PUZZLES

MAINLY FOR MATHEMATICIANS

NEXT week, puzzlers, will be a special French issue, so we're starting early. This week we are going to discuss figures. And, to show that we mean business, we'll start right away.

During the last month a fairly select group of readers has been busy with the higher flights of

Now, read carefully, for there's some explaining to be done.

Study Mr. Mullon's table. Observe that the centre row is headed by 1. This is where he started to make his table. His next move, to place the figure 2, would have ordinarily been to the diagonally adjacent square above the 1. But there is no square in this position, so the 2 goes into the bottom square of the vertical row of squares to the right of 1. From 2, he has gone diagonally

93	108	123	138	153	168	1	16	31	46	61	76	91
107	122	137	152	167	13	15	30	45	60	75	90	92
121	136	151	166	12	14	29	44	59	74	89	104	106
135	150	165	11	26	28	43	58	73	88	103	105	120
149	164	10	25	27	42	57	72	87	102	117	119	134
163	9	24	39	41	56	71	86	101	116	118	133	148
8	23	38	40	55	70	**85**	100	115	130	132	147	162
22	37	52	54	69	84	99	114	129	131	146	161	7
36	51	53	68	83	98	113	128	143	145	160	6	21
50	65	67	82	97	112	127	142	144	159	5	20	35
64	66	81	96	111	126	141	156	158	4	19	34	49
78	80	95	110	125	140	155	157	3	18	33	48	63
79	94	109	124	139	154	169	2	17	32	47	62	77

mathematics. We've been saving them, and here's the horrible result:

Obviously, you will say, this table requires some explanation. It does not take all that space for nothing. Well, it comes from H. D. Mullon, of New Plymouth, who worked it out according to a rule. If you care to check it, you will find that each row, perpendicularly and horizontally, adds to 1105, that the diagonal addition is also 1105, and that the number of rows multiplied by the centre figure (85) makes 1105.

Obviously, you will also say that this is remarkable. It is remarkable. But it is not unique.

More Figure Squares

From S.G.E. (Glenavy), comes a whole collection of similar figure-squares. He gives six, each larger than the first. In the first, he has five figure-groups to each side of the square, built up to total 65. In four others he has six, all adding to 111. In the last he has seven groups per side, all adding to 175.

And that is not all. You are not to be let down lightly this time, whatever leniency we have shown in the past.

From W. H. Presswood (Whangarei), comes a letter covering the same sort of trickery. Mr. Presswood uses one square built on five groups per side to total 65 (to illustrate his exposition of the rule) and another example with nine groups per side to total 369.

above and to the right as per the recipe until he has come to 7. Beyond 7 there is no square, so he puts his 8 in the other end of the row of figures immediately above the row terminated by 7. Then from 8, he runs consecutively up to 13, and here he finds that his next square, diagonally above and to the right of 13, is already occupied, by 1. So he establishes a rule that, when the next square is occupied, the next number shall go vertically below the last figure. So 14 goes below 13, and from there he runs easily up to 16. Here again, he finds no square ahead of him, so drops to the bottom of the adjoining row on the right and starts working diagonally once again from 17 to 21. Then up one and back to the other end for 22, and so on.

How It Is Done

So he establishes the rules: Start with 1 in the top centre. When there is no square for the next move, go one to the right and down to the bottom, if working at the top of the table, or one up and along to the left if working at the side. If the next square is occupied, use the one directly below. In the top right hand corner, of course, the rule does not apply, so he just drops 92 one square vertically below 91.

Readers whose appetites have now been whetted should refer back to J. A. Reid's statement on figure squares in our issue of February 2. Mr. Reid had still another method.

A variation comes with Mr. Presswood's examples. He gives the following table for his illustration.

9	3	22	16	15
2	21	20	14	8
25	19	13	7	1
18	12	6	5	24
11	10	4	23	17

This gives 65 in all directions. Mr. Presswood's instructions are:

Always start with 1 in the centre of the far vertical row and work diagonally towards the top right hand corner, as, for example, from 11 to 15. When you come to the edge, carry on at the beginning of the next line (see 1 to 2). When the next square above is already occupied go to the square to the left of the last figure in the same row (see 5 to 6).

And that, of course, is simply Mr. Mullon's method turned on its side.

PROBLEMS

The Rude Rowers

Now for those humble folk who like plain puzzles. They will want something nice and easy. S.G.E. supplies this one:

In celebration of victory in their annual rowing contest with the neighbouring school, students were believed to have been responsible for tarring and feathering a statue in a public park. Suspicion pointed to the rowing eight and their cox. The principal called on them and asked each one to confess. This is what they said:

A—E did it.
B—No, it was not E
C—I did it.
D—It was either C or H.
E—B is not telling the truth.
F—It was C.
G—It was not C.
H—It was neither C nor me.
I—H is right, and it wasn't E either.

On the assumption that three statements are true, who despoiled the statue?

Irish Arithmetic

Arrange 5 numbers, none of which is greater than 10, so that when read from left to right, the one on the right will always be nearer to 10 than the preceding one, and the first number will be nearer to 10 than the fifth. — C.N.G., (Gisborne).

Double Acrostic

For those readers who are not familiar with a type of puzzle which has not appeared previously on this page, and who are now prepared to stoop to solving this one, we might say that a double acrostic is a poem in which the initial and final letters of each line make words. This one:

> Means we've got
> On the spot.

1. The poet thus designates tears
When he in the spirit appears.

2. Here we present (or maybe personate)
The language (maybe) of some future date.

3. This may be seen
On cook and on dean.
4. Close application brings to mind
A carriage of a foreign kind.
5. A force
Of horse.

ANSWERS

Refer to *The Listener* of March 8.

The Queening of Alice:

If we place the ruler to pass through the point A (top right of Q. Kt. 5), it cuts off one-fifth; through B (top right of Q. 5) gives another fifth; and so on through C and D.
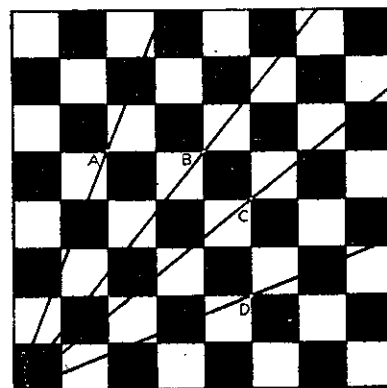
Tolls: Two half-pennies.

Age: Forty-four. The only year between 1900 and 1940 divisible by 30 is 1920.

Station: It was a mail train.

Oranges: At a third gate he must have only one left, so start at the beginning with X as the number of oranges and construct a series of equations until you have become tired of algebra, then think swiftly for one second and say "six" in a confident voice. On second thoughts, which are always best, say "seven" and you'll agree with us.

Egg: The problem was given wrongly. The fifth sale was the *second* last sale.

Family: One man's daughter married the other man. He married the other man's daughter.

Jumps: An infinite number of jumps until the poor frog falls off, according to our hare and greyhound experts; but, the frog, we must presume, jumps the same distance each time he jumps. Unless he can jump one-third of the ten-foot log the proposition does not hold, so you just have to work it out on the assumption that he jumps 3ft. 4ins.

Changeling: The window is diamond shaped.