20th March 1935.

Dear Bartlett,

There are only 4 X 4 Latin squares in the standard arrangement and of these, only one leads to a Graeco-Latin square. It does so in two ways which are mutually orthogonal in the Greek letters, consequently there are $4 \times 3! \times 4!$ Latin squares, $2 \times 3! \times 4!^2$ Graeco-Latin, and $2 \times 3! \, 4!^3$ with a third alphabet.

Of the 56 5 X 5 squares the six, which are symmetrical, lead to Graeco-Latin squares and these in three different ways all mutually orthogonal, so that the numbers are

$$56 \times 4! \times 5!$$
$$3 \times 6 \times 4! \times 5!^2$$
$$6 \times 6 \times 4! \times 5!^3$$
$$6 \times 6 \times 4! \times 5!^4$$

It is fairly easy to see that for any prime number, such as 7, one can make eight different catagories, such as rows, columns and letters of different kinds of mutually orthogonal, and the number of ways of doing this might well be fairly simple for prime numbers. I believe Euler suggested that there is no Graeco-Latin square when the number in the

side is of the form for s + 2, but nothing really is known and I should not be surprised at anyone hitting on a 10 X 10 Graeco-Latin arrangement.

I expect to be sending out my papers from the last analysis almost at once.

Yours sincerely,

M.S.Bartlett Esq.,
Agricultural Research Station,
Jealotts Hill
Bracknell,
Berks.