

SOME NOTES ON RECRUITS AND RECRUITING.

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THE collection of consecutive data, and the reduction of them to something like intelligible form, is a lengthy and tedious process, and I want to admit, straight away, that the numbers dealt with here are really quite insufficient for the formation of any dogmas on the subject, and therefore anything in these notes which may appear as a definite statement should probably only be taken as the basis of possible future discussion or disproof. If, however, the collection of notes on the development of soldiers, either as recruits or as fully trained men, is in any way stimulated, and their publication in a form easily available to all members of the Corps hereby encouraged, there will at least be some data gained. I have been surprised at the small quantity of literature which appears to be available to help the medical officer who comes fresh to the selection and care of the recruit. It is not until one has been able to watch a series of squads of recruits growing before one's eyes, and has devoted some considerable time to the consideration of recruits in the abnormal conditions of their first few months of Army life and training, that one grasps the enormity of the subject. The further one proceeds the more the varied sides of the matter present themselves; consequently the insufficiency and incompleteness of these notes are but evidence of a growing appreciation of the possible value of certain investigations and statistics, and are due rather to limitation of time than to lack of material. As the data have been collected in the midst of ordinary routine work, experts on the subject—and others too—will recognize that there is here more of the search for knowledge than of the profession thereof.

The standards to be observed in passing men into the Army are very clearly laid down in Regulations, and whilst it would appear that but few and unimportant discrepancies could creep into the anthropometric details of any given individual dealt with according to the recognized rules, we all of us know how many pitfalls and traps there are for the medical officer who is not meticulously careful all the time and every time, and how particularly easy it is to fall into one of these, more especially if a too willing recruiting staff is allowed to assist with the scales or tape. Too much stress cannot be laid on the value of the old saying that if you want a thing well done you must do it yourself.

I suppose that about a quarter of an hour is devoted to the first medical examination of the average recruit before he is passed as fit; he is re-examined when he joins his depot, a little more rapidly probably. Even so, the time is really all on the short side in most cases for making a

decision as to whether a man is really fit for the strange and strenuous life which he proposes to enter. The question presents itself whether or not we can find any aids outside the regulations to help us to decide whether any given individual is likely to make an efficient soldier; in short, whether we cannot, with as little extra worry as possible, reduce the very expensive wastage which goes on at present at most regimental depots in the way of men turned out during the course of their training, without materially interfering with the regular and adequate supply of recruits.

Some idea of the bore of the waste pipe which carries off the unsuitable and the unfit from the depots back to the streets and unemployment whence most of them came, may be gathered from the fact that, at the most, only about sixty or seventy per cent of any given squad of recruits joining can at present be expected to survive the five months' training which they have to undergo, and this in spite of the fact that they have all of them been passed by at least two medical officers, a recruiting officer and an officer commanding a depot; one way or another nearly a third of them will fail during the course of their training. This wastage is the cause of considerable financial loss, and I doubt much whether the money so wasted produces any return at all.

Table I shows (from my own experience, as are all the figures in these notes) to some degree the care with which the men are sorted out in the first instance; and, too, gives some idea of the extent to which we are suffering physically as a nation from the period of the Great War, when parental and Governmental discipline of the home and school life of the soldier-providing classes was somewhat more lax than it normally is. The figures in column 4 of this table show an increase compared with the year 1912-13 of twenty-seven per cent, and with the year 1920-21 of thirteen per cent (*vide* JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, Vol. XLII, p. 190. Address by Major-General W. W. O. Beveridge, C.B., C.B.E., D.S.O., K.H.S.). They relate, however, to only a very small part of the Army, and the grand total may not be quite so depressing; in any case, this state of affairs should shortly right itself to some considerable extent. Other nations have suffered, and do suffer, from the same physical deterioration in similar circumstances. At the same time, it must be remembered that a higher standard of education is required from the present-day recruit than used to be the case, and that the effect of the unemployment dole on the physique of the soldier-providing classes has yet to be calculated.

