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सोऽहम् ।

Yoga-Mīmāṃsā

EDITED BY

S'RĪMAT KUVALAYĀNANDA

(J. G. Guṇe)

October, 1924

Vol. 1

No. 1

KAIVALYADHĀMA

Post—LONAVALA

(Bombay, India)

The Kaivalyadhāma.

Note—Throughout the literature issued by the Āś'rama, the word 'Philosophy' is used in its widest sense. The proposed experimentation of spiritual experiences refers to the investigation of psychic phenomena according to the methods of Psycho-physiology.]

The Principal Ideal.

The western philosophy, ever since the days of Greek thinkers, has continued to be merely speculative; and though of late it is exhibiting a biological tendency, it has neglected 'man' the highest biological product so far as his noblest spiritual experiences go. The western sciences, in their triumphant march, are ever singing songs to materialism, and have little leisure to attend to spiritualism and its wonders. Thus the western thought, either philosophical or scientific, does not experimentally take account of the sublimest in man.

The Indian philosophy, though based on the spiritual experiences of man, has been throughout its course, subjective. Swāmī Vivekānanda and others, indeed, tried to explain some of its principles in the light of modern sciences. But as they never took to experimentation, it again remained exclusively subjective and they could not add the objective side to it.

The Kaivalyadhāma proposes :

- (i) To carry the biological tendency of the western philosophy to its logical conclusion by tackling scientifically the highest states, of human experience.
- (ii) To make the western laboratory methods of research reveal spiritual wonders.
- (iii) To develop the objective character of the Indian philosophy by subjecting the individual spiritual experiences of man to experimentation.

Thus the Kaivalyadhāma has for its principal ideal the co-ordination of the western and eastern thought; and hopes, by their assimilation, to work out a philosophy which will perhaps give satisfaction to the greater part of humanity.

The Yogins, right from Patanjali, the greatest exponent of Yogic science, knew how to induce the highest spiritual stages. As the objective sciences had not developed till late, it was not possible for these stages to be experimented upon; and though lately there has been a startling advance in modern sciences, their exclusive material tendency and the equally exclusive spiritual tendency of the Yogins have led to a complete but an unlucky divorce of the two schools of thought. The Kaivalyadhāma is anxious to wed these together and produce results which will lead to the realisation of the ideal indicated above.

The Subordinate Ideals.

Although Yoga is mainly spiritual, it has two important minor aspects. It teaches excellent systems of physical culture and therapeutics. The Āś'rama has already started research in these two fields and reached impor-

(Continued on cover page 3.)

तदेकोऽवशिष्टः शिवः केवलोऽहम् ।
I alone persist : Blissful : Absolute.

ॐ

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सर्वे कल्पिदं ब्रह्म ।
All this is, indeed, Brahman.

नेत्रं सान्नास्ति किञ्चन ।
There is nothing here apart from it.

शरीरमाद्यं सङ्गं धर्मसाधनम् ।

Surely Health is the primary requisite of spiritual life.

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and published by Kuvshayananda (J. G. Gupte), at Kunjavana (804 Valvana), Lonavla.

CONTENTS

	Page
EDITORIAL NOTES	1
THE SCIENTIFIC SECTION—	
What is Uddiyana	9
X-Ray Experiments on Uddiyana	15
What is Nauli	25
The Discovery of a Partial Vacuum in the Colon in Nauli ...	27
THE SEMI-SCIENTIFIC SECTION—	
A Note on the X-Rays	33
The Anatomy of the Colon	36
The Physiology of the Colon	39
Cecal Constipation	42
THE POPULAR SECTION—	
The Pan-Physical Pose	59

LIST OF ILLUSTRATIONS

Fig.		Radiograph
I	The Rectus Abdominis Left used in Uddiyāna and Nauli.	
Ia	The Rectus Abdominis Right used in Uddiyāna and Nauli.	
II	The Muscles of the Back used in Uddiyāna and Nauli.	
III	Uddiyāna in Sitting.	
IV	Uddiyāna in Standing.	
V	Uddiyāna in Squatting.	
VI	Uddiyāna in S'īrshāsana.	
VII	The Stomach and The Intestines.	
VIII	Normal Position of the Colon with One Pint Opaque Injection.	I
IX	Position of the Colon and its Contents during Uddiyāna.	II
X	Nauli in Standing.	
XI	Nauli in Squatting.	
XII	The Rectus Abdominis Rolled to the Left.	
XIII	The Rectus Abdominis Rolled to the Right.	
XIV	Intestines with an Opaque Meal in Uddiyāna.	III

