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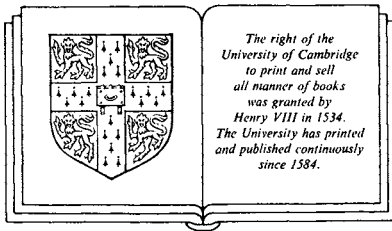
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# Elastic mechanisms in animal movement

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# Preface

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Springs are useful for many purposes: you can fix a spring on a door, to close it; you can bounce along on the spring of a pogo stick; you can use springs to make a catapult, or the suspension system of a car. Animals exploit the elastic properties of parts of their bodies in ways like these, and in other ways. They use elastic mechanisms in running, jumping, flight, swimming, breathing and in controlling their hands. The study of elastic mechanisms has been a dominant theme in biomechanics at least since the discovery of the protein resilin in 1960 by the late Torkel Weis-Fogh. It has been a remarkably fruitful field of enquiry. We have learned a great deal about animals (including people) and we have had a lot of fun.

This seems to be the first book about elastic mechanisms in animals. I have written it mainly for university students and research workers in biology, but I hope that other people will read it too. They will need some basic understanding of biology, physics and mathematics. I have tried to keep the mathematics simple, and I have avoided skipping 'obvious' steps in the argument. There are a lot of equations, but I think you will find that each leads easily to the next.

I have not tried to include every investigation of elastic mechanisms in animals. Instead, I have selected subjects for their interest and variety, and for their significance for our understanding of animal lives and movements.

*R. McNeill Alexander*