

the soldier from honorable parenthood. In addition to abundant records from Europe and America, we have the following facts from Japan.

The war between China and Japan occurred twenty years ago. It involved the destruction of a large number of picked men of Japan and a corresponding reduction in the virility of the nation. The effects of the loss on the succeeding generation can not be felt until the children born in 1895 attain their majority. These results can be measured only in the reduced stature of the incoming conscripts and in the proportion of exemptions from military service. "Like the seed is the harvest." The new generation takes the quality of those men and women who were its actual parents. Those whom war has destroyed, in general the stronger and the best developed physically, are not represented.

According to the *Asahi* of Tokyo, as translated in the *Japan Chronicle*, the number of available conscripts in Tokyo for this year is 9,235, instead of 9,981. For a number of years there had been a steady increase of about 800. This falling off of 1,546 marks a decrease of over 16 per cent. In Kanda, the most densely populated ward of Tokyo, the decrease was 22 per cent.

In the whole nation, a slight increase of conscripts has taken place, 482,965 as against 472,147 of 1914. But this rate of increase (9,000) is only from thirty to fifty per cent. of the normal, which for years has ranged from 20,000 to 30,000.

More important than the reduction in numbers is the lowering in quality. In Kanda in 1914, twenty-four per cent. of the conscripts were passed as "strong," while in 1915, the percentage was thirteen per cent. (83 out of 635, instead of 194 out of 813). A much larger percentage of those sent to the barracks were of the "average" class.

The birth-rate in Japan, as in every other nation, declined in time of war, to rise again at its conclusion.

This decline of physique is a matter of concern to the military authorities of Japan, but they optimistically hope that it is of a tempo-

rary nature. The *Asahi* concludes that "most of those who underwent conscript examinations this year were born during the war and therefore are sons of those too old or too weak to go to the front, and so it is no surprising thing if the conscripts of 1915 are of exceptionally delicate constitution."

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SCIENTIFIC BOOKS

Key to the Families of North American Insects. By CHARLES T. BRUES AND A. L. MELANDER. Boston, Mass., and Pullman, Wash., published by the authors, 1915.

Most modern works on entomology contain keys or tabular synopses, intended to facilitate the determination of families, genera and species. It is the experience of those who have classes in entomology that these keys are on the whole unsatisfactory, being frequently incomplete, incorrect or unintelligible. The most noteworthy exception is found in Williston's "Manual of North American Diptera" (1908), which, considering its scope, could hardly be improved. One who has constantly used Williston's book for a number of years becomes convinced that it is possible to prepare keys which will in nearly every case enable the student to determine the genus of the insect before him, especially when he has also the aid of numerous outline figures. It is really astonishing how soon a clever student will learn to use works of this kind; at Boulder we find that students using an illustrated table of Rocky Mountain bees can frequently determine correctly as many as four genera in an hour, in spite of the fact that the insects and the kind of work are new to them. Exceptional students do even better than this.

The method having proved so satisfactory, Professors Brues and Melander thought it worth while to prepare a key to all the families of North American insects, illustrated, like Williston's book, with many outline figures. Thus we have for the first time a complete synopsis of the families, whereby the student may find the place in the taxonomic system of

any insect he happens to have obtained. In preparing this key, the authors have taken advantage of all previous work which appeared serviceable, added to their own extensive knowledge of a number of groups, so the result is probably not far from the best attainable in the present state of our knowledge. The book will be invaluable to all students of entomology, and will be in constant use in every entomological laboratory. The details of insect classification are not so well established that it is possible to present a system which will be universally approved. In the present case we recognize a number of improvements over arrangements previously current, but we must protest against the uncritical adoption of the system of Handlirsch. It is actually proposed to recognize five classes of insects, the additional four being made out of the Aptera, one of them containing the recently discovered Protura. Then, again, the old order Orthoptera is divided into a long series of orders, placed in two subclasses. The reviewer has not critically reconsidered the whole subject to determine exactly what support may be found for all these changes, but neither has any one else in this country, so far as we know, for it would involve many months or years of intensive labor, with access to very large collections. The reviewer has however had much occasion to use Handlirsch's great work "*Die fossilen Insekten*," in which the new classification appears, and has come to a clear estimate of its merits and faults. It is a wonderful compilation, showing enormous industry and great ability, and will always rank as a classic in the literature of entomology; but in detail, and especially in its innovations, it is not to be trusted, the taxonomic arrangements set forth with so much assurance being often based on very inadequate grounds or imperfect knowledge. It may well be that this author has been taken more seriously than he himself intended. A new classification, even if faulty, is of value if it stimulates thought and is received in a critical though friendly spirit; to adopt it *en bloc* without criticism is in a sense to do an injustice to the eminent author.

Only frequent use will show how serviceable

the key is in all its details. Undoubtedly many little changes will be required in the next edition. As the authors observe, the families are not of equal rank, and it seems impracticable to make them so. All the scale insects and mealy-bugs are still Coccidæ, all the ants are called Formicidæ, while the bees are divided into twelve families.

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ON THE ACOUSTICS OF THE CHAPEL OF
ADELBERT COLLEGE

IN SCIENCE of November 14, 1913, was published a short account of experiments made to determine the effect of a sounding board on the acoustic qualities of the chapel of Adelbert College. The sounding board, constructed at the suggestion of the architect of the building, and in accordance with his specifications, was of the canopy type, about six feet in diameter, and suspended about two feet above the head of the speaker. An investigation showed, as was not unexpected, that the sounding board was without noticeable effect, and it became necessary to try other remedies.

A sufficiently detailed description of the interior of the chapel is given in the previous article, and need not be repeated. The ceiling of the building is of wood, the walls are in part of stone, and in part of plaster laid directly upon the stone without lath or furring.

There was no evidence, as was before stated, of special or local echoes. The difficulty was plainly one of excessive reverberation, due to the insufficient absorbing power of the walls and ceiling. It was evident that the only effective remedy was to cover a portion of the walls with highly absorbent material, after the manner devised by Professor Sabine, of Harvard University. The generosity of the donors of the chapel provided the necessary means; the work was intrusted to an "acoustic engineer," a former student of Professor Sabine's, and Mr. Sabine himself was good enough to aid with counsel and suggestion.

Calculation showed that a reasonably effective treatment might be obtained by covering the ceiling and the upper part of the walls