- Fig.
- XIVa Müller Special Heavy Anode Tube
- XIVb The Coolidge X-Ray Tube.
- XV Half the Colon Cut off.
- XVI The Whole Colon Cut off.
- XVII The Vertebral Column
with
The Sympathetic Nervous System.
- XVIII Lying Supine for the Pan-Physical Pose.
- XIX Sarvāṅgāsana or The Pan-Physical Pose
(Side View)
- XX Sarvāṅgāsana or The Pan-Physical Pose.
(Back View)
- XXI Sarvāṅgāsana or The Pan-Physical Pose
with
Hands Extended,
(Side View)
- XXII Sarvāṅgāsana or The Pan-Physical Pose
with
Hands Extended,
(Back View)
- XXIII Preparation for the Fish-Pose.
- XXIV Foot-Lock for the Fish-Pose.
(Folded)
- XXV Foot-Lock for the Fish-Pose.
- XXVI Matsyāsana or The Fish-Pose.
(Side View)
- XXVII Matsyāsana or The Fish-Pose.
(Front View)
- XXVIII The Arch of the Aorta
and
Its Branches.
- XXIX The Thyroid Gland
and
The Arteries Affected
by
The Pan-Physical Pose.

ॐ

तदेकोऽवशिष्टः

शिवः केवलोऽहम् ।

सोऽहम् ।

YOGA-MĪMĀNSĀ

VOL. I

OCTOBER, 1924

NO. I

Editorial Notes

MAY the Maker of all make this periodical a success. Blessed is the name of the Lord. May He bless the workers of the Ās'rama with a happy and prosperous career as servants of the world which is only the Lord Himself objectified. May He, that has created us in his infinite wisdom, lead us to the light that is beyond all darkness.

* * *

THE Yoga-Mīmānsā Quarterly will publish researches of the Ās'rama Kaivalyadhāma. The workers of this Ās'rama are tackling, according to the modern scientific methods, the great Yogic culture of India in its different aspects. Nothing that has not been tested either clinically or in the laboratory will appear in the pages of this periodical. What truths will be revealed by these researches nobody can predict. But it looks very probable that the research-work of the Ās'rama will enrich the field of physiology, psycho-physiology, therapeutics, spiritual and physical culture, etc. Years of labour in psycho-physiology may help the scholars to solve some of the toughest problems of philosophical thought.

* * *

THE matter will appear under three sections: the Scientific, the Semi-Scientific, and the Popular.

The Scientific Section will record original laboratory experiments conducted by the workers of the Ās'rama. In the case of X-Ray, faithful prints of the original radiographs will be given. As these, however, represent only static conditions, observations on the fluorescent screen will be accurately stated whenever dynamic conditions are under discussion. Every experiment will be accompanied by a table of facts recorded by the operator during his work. Thus this section will present scientific data collected by the Ās'rama to the men of science who may draw their own conclusions and also may critically examine the conclusions reached by the scholars of the Kaivalyadhāma. These scholars are open to conviction and under no circumstances claim infallibility. No super-human agencies will be introduced into the laboratory work. It will be conducted in strict accordance with the recognised scientific methods of the west. Whatever the spiritual development of the worker, he will not allow anything to filter to these pages before applying to it a severe scientific test.

* * *

THE Semi-Scientific Section will contain articles on the conclusions drawn by the scholars of the Ās'rama from their researches. The application of these researches to therapeutics, spiritual and physical culture, etc., will be discussed in the pages of this section. At times the conclusions arrived at may not be final. In that case their hypothetical nature will be clearly stated. Copious scientific notes will be given. It is only on account of these notes, which to men of science are unnecessary, that the section is called Semi-Scientific. The first two sections will be complementary to each other, and should be read together.

* * *

WE want to emphasise one point regarding the scientific notes. They will appear only once in the pages of this periodical. On subsequent occasions the readers will be referred to back numbers of this Quarterly.

* * *

EDITORIAL NOTES

THE Popular Section will also bear on the researches of the Ās'rama; but here laboratory-evidence will not play a prominent part. Much will be based on clinical observations. Again, simple scientific facts which are known even to a beginner of scientific studies, will be elaborated here with a view to make the treatment so simple as to be readily intelligible to any man of average English education. For these reasons the section is termed Popular.

We originally intended to have only three sections. But we now think it necessary to add one more. It will be called Miscellaneous and will contain authoritative letters of criticism from our readers along with their answers from the workers of the Ās'rama. Original contributions from persons labouring in the same field as is being investigated by this Ās'rama, will also be published in this section, provided they are strictly scientific. We earnestly request all men of science to take keen interest in the problems discussed in the Quarterly and to help us in making it a grand success.

