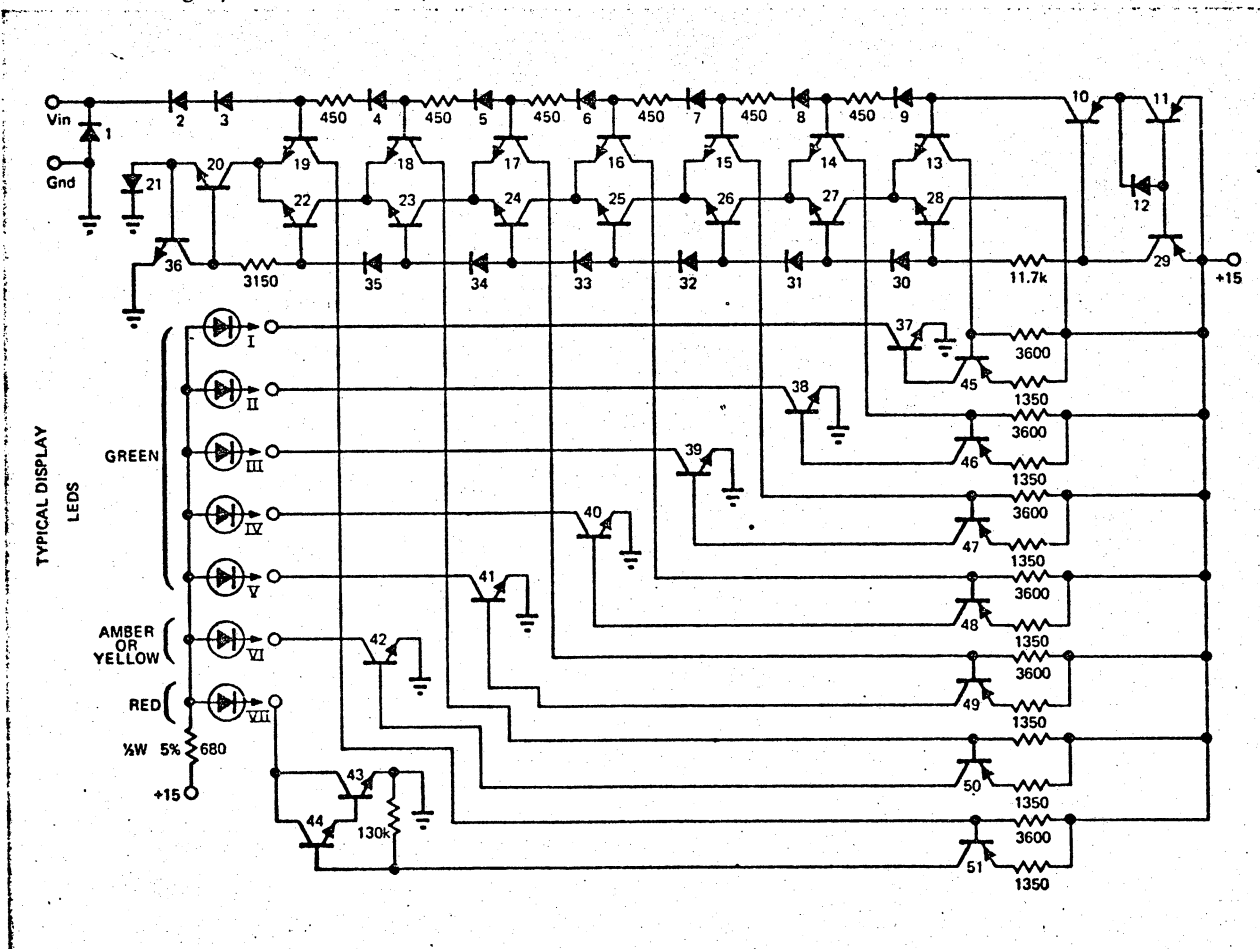

Fig. 5—A natural candidate for integration: The necessary matching and temperature tracking of the differential pairs (Q_{13} to Q_{19} and Q_{22} to Q_{28}) and biasing elements (Q_2 to Q_9) are provided inherently on the Monochip. Current is diverted gradually from Q_{28} to Q_{22} causing each stage to turn on in succession. In this manner, a 'jacob's ladder' display is provided.

CREDIT COMMENTS   from Barb

Well, 1975 is here and came in a
different way for each one of us.

