Dedication

To my patients
who by entrusting themselves to my hands have allowed me to learn; who by
improving have allowed me to understand; who by being cured allow me to pass on the
lesson they have taught me. Therapy is the art of uniting and separating, the result of
a shared act.
While respecting anatomy as closely as possible, the diagrams throughout the book reflect an anatomical ideal and make no claim whatsoever to replace or supplant courses in anatomy or physiology.

The cardioid is the geometrical figure that represents the locus of the different axes of a movement in space: it is the essence of movement.
Introduction

Any medical approach to health problems by manual treatment must have a very firm basis, which is provided here by cranial anatomy and biomechanics. There is certainly a wealth of reliable literature on anatomy, but unfortunately biomechanics is less well documented: the references are sporadic, incomplete, and sparse in the few publications devoted to this discipline. So there is really no overview that would allow the detailed research that would be so useful in this field.

This lack is perhaps due to the fact that numerous approaches to cranial technique are based on the development of perception during the teaching period. Although this is undeniably necessary in order to acquire manual ability, it seems inadequate to understand pathomechanics, which must form the basis of the reasoning that leads practitioners to the choice of techniques they intend to use.

In fact, how is it possible to understand pathomechanics without having a previous knowledge of biomechanics?

We have therefore assembled in this book all that we have found useful in thirty years of teaching cranial technique in ten countries. The contents seem to us to be the basic minimum necessary to understand cranial biomechanics.

It is already more than ten years since the publication of our first book on cranial manipulation; since then, it has been translated into ten languages. We delayed the planned publication of the second book because cranial technique, even in the most expert hands, seemed to us insufficient for dealing with all basically reversible lesions that could be treated efficiently.

The last ten years have given us the opportunity to find technical manual solutions to the rising tide of traumas, many of which are caused by the mechanical civilization in which we live.

Over these ten years, we have been able, through experience shared with our many patients, to refine very precisely the biomechanics that our predecessors introduced to us and guided us through.

Also over these ten years, we have come to realize that the general techniques used previously were sometimes not precise enough, and that specific techniques were not always perfectly adapted to the general body of knowledge. This led us to perfect other better adapted techniques, especially when several joints were involved. Such techniques had not been used previously, but they
allowed progression from the particular to the general without altering either the specificity or the totality of a method that takes into account the wholeness of a human being.

To improve its usefulness, we describe in this work manual exploratory techniques that can uncover functional defects of the cranial system and their pathomechanical characteristics. And this allows the practitioner to choose the most suitable techniques through reference to our book *Atlas of Techniques of Manipulation for the Bones of the Skull and Face*.

In this book, we have laid out the basic techniques that we have devised, improved, and developed during thirty years of practice. This long period of gradual development through practice will soon result in a complete revision of this book in order to include the results of our recent research.

Therefore, a third book will follow, which will give us the opportunity to choose corrective manual techniques that are related to manual perception. Their existing anatomical and physiological bases, together with our knowledge of pathomechanics, will then allow us to understand dysfunctions and their pathological implications.

For the present, however, let us examine the foundations of a manual diagnosis that is simple, clear, and precise in the sensitive hands of trained therapists.

It has been our guiding principle to go from the simple to the complex, leaving each professional to find his own starting point on this road.

Our hope is to help all practitioners who have found their own way of applying cranial osteopathic technique in the manual treatment of their patients’ dysfunctions.
Anatomy and biomechanics

Learning the technical aspects of cranial osteopathy is grounded in *anatomy*, which constitutes its structural substrate, and in *biomechanics*, which provides its functional component.

Mastery of these techniques will then follow as a result of progressive refinement of one’s proprioception, as regards both the plasticity of the bones and the mini-movements that take place at the sutures.

As for all senses, proprioception begins at the level of a sensor that transmits information to the primary centers of the brain and then on to the secondary centers, which refine its interpretation according to predetermined tactile systems of reference.

Therefore, learning will consist of a constant expansion of these systems of reference thanks to continuous exposure to tactile sensations and to the attention devoted to them, i.e., the reinforcement process of training.
The arterial blood supply

Everyone knows that the brain has a high rate of consumption of blood-borne oxygen and glucose. We need only look at the internal aspect of a bone of the cranial vault to observe how extensively it is grooved by the imprints of blood vessels.

As shown by Professor Lazorthe, the arterial supply to the brain has specific and distinctive characteristics. Thus, unlike many organs, the brain has numerous arterial pedicles because its arterial blood supply comes from four large vessels (i.e., two carotid arteries and two vertebral arteries).

These arteries anastomose to form the arterial circle of Willis, from which arise the cerebral arteries. The cerebral arteries then give rise to two systems of blood supply to the brain:

- the first, made up of the cortical branches, coats the external surface of the brain;
- the second, consisting of the central branches, enters the brain at its core.

These two systems of arterial branches then penetrate the brain substance, with the vessels of one system running towards the point of entry of the vessels of the other system and thinning progressively along their course. Hence, the two most vascular zones of the cerebrum are cortical and central.

These vessels branch further in the brain substance, with each branch supplying a well-defined territory. As Professor Lazorthe puts it, “The distribution of the cerebral arteries to separate anastomotic territories suggests the existence of juxtaposed but cofunctional hemodynamic currents.” In addition, there is no mixing of the blood carried by the anterior, middle, and posterior cerebral arteries where they join the circle of Willis, and their supply to the brain is strictly ipsilateral.

It may be useful to recall that each lateral surface of the body of the sphenoid contains a sulcus for the internal carotid artery as it traverses the cavernous sinus, to which it is attached by fibrous bands.
Superficial temporal artery
Occipital artery
Internal carotid artery
External carotid artery
Transverse facial artery
Vertebral artery
Maxillary artery
Communal carotid artery
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