American stock pile of scientific personnel has now reached a peak and for a time will progressively be reduced by the usual forces of attrition, until adequate training programs resume.

The danger here is that the colleges and universities will not be able to compete for personnel, either in point of salary or in point of time. Where industry or foreign countries will be able to offer immediate inducements, the American universities and colleges will often have to wait for an assured budget and an adequate student body before committing themselves to paying faculty salaries. Already an appreciable number of former faculty members, who have been in the services and have resigned their commissions, have found attractive industrial positions waiting for them. Although they may have preferred teaching positions, suitable ones were not open, since colleges and universities are not now in a position to add to their staffs.

Unfortunately, no simple remedy for the problem can be suggested. Recognizing the danger, Dr. James B. Conant recently spoke out urging industrial laboratories not to "kill the goose that lays the golden egg." However, individual laboratories are in no position to be forbearing. If they do not hire the bright young men, their competitors will. And foreign countries will, of course, be guided only by their needs and resources. Subsidization of colleges and universities to permit them to build staffs carries with it certain unfortunate controls which are undesirable. Other more direct manpower controls are even more abhorrent. The most satisfactory of all solutions would be an aggressive policy of selection and training of scientifically apt youth. In this way a supply might be reached which would obviate the necessity of rigid controls in this field which otherwise seem inevitable.

It is to be hoped that the crucial importance of resuming scientific training at all levels will soon be recognized and that the colleges and universities will be able to make proper adjustments to present altered conditions, so that they may successfully build their staffs to meet the mounting postwar training load. It is not too much to state that the future welfare of the nation is closely involved, in view of the central role of the sciences in military and economic spheres.

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"PSYCHOLOGICAL DIFFERENCES AS AMONG RACES"?

PROFESSOR GARRETT'S recent communication[1] on the correctness of Professor Montagu's statement[2] regarding the question of the demonstration of valid differences in psychological characteristics among races poses problems of a psychological and semantical nature.

Professor Garrett states that "investigations of race differences in this country have regularly and consistently found differences as between Negro and white" and that, though such differences may be interpreted differently, the "fact of their existence can not be denied." Such a statement, when read in conjunction with Professor Garrett's general comments, seems to imply that there does exist a firm factual basis for the contention that there are racial differences in psychological characteristics. The available body of fact does not seem to support this contention.

While it is a fact that studies in which various features of cultural difference were not controlled have frequently purported to demonstrate the existence of differences in various test performances as dependent upon the variable of "race," the admissibility of such evidence as worthy of serious consideration is, indeed, questionable. The demonstration of differences in test scores between white and Negro Americans does not at all necessarily constitute evidence in support of innate racial differences. Such differences in test scores could only be interpreted as representing inherent differences in racial capacity if all the other variables which affect test score were carefully controlled. The most obvious of such variables are socio-economic status, education, general cultural surroundings, urban or rural domicile and rapport between subjects and examiner, all of which are independently capable of yielding significant differences in performance. Thus, a simple demonstration of differences in score as among races on a psychological test does not mean that racial differences have been demonstrated, but only that different mean scores have been obtained for different ethnic groups. This is quite a different matter from demonstrating "psychological differences as among races." The most that can be concluded from such studies is that two test populations, which differ among other things in skin pigmentation, tend to make different mean test scores.

Perhaps the most interesting and candid rejection of the "evidence" for a racial basis of the differences found to exist in test performances in the so-called comparative racial studies has come from the late Professor C. C. Brigham, whose own study[3] formed a corner-stone of the racial differences in intelligence theory. In a review[4] article appearing seven years after the publication of his extensive comparative study Brigham concluded, on the basis of the then available evidence, that:

[1] SCIENCE, n.s., 101: 16–17, 1945.
[2] SCIENCE, n.s., 100: 383–384, 1944.

[3] C. C. Brigham, "A Study of American Intelligence," Princeton, N. J., 1923.
[4] C. C. Brigham, *Psychol. Rev.*, 37: pp 158–165, 1930.

This review has summarized some of the more recent test findings which show that comparative studies of various national and racial groups may not be made with existing tests, and which show, in particular, that one of the most pretentious of these comparative racial studies—the writer's own—was without foundation (p. 165).