* * *

THE work of investigation that is carried on at present in the Ās'rama, is mainly physiological. Yogic physical culture and therapeutics also play a prominent part. Hence the readers are likely to carry the impression that Yoga is only a system of physical culture and therapeutics. But nothing can be farther from the truth than this impression. The physical side is only a minor aspect of Yoga which is chiefly mental and spiritual. Scientific investigation of these main features will start as early as possible, and then psycho-physiological researches will find place in these pages, along with the physiological ones.

* * *

WE have specially to thank those of our readers that have shown their utmost confidence in ourselves and our work by paying their subscriptions more than a month

in advance. We only assure them that we shall try our best to better deserve their confidence as we progress.

* * *

WE earnestly request the general public to take keen interest in our work and to co-operate with us by showing their active sympathy to the Ās'rama. We are anxious to serve humanity; but we can do so only if our brothers and sisters, not only of India but also of other countries, come forth to encourage us in every possible manner. We beg to point out here that the easiest way to help us lies in subscribing to the Quarterly; and fervently hope that no man of means will hesitate to render us this assistance.

* * *

THE subscription may appear to be a little bit too heavy. But our readers will readily excuse us for this when they realise the character of the work and remember the high price at which such literature is sold in the market. We strongly hope, however, to reduce this rate next year if a fairly large number of subscribers are available for this organ.

* * *

MUCH is expected of the men of science and especially the medical men. The subject is such as deserves full attention at the hands of this section of the educated public. The researches of the Ās'rama are likely to help them in their work. We, therefore, sincerely solicit their active sympathy and co-operation.

* * *

WE shall spare no pains in making the periodical what it is promised to be. Care will be bestowed on every aspect of the work and no detail will be neglected. It will be our duty to make the Quarterly as interesting and instructive as it is possible for our Ās'rama.*

* * *

* The advertised size of the Yoga-Mīmāṃsā was Domy 8 vo. It is being published in the Royal size.

EDITORIAL NOTES

IN spite of our zeal and attention, some defects may have been left in the execution of the work. We humbly crave the indulgence of our subscribers for the same.

With these few words of introduction, we present the first issue of the Yoga-Mīmāṃsā to our readers, hoping that this and the subsequent numbers will find favour with them.

*N. B. Those of our readers that claim no acquaintance
with anatomy and physiology will do well to read the
Semi-Scientific Section first.*

The Scientific Section

SYSTEM OF TRANSLITERATION

अ	आ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ॡ	ए	ऐ	ओ	औ
A	Ā	i	ī	U	Ū	Ṛi	Ṛī	Ḹi	Ḹī	E	Āi	O	AU

क	ख	ग	घ	ङ	च	छ	ज	झ	ञ
KA	KHA	GA	GHA	ṄA	CHA	CHHA	JA	JHA	ṆA

ट	ठ	ड	ढ	ण	त	थ	द	ध	न
ṬA	ṬHA	ḌA	ḌHA	ṆA	TA	THA	DA	DHA	NA

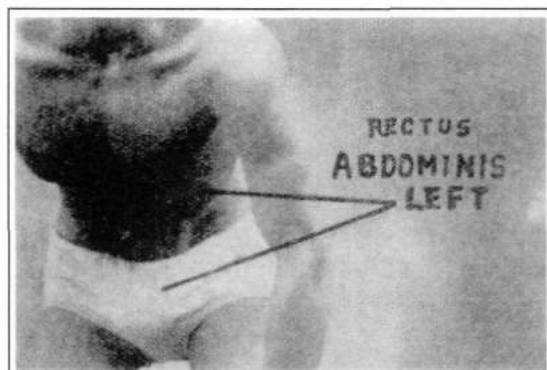
प	फ	ब	भ	म	य	र	ल	व	श
PA	PHA	BA	BHA	MA	YA	RA	LA	VA	ṢA

ष	स	ह	ळ
ṢHA	SA	HA	ḷA

Visarga—H; Nasalized म् as in संयम—m;

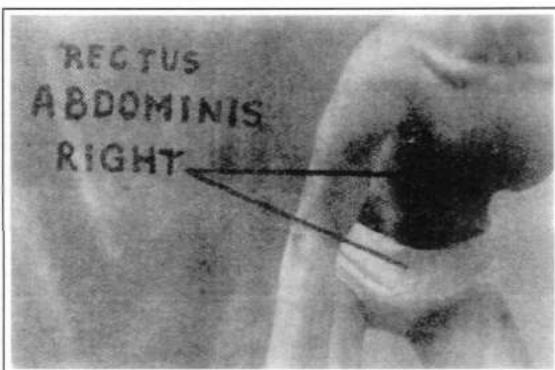
Nasalized न् as in मीमांसा—n.