Down with the Christmas tree and tree
ornaments to be packed away for
another year,and the tree--probably
just dumped on the trash. This
time of year can be a let down after
the holidays--the hustle and bustle
of baking goodies, buying gifts for
our loved ones, etc.--but for us
here at CROWN who know Jesus Christ
we have the finest promise of all--
salvation and the knowledge that
Jesus doesn't change with the Christ-
mas tree and ornaments. His love is
always there and He loves us regard-
less of who or what we are--and
sometimes that's saying quite a mouth-
ful! Jesus--what a precious name
and what a dear friend. He's my very
best friend--how about you?

You can bank on the fact that the new
year will bring more changes--you just
get used to one and somebody finds
another change to make--they can drive
you up a wall! Right, Kate??!!

By the way, Kate, we did miss you
that "decade" you were gone. It
just weren't the same!

The office has quieted down a lot
since the holidays. It seems as though
when there were goodies to eat every-
one's business took twice as long.
Of course, it does take a few more
minutes to gulp down some cookies
now and then!

Happy anniversary to Cindy--we've had

to put up with her for 2 years now!
How'd we ever do it?!

We're just going to get used to the
quiet down here and you know who will
pop back into our place and noise
shall fill the halls again! Watch
out, world, she'll be noisier than
ever! Right, Lou!!

+   +   +   +   +   +   +·   +

"He sure makes a fuss over one little decimal point."

+   +   +   +   +   +   +   +

Between the "Lines". . . .Marcia Putz
Engineering News . . . .Tom Szerencse
CROWN Sports . . . . . . John Bachman
Tax Tips . . . . Ross Swinehart
Gerald's Puzzles . . . Gerald Stanley
Scene at Sales . . . . . Donna Martin
Cover. . . . . .Gale Balmer
Ham Reports. . . . . Don Florea
Editor . . . . .Sylvia Eger

+   +   +   +.   +   +   +   +.

It's a good idea to tune your instru-
ment with prayer before the concert of
the day begins.

                --Our Daily Bread

Wage and Tax Statement 1974

Copy A For Internal Revenue Service Center

A. B. C. Company
4068 South Main Street
Elkhart, Indiana 46514
Type or print EMPLOYER's Federal identifying number, name, address, and ZIP code above.

1 Federal income tax withheld 545.98	2 Wages, tips, and other compensation 5,914.19	3 FICA employee tax withheld 345.98	4 Total FICA wages 5,914.19

EMPLOYEE's social security number 306 22 1505

5 Uncollected employee FICA tax on tips

John R. Doe
4725 West Myrtle Street
South Bend, Indiana 46617
Type or print EMPLOYEE's name, address, and ZIP code above.

Form W-2

For instructions see Form W-3 and back of Copy D.
Department of the Treasury—Internal Revenue Service

STATE OR LOCAL INCOME TAX INFORMATION

| 6 Tax withheld 118.28 | 7 Wages paid 5,914.19 | 8 State or locality 59.14 |
| 9 Tax withheld | 10 Wages paid | 11 State or locality |

IF (1) your 1974 income was from wages and salary
only, (2) you had no more than $400.00 of
dividends, or $400.00 of interest income, and
(3) you do not itemize deductions, then you can
use a simplified tax return -- Form 1040A.
Requiring only a few minutes of your time to
fill out, you can save yourself the cost of
having someone else prepare your tax return
for you.

Short Form 1040A   U.S. Individual Income Tax Return   1974

Department of the Treasury — Internal Revenue Service

Name: John R. Jane E.   Last name: Doe

Present home address: 4725 West Myrtle Street
City, town or post office, State and ZIP code: Elkhart, Indiana 46514

Your social security number: 306 22 1505
Spouse's social security no.: 305 44 2110

COUNTY OF RESIDENCE: Elkhart
Occupation — Yours ▶ Factory   Spouse's ▶ Housewife

Filing Status (check only one)
1 ☐ Single
2 ☒ Married filing joint return (even if only one had income)
3 ☐ Married filing separately. If spouse is also filing, give spouse's social security number in designated space above and enter full name here ▶

4 ☐ Unmarried Head of Household (See instructions on page 5)
5 ☐ Widow(er) with dependent child (Year spouse died ▶ 19)