In his survey[5] of the information available on the question of racial differences, Professor Klineberg clearly indicates the artificial character of the "facts" of racial difference, and states that "the conclusion came first, and the 'facts' were found to justify it" (p. 344).

In the recent studies of race differences in which careful attempts have been made to control some of the non-racial variables affecting performance, as well as in the best conducted of the earlier studies, the purported differences in performance as among races have not been demonstrated with any degree of clarity. In summary, it can be said that, so far as the psychological evidence is concerned, on the one hand there has been no clear demonstration of facts which are unequivocably interpretable as evidence for the existence of racial differences, while on the other hand there does exist a growing body of evidence which indicates that as cultural factors are controlled the obtained differences in psychological characteristics as among races tend to diminish to the point of insignificance.

HERBERT G. BIRCH

REGENERATION OF ADULT MAMMALIAN SKELETAL MUSCLE IN VITRO[1]

IN the course of an *in vitro* study of normal synovium from the patellar region of an adult rat, we have noted the appearance, growth and spontaneous contraction of striated muscle fibers from the muscle component of the explants.

On the 14th and 15th days of culture, muscle fibers were noted in two cultures; on the 16th day, the fibers began to contract spontaneously; and on the 18th day, the fibers still contracting, cross striations were observed. A portion of the explant also contracted rhythmically and spontaneously. These cultures were kept for six days more, during which time they were washed and fed about three times. The fibers increased in number and length. During this period they retained the capacity to contract spontaneously and rhythmically, at different rates and intervals. One fiber with no connection to the explant was also seen contracting. The contraction was most vigorous and involved the greatest number of fibers immediately after washing and feeding. Often there was a period of relatively rapid rhythmic contraction followed by a period of inactivity, after which contraction was resumed.

The outgrowing muscle fibers were ribbon-like structures with nuclei occurring singly, doubly, or in threes, fours or fives along their length. Longitudinal striae could be seen in the ribbons. Cross striae were elusive in nature, appearing, disappearing and reappearing. The majority of fibers showed no cross striae throughout their length even when contracting.

The muscle fibers are similar in structure and behavior to those of rat embryos (intercostal region) grown in this laboratory. In both cases the Maximow method was used, *i.e.*, a flying coverslip upon which the cells grew undisturbed except when being washed and fed. The only differences observed were that the embryonic muscle fibers were broader and had a greater number of nuclei. Longitudinal striae could be seen; cross striae were elusive, as in the case of the adult fibers. The muscle fibers in the embryo began to contract spontaneously at between four and eight days. One culture retained its capacity to contract for over a month.

In summary: Striated muscle from adult rat was seen to regenerate and to contract spontaneously *in vitro;* in appearance and behavior these fibers were similar to embryonic rat striated muscle fibers cultivated by the same method.

Since innervation of any sort is eliminated, this capacity of skeletal muscle to fibrillate *in vitro* offers a method for further analysis of contractility.

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ORTHOGRAPHY OF SCIENTIFIC NAMES

THE recent article by Dr. Harold Kirby[1] is a fine summary of the complex problem of transcription and orthography in scientific nomenclature. It omits one point which has had considerable importance in the past and continues to plague systematists. Transliteration has a strong nationalistic flavor. Many authors have been concerned to produce a version of the Greek or Latin term which looked French, Italian or German, etc. The real problem is: Are we rendering letters or sounds? Actually we compromise the matter by doing sometimes one and sometimes the other. This difference is illustrated by the official Russian and Library of Congress systems of transliterating Russian. The first conveys the spelling in Roman without helping a Western European to pronounce the word, while the latter gives the pronunciation but no idea of the Cyrillic spelling.

To look at some of Dr. Kirby's examples: *Agchylostoma* gives the Greek spelling but not the sound,

[5] Otto Klineberg, "Race Differences," Harper and Brothers, N. Y., 1935.

[1] From the Department of Surgery of the Presbyterian Hospital, and the Laboratory of Surgical Pathology, Columbia University, New York, N. Y.

[1] SCIENCE, 100: 425–427, 1944.