TABLE I.

All applicants			Applicants seen by M.O.	
Rejected by Recruiting Staff	Rejected by M.O.	Passed	Rejected	Passed
24.2 per cent	34.7 per cent	41.1 per cent	48 per cent	52 per cent
Total numbers concerned = 327.				

Another matter of interest which arises in this connexion is the extent to which the recruiting office staff reject or send up for examination

applicants for enlistment. A considerable proportion of "impossibles" and "undesirables" necessarily present themselves at all recruiting offices, but any medical officer who has worked with several recruiting staffs will have realized that the percentage of rejections which he has to make tends to differ according to whether or not the staff know his particular carefulness or fancies. For instance, for a short period I was detached from my own station to a larger recruiting office, and Table II gives a comparison of my experiences in this respect "at home" and "away." I leave the reader to draw his own conclusions, and do but repeat that the recruiting medical officer needs his wits about him all the time and every time.

TABLE II.

	Rejected by Office Staff	Rejected by M.O.	Passed	Total number
Home ..	26.85 per cent ..	25.98 per cent ..	47.24 per cent ..	127
Away ..	21.50 ,, ..	43.50 ,, ..	35.00 ,, ..	200

Of the measurable factors with which one has to deal, perhaps the most easily dismissible are those of visual acuity and dental efficiency; in the latter case there is now nearly always a dental officer available who will cheerfully shoulder the responsibility of saying "yes" or "no."

The detection of actual disease, deformity or weakness of the body or internal organs, is, after all, but the normal practice of a medical officer's profession, nevertheless, the figures tabulated below tell their own tale; and, whilst those in column 3 may be called medical officers' mistakes (some justifiable, others questionably so), columns 2 and 4 also undoubtedly contain many cases which are practically medically unfit. These figures refer, as do all others in these notes, to a period of six months, and here concern a total of 300 recruits joining two regimental depots during that time, about one-third of whom, at the time of taking the count, had been only some two months in training, the remainder for varying periods up to six months.

TABLE III.—SHOWING DISCHARGES FROM THE SERVICE OF RECRUITS BEFORE THE COMPLETION OF THEIR TRAINING.

Date of discharge. Month	Under age	Medical grounds	By Regimental Boards	All other causes	Total
Under 1 ..	6 ..	24 ..	— ..	9 ..	39
1—2 ..	2 ..	6 ..	7 ..	— ..	15
2—3 ..	5 ..	4 ..	3 ..	3 ..	15
3—4 ..	1 ..	4 ..	2 ..	1 ..	8
4—5 ..	— ..	— ..	1 ..	— ..	1
Totals ..	14	38	13	13	78

Principal causes under column 3 (Medical Grounds) :—

- (1) Defects of the lower extremities = 11
- (2) D.A.H. (tachycardia) .. = 9
- (3) Otitis media = 7

The number of apparently healthy young men who do not appear to be affected with any cardiac abnormality appreciable to percussion or auscultation and who yet have a pulse-rate, normal to them, of over 100 beats

per minute is quite remarkable, and seems to differ, as one might expect, in different districts. Table IV shows the percentages at different rates per minute in a series of 133 cases taken without reference to any other quality than that they presented themselves for enlistment and were all under 22 years of age. Special care was taken to avoid the effects of excitement or exercise and no case of valvular disease or obvious undue cardiac enlargement is included.

TABLE IV.