Exemptions
6a ☒ Yourself   Regular ☒ / 65 or over ☐ / Blind ☐
   b ☒ Spouse   Regular ☒ / 65 or over ☐ / Blind ☐   Enter number of boxes checked ▶ 2
   c First names of your dependent children who lived with you ▶ John Boy   Enter number ▶ 1
   d Number of other dependents (from line 26)   Enter number ▶
7 Total exemptions claimed ▶ 3

Presidential Election Campaign Fund ▶ Do you wish to designate $1 of your taxes for this fund? Yes ☒ No ☐
If joint return, does your spouse wish to designate $1? Yes ☒ No ☐

9 Wages, salaries, tips, and other employee compensation. 5,914 19
10a Dividends $110.00 ... 10b Less Exclusion $.100.00 ... Balance ▶ 10c 10 00
11 Interest income (if over $400, use Form 1040) 11 29 37
12 Total (add lines 9, 10c, and 11) (Adjusted Gross Income) 12 5,953 56

Page 2

13 If line 12 is $10,000 or more, enter 15% of line 12 but not more than $2,000 ($1,000 if line 3 checked) 13
14 Subtract line 13 from line 12 14
15 Multiply total number of exemptions claimed on line 7 by $750 15
16 Taxable income (subtract line 15 from line 14) 16

Form 1040A (1974)

17 Tax, check if from: ☒ Tax Tables 1–12 OR ☐ Tax Rate Schedule X, Y, or Z 17 358 00
18 Credit for contributions to candidates for public office (see instructions on page 4) 18
19 Income tax (subtract line 18 from line 17). If less than zero, enter zero 19 3 58 00
20a Total Federal income tax withheld (attach Forms W-2 to front) 20a 545 98
  b Excess FICA tax withheld (two or more employers—see instructions on page 4) b
  c 1974 estimated tax payments (include amount allowed as credit from 1973 return) c
21 Total (add lines 20a, b, and c) 21 545 98
22 If line 19 is larger than line 21, enter BALANCE DUE IRS 22 187 98
23 If line 21 is larger than line 19, enter amount OVERPAID 23 187 98
24 Amount of line 23 to be REFUNDED TO YOU 24
25 Amount of line 23 to be credited on 1975 estimated tax ▶ 25

26 Total number of dependents listed in column (a). Enter here and on line 6d

Sign here ▶ John Doe   2/5/75
            ▶ Jane Doe   2/5/75

TAX TIPS FROM ROSS

Ⓐ $1.00 of your tax ($2.00 on a joint return)
can be designated as a contribution to the
Presidential Election Campaign Fund. It
does not increase your tax or decrease your
refund.

Ⓑ $100.00 of dividend income received in 1974
can be excluded from income. If husband and
wife file a joint return and both have
dividend income, each can exclude up to $100.

Ⓒ Make sure the return is signed and dated. If
filing a joint return, both husband and wife
must sign.

Engineering Terry Toons

Well, with Christmas over, the
Engineering department is scheduled
to get back to work, but I don't
think we'll make it. Our depart-
ment says thanks to all that
brought in the holiday foods on
Christmas eve. They were quite
"enlightening" (as the belts slip
a notch!)

Stuber just went running out of
the plant like he sat on a tack!
Wonder what's up? (He says his
wife's expecting, but no one
believes him.)

It's also that time of the year
when old employees return to "ruin"
the holidays for everyone. John
Groves, Ned Kiser and Jim Marks
came back to help the crew. Jim
has a longer break and will be with
us for all of January.

Given up to the new year is Brad
White, who left for "P.P. Purdue"
as he would say. For Christmas
Brad got a SR-50 calculator.
Strange I couldn't get him to let
me use it while he was gone!?!

Back from vacation is Vern Searer.
He said he was going to move down
to Texas and open up a ship building
company. I guess he's not as fond of
rain as he used to be.

Before I close for this month, I would
like to say thanks to Terry Baldwin
for shoveling snow and keeping clean.
I see him out making paths before

regular hours.

OK, enough is enough! See you next
month with the results of the Stuber
boy, girl; or 1, 2 or 3 contest.

Later 'gator!

Tom Szerencse

****

The Scene at Sales

There have been quite a few things
happening in the Sales department.

First of all, a praise note that Lou
Murphy has been recovering real well.
We praise the Lord for being with her
through her surgery. We need to continue
to pray for her rapid recovery.