Fig. I



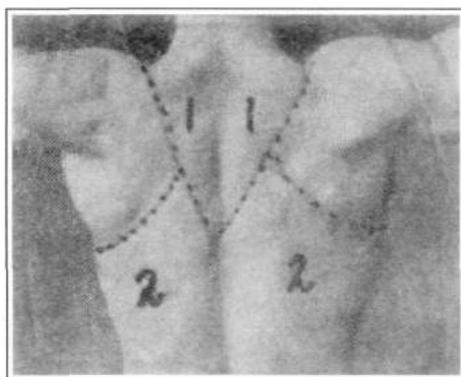
The Rectus Abdominis Left
used in
Uḍḍiyāna and Nauli.

Fig. Ia



The Rectus Abdominis Right
used in
Uḍḍiyāna and Nauli.

Fig. II



The Muscles of the Back
used in
Uḍḍiyāna and Nauli.

WHAT IS UDDIYĀNA ?

UDDIYĀNA is a Yogic exercise for raising the diaphragm. But this definition hardly conveys any idea as to what the exercise really is. Nor does it say anything regarding its physiological effects on the system. All these points are, however, made clear in the different experiments bearing on this practice, that are described in the following pages. For instance the position of the colon during this exercise is given in the X-Ray experiment II. Its physiological effects on the cecum are mentioned in an article on cecal constipation under the Semi-Scientific section. The technique and the superficial aspects of the exercise, however, are as follows.

*The Technique:--*The Uddiyāna is practised in various positions, four of which are represented in the illustrations III to VI. A survey of these figures will at once make it clear that some features are common to all these positions whereas others are peculiar to each one of them. Only the common technique will be indicated here, leaving the special parts of each exercise to be detailed in the information recorded on pages facing its illustration.

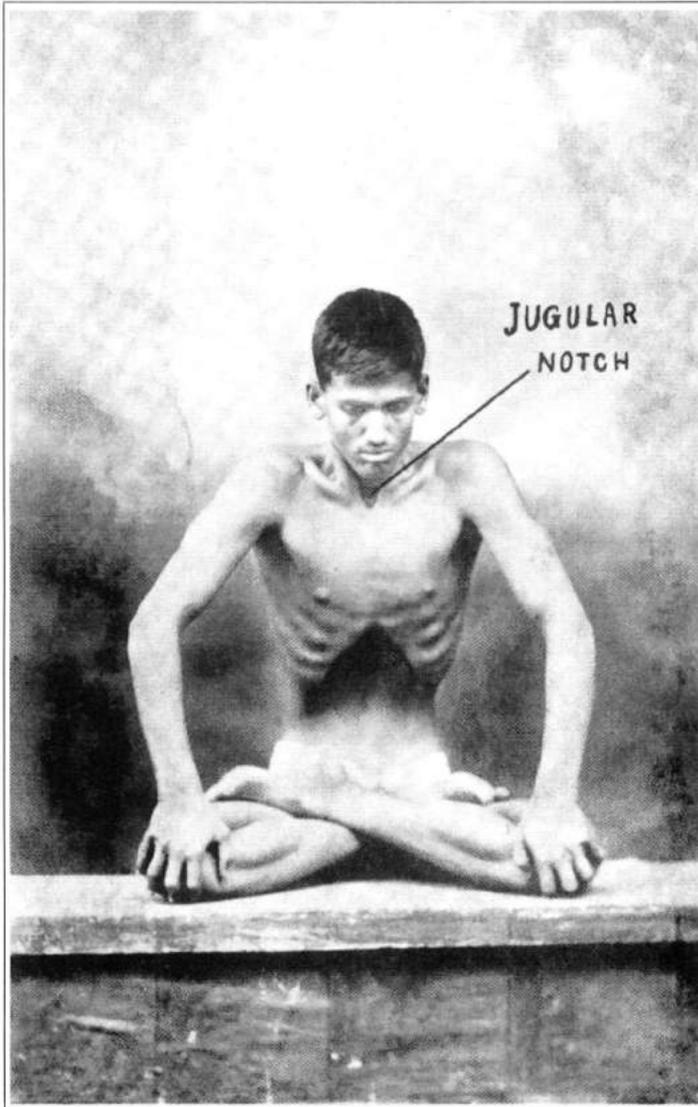
The exercise of Uddiyāna starts with a complete exhalation. The muscles of the abdomen are then fully relaxed and pushed well under the ribs. This is followed by the contraction of the back muscles, especially the latissimus dorsi and the trapezius, (Fig II). These two muscles which control the back-bone and hold it in its place, are then further brought into play and are made to exert an upward pull on the spinal column. This pull on the back side is supplemented on the abdominal side by an upward and inward push of the rectus abdominis, (Figs. I & Ia), producing the concave appearance shown in Figs. III to VI. As soon as the student feels that he can no longer keep the breath out, he relaxes his muscles; and when the abdomen has returned

to its original shape, slowly inhales. Utmost care is necessary in keeping the respiration slow and steady.