Pulse-rate per minute	from to	61 70	71 80	81 90	91 100	101 110	111 120	121 130	131 over	Total
Numbers	..	2	24	40	33	4	12	11	7	133
Percentages	..	1.5	18.1	30.0	24.8	3.0	9.0	8.3	5.2	

The average pulse-rate per minute of ninety men (three squads), who had been passed into the Army, taken on or very shortly after joining their depot, was 95.76; after some five to six weeks of training the average pulse-rate of sixty-eight of the remainder who had not been discharged (some being absent or sick) was 82.7; by the end of their third month the number available had dropped to fifty-seven, and their average pulse-rate was 82.84 per minute. Of these fifty-seven who survived three months the average pulse-rate at the beginning of the training was 86.56 per minute. These figures seem to agree with the general impression that the men with high pulse-rates drop out quite early in the course of training, either with D.A.H. or some other defect, though a certain number of cases of tachycardia appear to develop in the third and fourth months at the depot, and the final average pulse-rate is raised, in these cases, by three men who up to the date of recording had gradually developed pulses of just over 100 per minute. The drop in numbers is not, of course, permanently so great as would appear because on any given date there are always likely to be men absent or sick in hospital, still, it is fairly good indication of what happens to an average squad.

The whole question of the cardiac reaction to and recovery from effort is at present under the consideration of a War Office Committee and is therefore not considered here.

When we come to consider those constantly related measurements of height, weight and circumference of the chest, and to assign the different values to be allotted to each individually and to all together, we begin to tread on more difficult and interesting ground. The minimum height at which a recruit may be accepted for the Service is governed very largely by the interaction of the rates of supply and demand, and the low limits of all these three factors are standardized, from time to time, in Regulations.

The proper relationship between height, weight and chest has been worked out by Professor Georges Dreyer and tabulated in his book, "The Assessment of Physical Fitness." He uses the length of the trunk not the length of the whole body (i.e., the height sitting not standing) as the

standard of height, and the mean or ordinary circumference of the chest, not the maximum or minimum, and also takes the vital capacity of the lungs. Calculations from these tables materially increase the time taken for the examination of recruits, but they do give data comparable with accepted normal standards for the estimation of the physical worth of any individual with whom one is dealing; and they have the advantage that they are applicable to all ages without alteration. Taking the measurements easily obtainable in the examination of recruits, it would appear, roughly from a small number and using the weight calculated from the trunk length as the most reliable in dealing with numbers according to Dreyer's recommendation, that the average recruit on enlistment is some seven per cent below the normal weight for a man of his size, though he is up to, or over, the regulation weight for recruiting.

In the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS for January, 1913, Lt.-Col. (then Captain) J. A. Balck Foote, R.A.M.C., showed that it was possible by modifying the original formula, to make use of Pignet's factor for the estimation of the physical condition of men from figures available on their medical history sheets, and to classify men by the use of this formula. Thus, if the height in inches is subtracted from the sum of the weight in pounds and the maximum circumference of the chest in inches a "factor" is obtained which will give one a mental picture of the state and worth of the individual's development ($F = (W + C) - H$): and the values of various factors arrived at in this way are given by Balck Foote as:—

Under 80	..	Useless
80 to 90	..	Weak
90 to 100	..	Fair
100 to 110	..	Good
110 to 120	..	Strong
120 upwards	..	Very strong

Provided that there is no excessive fatness, or other obviously disturbing feature, these standards appear to be reliable and the factors obtained do give a remarkably reliable indication of the subject's physical value at the recruiting ages. I have not had sufficient experience in the recruiting of boys to be able to say whether it is of the same value between the ages of 14 and 17 years, but as this is a time of rapid growth in height—usually at the relative expense of weight, probably the above classification requires considerable modification.

The standards laid down at present for recruiting for infantry of the Line, if worked out on this formula, give, for the various ages and heights, a minimum factor as shown below:—

TABLE V.

At the age of	Minimum factor for a height of					
	63	65	68	70	72 inches	
18 ..	84	83½	84	87	84½	
19 ..	84½	86	86½	87	91½	
20 ..	85½	89	89½	91	93½	
21 ..	86½	90½	91	92½	96	
22 and over	90½	92½	93	95½	97	

These standards, it must be remembered, are for untrained men, and may be assumed to be the lowest from which it is considered reasonable to expect it to be possible to produce strong and efficient soldiers as the result of at least five months' special training. It will be noticed that the standards printed in black figures—i.e., 18 to 20 years and sixty-three to sixty-eight inches height—which include the vast majority of normal recruits, are in the eighty to ninety, or "weak" class.