You know how you picture a person when
you hear their voice on the telephone--
well, don't believe everything you hear.
Some of the reps' voices didn't quite
seem to fit their appearances. Sales
girls had fun serving them while they
were here. . . .and puting voices
with faces. One fun way to blow a
little time!!

During the past few weeks we have
changed some help in our department.
Ann Edel worked for two weeks and then
Kay Hoffman worked for two weeks.
After a week of reminiscing, we got
some work done.

A new star is born! Did you ever
imagine that a secretary who watches
a typewriter do all her typing for her
could play a marimba?! Gloria, you are

really good! I'm waiting for the day when Gloria brings her marimba in and watches it while it plays by itself.
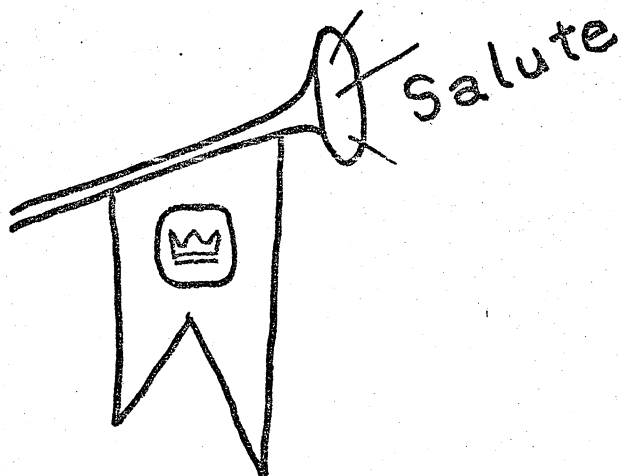
We'll see you next month.

Donna Martin

*** *** *** *** *** ***

DID YOU KNOW THAT. . .

On his last trip visit with our dealers and reps, Jim Beattie was overheard to say to the waitrees at breakfast one morning, "Ruffle you hair, burn the toast and holler at me--I'm homesick" ? ? ? ?

*** *** *** *** *** ***

Salute

We have a hard-working "little" secretary here at CROWN who it seems almost gets lost in the "hub-bub" at times----maybe because of size?!?!? To you, Gloria Baloy, we offer our salute this month! Gloria works for Ron but also has many other duties that keep her busy out in the factory area. We certainly admire the determination she puts forth keeping such an important aspect of our business in order. THANKS, Gloria!!!

Between the "Lines"   by Marcia Putz

As each individual looks back on this past year, just being an employee at CROWN, he must think to himself how much God loves us and watches over us. There should never be a blue or sad moment when we think of the many answered prayers and blessings the Lord has bestowed on us.

Steve and Naomi Peer have so much to thank the Lord for. What a beautiful experience it was when everyone united their hearts in prayer for Kenny. Such assurance we all had that God would heal him.

Tom Brock has slowly--but surely--gotten back on his feet again. To see him up and around is such a testimony.

God has been with Dale Nafziger. He is progressing but still most definitely needs our prayers.

We can all be thankful for our jobs. When so many prominent businesses have gone out of business or have laid many workers off, CROWN has kept putting out the amplifiers. This is an act of God!

We should all be praying that the Lord can continue to provide orders in this next year as He did in the past.

Praise the Lord !

+++
+++

Success does not consist in never making mistakes but in never making the same one a second time.

--George Bernard Shaw

6

from the desk of:

GERALD STANLEY

———————— C3 /S ————————

When a knot has four strings passing to it there need not be a loose end in the knot.

If a knot has three strings entering it there must be at least one end in the knot.

On the parcel there are eight knots with three strings to them. Therefore there must be at least eight ends and hence at least four pieces of string.

94. Pongie and Quongie Play Football

Two diagrams will help — one giving scores in each match as they are found, the other giving information, as found, about the teams to which P, Q, R, etc. belong.

Thus:

	A	B	C	D	E	Total goals for	Total goals against
A	X						
B		X		*w* 3–1			
C			X				
D		*l* 1–3		X		9	
E					X		

	A	B	C	D	E
P					
Q		×		×	
R					
S		×		×	
T		×		×	

(i) Q, S, T all say, 'score in B *v.* D was 3–1'. If Q, S or T a member of B or D remark false. But Q, S, T cannot *all* be members of B or D. ∴ in at least one case own team not mentioned. ∴ remark true, ∴ neither Q, S nor T a member of B or D. And B beat D 3–1.