This exercise has been studied under the X-Ray. Very interesting and valuable data have been collected. Two X-Ray experiments are published in this issue and an article discussing the therapeutical value of this Yogic practice is included in the Semi-Scientific Section.

Though the figures III to VI represent poses that are superficially different, yet from the point of view of their effect on the colon, the first three may be taken to be similar. The last one deserves a separate treatment and will be taken up in some other issue for a detailed study. The radiograph given in the second X-Ray experiment, however, was taken in a position quite different from the four illustrated here. But it can fairly represent the condition of the colon in the first three poses. The last statement is made on the strength of the screen observations.

Fig. III



Uḍḍiyāna in Sitting.

UDDIYĀNA IN SITTING

THE NAME :—

This practice is called Uddiyāna because the diaphragm is made to fly up from its original position and held very high in the thoracic cavity.

THE TECHNIQUE :—

The common technique has been noted on page 9. The particular points are as follows. First the student folds his legs in a foot-lock as illustrated in Figs. XXIV & XXV.

Then with the help of the rectus abdominis on the front side and the latissimus dorsi and the trapezius on the back side, he produces the concave appearance of the abdomen shown in the opposite figure. To help himself in the muscular efforts, the student stoops a little and presses his knees with his hands and gives an upward push to his whole trunk.

POINTS OF STUDY :—

For points of study see pages 23 & 24.

NOTE —

As this practice puts a high pressure on the heart, people suffering from heart-complaints should not take to it. Even those that are suspected to have a weak heart, will do well to proceed very cautiously into the exercise. For healthy persons too, it is desirable, that the practice should start on a moderate scale. On no account a beginner should make more than three attempts a day. Uddiyāna is always to be practised with an empty stomach. All this applies to the variations of this exercise shown in Figs. IV, V, and VI. This and the subsequent pose are useful for the purposes of physical culture and therapeutics.

UDDIYĀNA IN STANDING

THE NAME :—

For the name see page II.

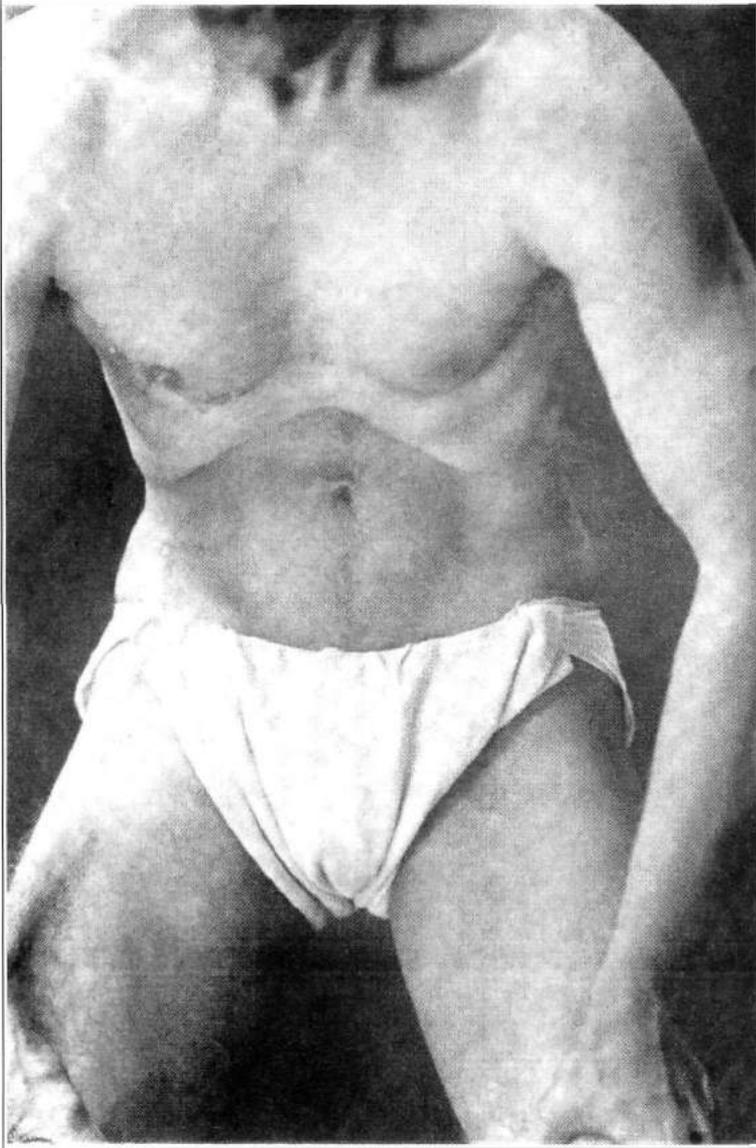
THE TECHNIQUE :—

The student stands with his heels a foot apart from each other. His feet are turned a little outward and his legs are slightly bent in the knee-joint. He rests his hands on the knees and bends forward a good deal. For photographic purposes the student in the opposite picture is shown to hold his head high. But in practice he bends it down, so that the whole spine describes a pronounced curve. He then completely relaxes his muscles and proceeds as directed in the previous practice.

