Chinese Names of Colours.

THE correspondence on the above subject, started by Mr. A. H. Crook in NATURE of January 11, 1906 (p. 246), was lately recalled to me when I heard, for the first time, the phrase "hsüeh ch'ing" (Cantonese sut, ts'eng)—snow-blue—used in conversation. It was used in this case in naming the colour of a flower, and struck me as particularly appropriate; the colour might well be described as one of those termed "ch'ing" diluted to a pale shade with white snow.

It hardly seems likely that any natural colour of snow itself should be the origin of the phrase, or how would one account for "shui hung"—water-red? The latter means pink, or, as one might say, a watery and "washed-out" red. Natural water of a pink colour is scarcely common.

Independently of the foregoing, though perhaps bearing on it, I should like to point out how the origin of some Chinese phrases may well have been obscured; this is by the substitution of one character for another nearly like it in sound, but not in sense. This may be illustrated by a case in which the change appears to be now taking place.

"Wang⁴ pa¹"—forget eight—is a term denoting a person of infamous occupation, and also a kind of tortoise. This looks already sufficiently obscure, but is fully accounted for to the satisfaction of dictionary-makers and their kind.

It happens, however, that illiterate persons frequently wish to write this name. In many cases they may not know the character for "forget," but they well know that for "king" (wang²), and the slight difference in sound is easily overlooked. The practice is being copied among the more literate, and it seems likely that in the end "wang² pa¹"—king eight—will entirely supplant the original (and now less common) form, and when this process is complete a sensible derivation will be impossible without reference to an older literature.

The process is almost parallel to some changes of spelling in English, but results in more complete obscurity.

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Percentages in School Marks.

MR. CUNNINGHAM'S inquiry (August 5) is aimed, apparently, at obtaining a kind of *index mark* for each candidate in an examination containing several papers. In getting a boy's percentage mark in any one paper there is no trouble; but the question is, By what law are percentages in different papers to be combined in order to get an index mark? Percentages may be combined in an infinite number of ways; which is the way Mr. Cunningham desires?

Consider three papers:—(1) looking at all the questions in the three papers as a whole, if marks have been assigned to each question with due relativity to all the other questions, (2) if the boys have each been properly prepared for all these questions, and (3) if fair time has been allowed for each of the papers, then each boy's index mark is clearly his total marks gained in the three papers divided by the total maximum marks of the three papers. The whole matter may be expressed more easily thus:—Let a boy gain marks x, y, z in three papers the maximum marks of which are a, b, c ; his index mark may be expressed by $px+qy+rz$, and will depend on the constants p, q, r . For example, if $p=1/a, q=1/b, r=1/c$, the index mark is $x/a+y/b+z/c$ (or this divided by 3, the mean of the averages). Again, let $p=1/(la+mb+nc), q=1/c, r=1/c$, then the index mark will be $(lx+my+nz)/(la+mb+nc)$, which reduces to the first example when $l=m=n$. In this case we have still the ratios $l:m:n$ in our power. For example, suppose papers set in Latin, French, and Greek, and take Mr. Cunningham's numbers for them respectively, namely, 37 out of 50, 50 out of 50, 71 out of 100, and suppose, on comparing the papers, that Latin is reckoned half as hard again as French, and Greek a quarter harder than Latin, then their difficulties would be Latin, French, Greek as

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12:8:15, and it would seem fair to take these values for $l:m:n$. Thus the index mark for this boy would be $(12.37+8.50+15.71)/(12.50+8.50+15.100)$, or 1909/2500, or 0.7636 (per cent. 76.36). If, however, each one of the questions has had marks assigned to it relatively fair when compared with the marks of all the other questions of the three papers, and if the time allowed for each paper is proportionate to the work required by an average boy to answer the paper, then would $l=m=n=1$, and the index mark would be 158/200 (or per cent. 79.00). Thus, Mr. Cunningham must settle for himself, in accordance with the circumstances of each case, the values of the ratios $l:m:n$. The above includes the cases of Mr. Whalley and Mr. Abegg, and, I believe, will cover Mr. Pickering's case too, but I have tried unsuccessfully to understand his numerical table.

A kindred question is sometimes asked, What is the master-average of a set of averages? For example, thirty schools send in candidates for a paper; each school gets its own average of the marks gained by its pupils in the paper (this is the mark of value for the school); but the examining body wants some information as to how the paper has been done in general, for the sake of comparison with similar papers in other years, hence a master-average, or some equivalent, has to be determined. Assuming all the candidates from the whole thirty schools to be equally prepared for the paper, obviously the examining body will obtain its desired result by dividing the total sum of all gained marks by 100 N, if N be the total number of candidates and 100 be the maximum marks of the paper. This amounts to putting

$$l=m=n=\dots=1;$$

but if it be known that very bad work has come from a certain school, and if in fairness its marks should be valued at (say) one-third of the general run of the schools, then in this case we should put

$$l=m=\dots=3$$

for twenty-nine of the schools, and $n=1$ for the school in question. To add the thirty averages and take one-thirtieth of the result is of no value at all. This is easily seen from the adjacent diagrams; in the first, sixty boys have an average of 10 marks, fifteen an average of 9, and five an average of 2; the mean of the averages is $(10+9+2)/3$, or 7; in the second case, five boys have an average of 10 marks, fifteen of 9 marks, and sixty of 2 marks; the mean of the averages is still only 7. Hence the same mean of averages is derived from two obviously different and even independent cases. Is it not fairer, in the absence of any other information, to take

$$(600+135+10)/80=9.31 \text{ and } (50+135+120)/80=3.81$$

as the means of the averages, or rather as the representative index marks of the two groups of candidates? In other words, is not one group about two and a half times better than the other? Hence, for a single paper in a number of schools, the apparently easiest plan is to treat all candidates as equally well prepared, and to take the index mark required by the examining body as equal to the total marks gained by all the candidates in the thirty schools divided by 100 N as before; and this seems also fair. This index mark may be got as the quotient $(fu+gv+hw+\dots)/100(f+g+h+\dots)$, where $u, v, \dots$ are school averages, and $f, g, h, \dots$ are the numbers at each school, so that $f+g+h+\dots=N$. The same problem is presented to the headmaster of a school who wants to get an index mark either of a form, or of the work of a master, or of the whole school, for comparison from year to year.

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