(This information has been marked in diagram. Other information should be inserted as found.)

(ii) Q(2) true, since Q not member of D.

(iii) Consider S(2) and T(2) (which say the same thing). S must be A, C or E; and T must be A, C or E. ∴ one of them must be C or E. ∴ S(2) and T(2) false; ∴ C beat E. And S and T between them must be C and E; ∴ no one else is C or E.

(iv) ∴ by elimination Q is A.

(v) ∴ P(1) true (P not a member of either A or C).

(vi) T(3) true (T not a member of B).

(vii) P(2) true (P not a member of C), ∴ C drew against B and D.

(viii) R(1) true (R not a member of C).

(ix) Consider R(2). We know this is false (B *v.* C a draw). ∴ R a member of B or C. But not C (see (viii)), ∴ B.

(x) By elimination P a member of D.

(xi) S(3) true (S not a member of A or B).

(xii) Total against B was 2 goals. Since 1 scored by A, and 1 by D, ∴ none by C or E. ∴ B *v.* C was 0–0.

(xiii) R(3) true, since R not a member of C or D. ∴ score in C *v.* D was 3–3. And since C scored 7 goals altogether, ∴ C scored 4 against E.

(xiv) P(3) true (P not a member of E).

(xv) S(4) false (we know C *v.* D was 3–3). ∴ S a member of C or D. We know not D, ∴ C. ∴ T a member of E.

(xvi) Q(3) true (Q not a member of B or C). ∴ B scored 8 goals. ∴ B *v.* E was 3–0.

(xvii) P(4) true, ∴ A *v.* D was ?–0.

(xviii) Since D scored 9 altogether, ∴ D *v.* E was 5–0.

(xix) T(4) true, ∴ D *v.* A was 0–0.

(xx) R(4) true, ∴ A *v.* E was 1–0.

Therefore membership of teams, results and scores are: P in D, Q in A, R in B, S in C, T in E.

	A	B	C	D	E
A	X	*l* 1–2	*w* 2–0	*d* 0–0	*w* 1–0
B	*w* 2–1	X	*d* 0–0	*w* 3–1	*w* 3–0
C	*l* 0–2	*d* 0–0	X	*d* 3–3	*w* 4–0
D	*d* 0–0	*l* 1–3	*d* 3–3	X	*w* 5–0
E	*l* 0–1	*l* 0–3	*l* 0–4	*l* 0–5	X

———————— J5 /S ————————

Given r different things with an equal chance of occurrence, what is the probability that in n trials we shall get one each of the r things?

Consider the favourable cases. The total number r^n contains all these and the cases with $(r-1)$ objects. Subtract these to get $r^n - \binom{r}{1}(r-1)^n$. But this subtracts too much, namely $\binom{r}{2}$ of the cases with $(r-2)$. Add these to get $r^n - \binom{r}{1}(r-1)^n + \binom{r}{2}(r-2)^n$.

This adds too many cases with $r-3$ objects and so on.

Hence we get the general formula:—

$$P = \frac{1}{r^n}\left\{r^n - \binom{r}{1}(r-1)^n + \binom{r}{2}(r-2)^n - \binom{r}{3}(r-3)^n \ldots \pm \binom{r}{r-1}(1)^n\right\}$$

The above formula may be established by the difference equation:—

$$u_{n,\,r+1} = \binom{n}{1}u_{1,\,r} + \binom{n}{2}u_{2,\,r} + \ldots \binom{n}{n}u_{n,\,r}$$

or $\beta^{-1}(1+\alpha^{-1})^n = 1$ where $\beta u_r = u_{r+1}$

$$\alpha u_n = u_{n+1}$$

In this case $r=6$ and by trial when:—

$$n=12 \qquad P=0\cdot438$$
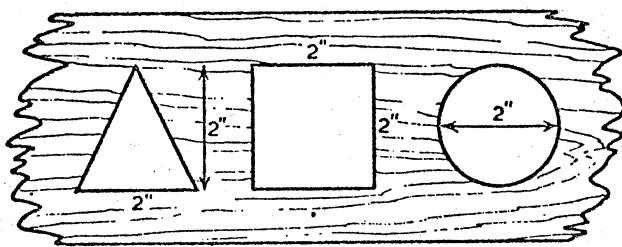$$n=13 \qquad P=0\cdot514$$

Hence the landlord had nine dice.