POINTS OF STUDY :—

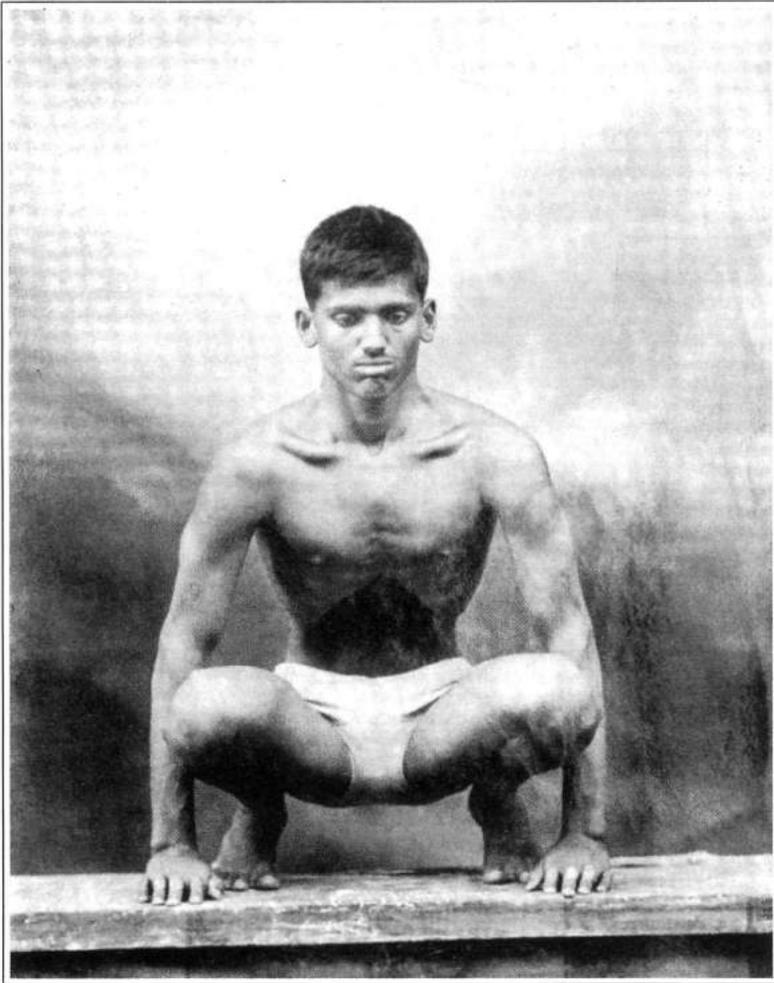
For points of study see pages 23 & 24.

Fig. IV



Uddiyāna in Standing.

Fig. V



Uḍḍiyāna in Squatting.

UDDIYĀNA IN SQUATTING

THE NAME:—

For the name see page 11.

THE TECHNIQUE:—

Here the student first sits down with his knees drawn up and his whole weight resting almost on the toes. His heels are fully raised and support his hams. He places his hands beside his toes, keeping his elbows clear of his knees as shown in the adjoining picture. It is preferable, however, to pass the arms across the knees, for the pressure of the elbows on the knees gives the student a good deal of mechanical advantage in the muscular control necessary for the practice of Uddiyāna. As in the previous illustration, the forward bent of the body has not been as pronounced in the figure as it generally is. That is because of photographic necessity. The student hangs down his head during the practice and gives a good curve to his spine, so that with the usual muscular effort the necessary concave appearance of the abdomen is produced.

POINTS OF STUDY:—

For these see pages 23 & 24.

NOTE—

This practice is useful for Yogic colon-flushing.

UDDIYĀNA IN ŚĪRSHĀSANA

THE NAME :—

For the name see page II.

THE TECHNIQUE :—

First the student has to balance his body on his head as shown in the opposite figure. For this purpose he first squats on his seat and prepares a finger-lock by pushing the fingers of his right hand between those of the left till their roots are well knit together. Then in his front, he makes a convenient angle with his fore-arms, the finger-lock serving as the vertex. Further he places his head at the vertex so that during the balanced pose, the head may be supported from behind by the finger-lock. Now he tries to bear his whole body on the three points, the two elbows and the head. He slowly raises the lower part of his trunk; and drawing up his knees to his chest balances his body on the three points just mentioned. When he finds himself quite steady in this position, he unfolds his legs and thighs and holds them in the air as shown in the adjoining figure. Afterwards with the necessary exhalation and muscular effort he practises Uddiyāna.