One point which I have tried to arrive at is the standard from which, as a start, the average healthy recruit may, with any degree of certainty, be expected to turn into a promising soldier by the end of his course of training at the depot. Omitting therefore those who fall by the wayside, and considering only those who arrive at the end of their training fit to be passed on to the battalion, the average factor of 156 recruits who have been drafted to their battalions for two regimental depots during the six months under consideration was 93.99 at the time of their enlistment, and 103.67 on completion of training—an increase of 9.68 points. These figures represent, for an average of eighty-eight of these men, an initial weight, chest and height measurement of 125.43 pounds, 35.24 inches and 65.86 inches respectively, and final measurements for 125 men of 133.54 pounds, 35.93 inches and 66.52 inches. Taking the figures in different detail, the following table shows the average finishing factor of men who started at various points on the scale, and shows, for this series, that even if we take a factor of from 100 to 110 as a satisfactory point at which to arrive by the completion of a recruit's training (allowing for the fact that the majority have still two or more years in which to continue growing), we ought not to look too hopefully on any recruit who has, on enlistment, a factor of less than 90, and not too certainly on one of less than 95. In other words, the recruit who is just up to the regulation standard and not very much more, is not likely to be of much real value. Naturally, a percentage of such men do survive to become efficient soldiers, but my personal feeling is that only those who are particularly keen to do so survive, and as this class includes most of the men who are driven to the Army as unfit for anything else, they do not, as a rule, merit any great expectations. As a general rule, it seems to me, the basis of their failure is their insufficient weight.

TABLE VI.

Factor on enlistment	Average factor at end of recruit training	Numbers
Below 80	89.475	13
80—84	95.207	21
85—89	99.52	22
90—94	101.33	31
95—99	106.06	25
100—109	112.80	33
110 and over	118.58	11

One constant feature which has always to be kept in mind is the normal strains to which a soldier is likely to be subjected as a trained man, the

most constant and, perhaps, the most severe of which is the amount of weight which he will be required to carry. Professor Cathcart and Captains Richardson and Campbell, R.A.M.C., have recently demonstrated that the optimum load of the soldier should not exceed one-third of his body weight under ordinary service conditions, which, as they point out, taking the average body weight in the Army as 135 pounds, means a load of some forty-five pounds. The weight of full marching order (without the great-coat) is, at present, fifty-seven pounds three ounces; so that the average weight given above for this series of recruits at the end of their training may be taken as the least that is desirable; for, provided that he keeps in good training, the soldier is not ordinarily likely to gain very much in weight after he leaves the depot. Indeed, if the figures given above for small numbers in any way correspond to the general rule, he has but a couple of pounds to gain, on an average, to bring him up to the standard of the Army as a whole. I have laid stress on the question of weight because it has seemed to me to be, if any one thing is, the most important determining factor in the successful selection of recruits both from the military and from the purely economical points of view under the present system of training. The light-weight man seems not to have sufficient basis on which to build, nor sufficient reserve on which to draw, so that he may survive the period of intense training at the depot; of course modification or delay in training might save a percentage of these men, but it is questionable whether, on the whole, such a proceeding would be really economical.

It would be interesting to know whether this question of weight, and more particularly of regular gain in weight, bears any definite relation in the recruit to the incidence of D.A.H. during training; and whether, as I suspect, it might not be possible by watching fortnightly weight charts to predict and prevent the occurrence of disabling tachycardia by delaying or modifying the training of those who are not gaining weight at the normal rate.

There is an abundance of material for such investigations, but, as anyone who has started on them in the course of ordinary duties will know, there are many obstacles to the successful collection of statistics and gathering of impressions and ideas, not the least of which are the amount of time which can be made available and the length of time over which continuous observations should be carried out.