————————— C / 4 —————————   ————————— B / 4 —————————

A factory has ten machines, all making flywheels for racing cars. The correct weight for a flywheel is known. One machine starts to produce faulty (over- or underweight) parts.

How, in two weighings, can the faulty machine be found?

Holes of the above shapes were found in a plank of wood.

Can you from a 2 in. ×2 in. ×2 in. cube of wood make a shape (all in one piece) which will pass through each hole and completely fill it ?

56. The World of Bonkers

In the World of Bonkers the ditty for remembering the numbers of days in their seven months runs as follows:

        'Nineteen days hath Cucumber,
        Strawberry too, and the number
        of days there are in Tiddleywinks
        is just the same as 'tis in Jinks,
        which is seven whole days more
        than the ten there are in Pinafore.
        With the month of Collywobble
        diary makers have some trouble;
        thirteen days if year is even,
        forty-four if odd. And Stephen
        quite the least of Bonkers months,
        in fact it's sometimes called the runt, as
        you can easily understand,
        since it hath but four days and
        another two in years of Heaven
        (that's if the year's date ends in seven).'

There are five days in each week — Joyday, Funday, Laughday, Blissday and Workday, in that order.

In the year 17 a.b. (after bliss) the King of Bonkers went off for his holiday on Funday, Strawberry 17th and returned, just over 7 weeks later, on Blissday, Tiddleywinks 8th.

In the year 19 a.b. there were exactly 10 weeks from Collywobble 41st to Pinafore 7th.

Collywobble is the first and most important month in the year.

   1. *Find the order of the seven months of the Bonkers year.*

   2. *In the year 21 a.b. Strawberry 13th was a Workday. What day of the week was Collywobble 2nd?*

HAM Reports. . . .from Don Florea

Guess what? The Amateur Radio Club
has almost become a reality. Without
going into any details, our hats must
go off to John Bachman for his work
in drawing up a constitution. All
that needs to be done now is for the
constitution and by-laws to be appro-
ved and an election of officers to
take place. With an approval of the
constitution, our application for a
club license can be sent in to the
FCC, where we can receive legal recog-
nition as a club. Once our license
is received, we as a radio club can
have a radio station with its own call
sign, transmitter, repeater, etc.

As you may have remembered, a couple
of issues ago, a contest to name the
club was put forth. I would like to
thank you (both of you) for your
interest. I think special recognition
should go to Bill Mullins of Dobbs/
Stanford of Texas for his entry--"The
Eighty Eights." As far as a name for
the club, it has been decided that it
will be held off until an official
meeting of the club has been called.
In this way, those interested in the
club can decide what they would like
to call it.

In another area of interest, Richard
Putz has become another hard worker
in the art of Amateur Radio by passing
the Novice part of his code test.
Congratulations, Richard!

CROWN Sports. . . . .

The men's bowling team has come to
a slow standstill and another move
could be fatal. I refer to the fact
that they have fallen to second-to-last
in the league standings--another move
toward the bottom could put them in
last place.

The ladies have remained about the
same but I'm assured a move toward
the top is coming. They are currently
in 9th place and their substitutes are
bowling in the 190's. I think I'd
stay home and let the subs bowl.

Other winter sports such as ping-pong
and yahtzee are still grinding on. The
ping-pong needs balls and the yahtzee
needs restraint. Not really--the girls
have been very quiet lately and it
appears that if Beth Cline wins one
more game she will be assured all-
conference status.

***   ***   ***   ***   ***   ***
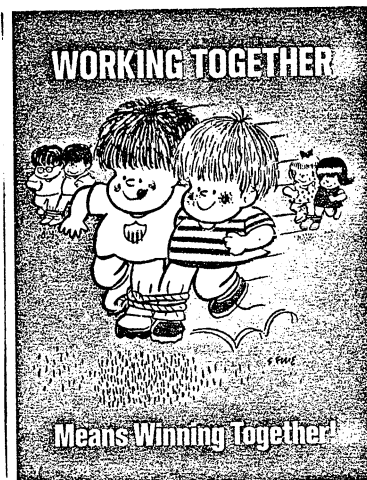
Have you heard. . .
                that Woss and Chane are susceptible to fits of hilarious
                laughter !?!?

9