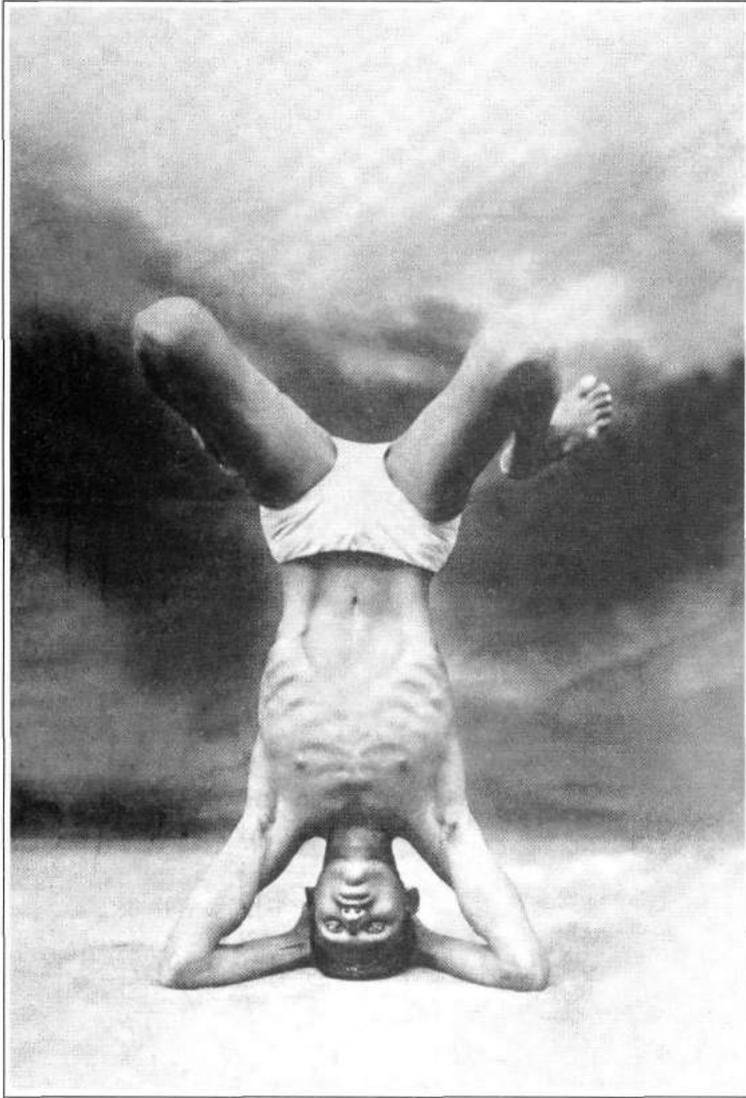
POINTS OF STUDY :—

These will be recorded in some other issue of this Quarterly, along with a detailed study of the pose.

NOTE —

The practice being an important variety of Uddiyāna had to be mentioned along with its other types. It has been subjected to experimentation and the results require a separate article for their treatment. It is sufficient to note here that through this exercise, the student is able to relax the levator ani and the anal sphincters and thus to open his rectum. He can thereby expel foul gases from the lower part of his colon and admit fresh air to it. It has great therapeutical advantages.

Fig. VI



Uḍḍiyāna in Śirshāsana.

X-RAY EXPERIMENTS ON UDDIYĀNA

EXPERIMENT I

THE OBJECT OF THE EXPERIMENT :—

The object of the experiment was to study the normal position of the colon when loaded with a pint of opaque solution, with a view to contrast it with its position during the Yogic exercise called Uddiyāna.

THE PREPARATION OF THE SUBJECT :—

The subject was a young man of average health who had yet to complete his teens. He was practising the two Yogic exercises Nauli and Uddiyāna for the preceding six months. On the day previous to the experiment, he took his usual meal at about 12 A. M. In the evening he was given only a cup of milk. He slept soundly at night and the next morning at about 6 A. M. had a clear bowel movement. The subject was not allowed to take anything till 12 A. M. when the experiment started. These precautions were taken for securing clean intestines. In the fluorescent screen examination conducted just before the experiment, the whole alimentary canal was found free of all opaque contents. In the radiographs I and II, though the colon appears to have cast dark shadows on account of the injected liquid, the small intestine has not done anything of the type.

