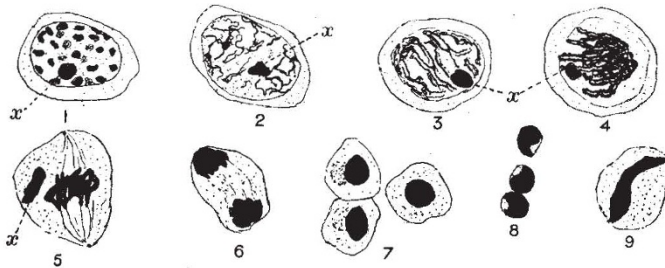


clump (*x*), which is larger than the others, is presumably the sex chromosome. Fig. 2 shows a leptotene stage, Fig. 3 syndesis, and Fig. 4 a contraction figure in the diplotene stage. In all these, the sex chromosome can be easily distinguished, and in Fig. 5, which shows the chromosomes arranged on a normal spindle, the sex chromosome is seen lying apart in the cytoplasm. Fig. 6 shows the telophase of this division. The second spermatocyte division also appears to be normal.

There are, however, two kinds of spermatids; the larger, shown in Fig. 7, arises from the ordinary divisions described above, and gives rise to a normal spermatozoon; early phases of spermatoleosis are shown in Figs. 7 and 9. The smaller type of spermatid has a very small amount of cytoplasm; these



apparently abnormal spermatids supposedly arise either by an extra division of the ordinary spermatids, or by degeneration of the normal forms. It is thus plain that in the spider examined by me the whole course of spermatogenesis corresponds with that known in the great majority of animals; there is no evidence of amitosis either in the spermatogonial or spermatocyte divisions. Abnormal spermatids are known to occur in many insects and molluscs, and occasionally occur also in mammals. In such cases, however, the testis is found to contain normal spermatozoa, which presumably are the agents in fertilisation.

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#### Birth-Control among the New Zealand Maori.

MAY I, as a New Zealander, make a few comments on Prof. J. S. Huxley's very valuable review of "The Ethics of Birth-Control" (*NATURE*, September 26, p. 455). Europeans have found it almost impossible to elicit definite information from the New Zealand Maori regarding methods of control, although we have known quite well that control of fertility was exercised, and abortion is prohibited by the Maori Sacred Legends. Very few Maori women have more than four children; many fewer than four. In ancient times there was a betrothal for about eight or ten years, during which time no children were born. This betrothal was really a trial marriage. At the age of from twenty-five to twenty-eight, formal marriage took place between the betrothed lovers or otherwise, and the married woman had as many children as she desired, and by whatever father she desired.

Race improvement was taught in the Sacred Legends, and it was regarded as the duty of every mother to have as fine a father as possible for her child. If she wanted to live with her husband but preferred some other man to become the father of her child, she might allege that this lover's spirit

visited her. This was a recognised polite fiction. The husband might feel sorry his wife considered some other man a better potential father, but still he regarded himself as fortunate if his wife continued to love him and want him as her husband.

No man and no woman were allowed to reproduce unless passed as fit for reproduction by the Maori authorities; and before betrothal occurred there was medical examination of both parties by the parents of the young couple and by the doctors. Children were named by the community in accordance with their birth and form, and the girl-baby of a mother having difficult or abnormal childbirth was named in such a way as to indicate her unfitness for reproduction. Only the physically perfect men were permitted to become fathers, and no Maori woman would allow herself to bear children by other men than these. The Maori considered the father of more importance than the mother in the matter of race improvement. Even crippled women might be allowed to become mothers, but crippled fathers—never. Scarcely any really "unfit" babies were born, but should such an accident occur, the new-born unfit baby was given "The Peaceful Death." Marriages were generally for life, and polygamy was rare. There were usually more men than women in Maori communities. Sexual hygiene and control were exercised. Some of these practices I have detailed in "Safe Marriage" and "Sex and Exercise" (Heinemann's Medical Books); others will be detailed in "New Zealand Maori Sacred Legends," to be published shortly by Routledge and Kegan Paul.

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#### Choice of the Striking Point in the Pianoforte.

THE experiments dealing with the amplitudes of the partials from a struck string are many, and the conclusions are varied. For example, the experiments of W. H. George (*Phil. Mag.*, vol. 50, August 1925) show maxima at various points, and he arrives at the conclusion that the amplitude of the fundamental attains a maximum at a small distance from the bridge, while S. K. Dutta found that it attained a maximum at a distance of  $1/91$ , where  $l$  = length of string. Again, Berry's conclusion is that forced vibration is a maximum at  $1/91$ . Experiments made by me on the pianoforte have shown that the elasticity of the hammer must also be considered when calculating the duration of contact, which is of fundamental importance in the tone of the struck strings.

Recent experiments show that the amplitude of the fundamental and the octave, and the 2nd harmonic, are maximum when  $T/\phi = 2$ ;  $T$  = period of vibration of the string, and  $\phi$  = the duration of contact. Now  $\phi$  depends upon the product of the striking distance and the mass of the hammer and its elasticity. The striking distance should not be very small, for then the resulting amplitude will be very small on account of the presence of the factor  $\sin \pi a/l$ , where  $a$  = striking distance, and  $s$  is an integer. Secondly, it cannot be very large, for the reflection of the wave in presence of the load (hammer) would render the partials nonharmonic. Thus the striking distance must lie somewhere between  $1/91$  and  $1/71$ . When  $a$  is fixed, the mass of the hammer and its elasticity are determinate. The best position of  $a$  is, however, obtained from the consideration of the note from the musical point of view.

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