THE INJECTON :—

In preparing and giving the injection, the method recommended by Haenisch for the investigation of the large intestine was followed. 500 grammes of warm water were thoroughly mixed with 300 grammes of kaolin and 150 grammes of barium sulphate. Then 500 grammes more of warm water and finally 150 grammes of barium were added. A douche can was filled with three pints of the solution thus

prepared and was placed 5 ft. high from the subject. It was fitted with a sufficiently long piece of India rubber tubing having at the end two inches of glass tubing attached to it. This last part was connected with a soft rectal tube by means of rubber tubing again. The short glass tube allowed the flowing injection to be seen.

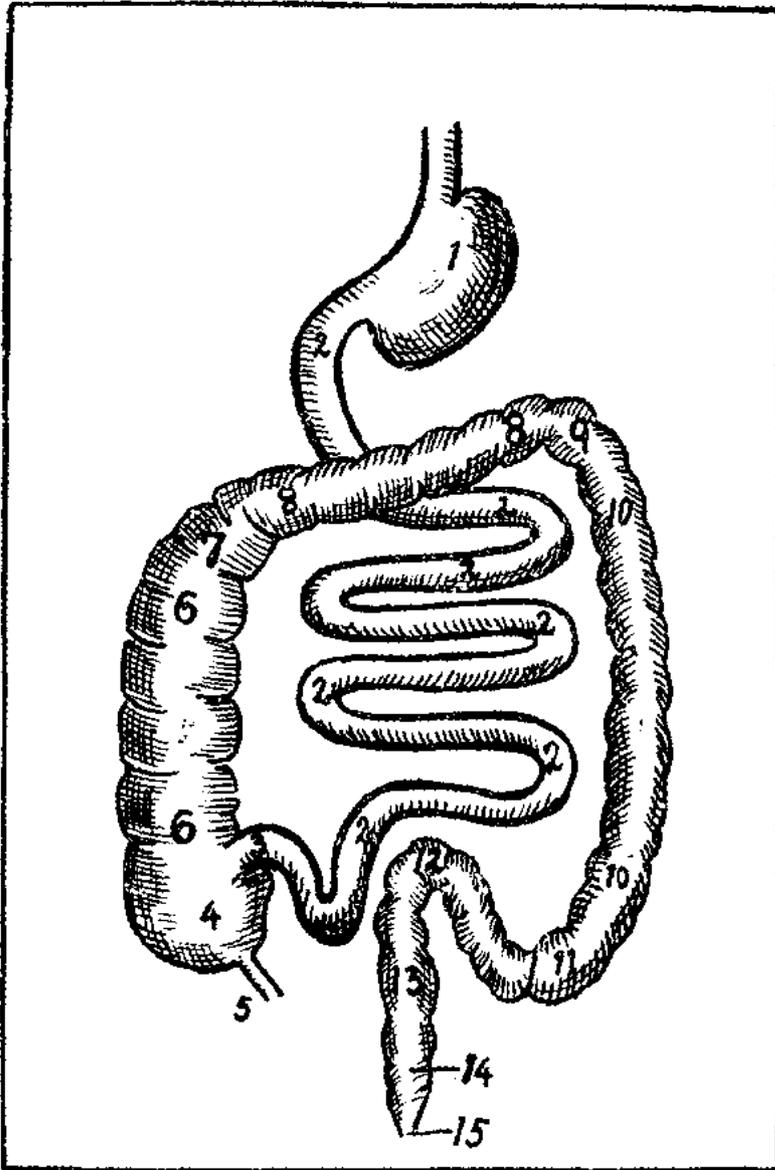
THE EXPERIMENT PROPER :—

Only one pint of this liquid was introduced through the rectum while the subject was lying on his back. He was immediately taken to the X-Ray couch and was made to lie there again on his back, with the X-Ray tube below. The shadows on the fluorescent screen showed that the injection had reached the splenic flexure only, leaving the remaining part of the colon free. The subject was then made to practise Nauli. The effects of this exercise on the bowel contents have been scientifically studied and will be reported in some other issue of this Quarterly. Here it is sufficient to note, that the practice had the desired effect and the injection at once spread upto the cecum. The radiograph I was taken in this condition while the subject was made to lie supine on the couch.

NOTE —

The radiographs printed in this issue were all originally of 12" × 10". They have been subsequently reduced to 6" × 5" size for the convenience of the Quarterly.

Fig. VII



The Stomach & The Intestines.

- | | |
|-------------------------|--------------------------|
| 1 The Stomach. | 9 The Splenic Flexure. |
| 2 The small Intestine. | 10 The Descending Colon. |
| 3 The Ileo-cecal valve. | 11 The Iliac Colon. |
| 4 The Cecum. | 12 The Pelvic Colon. |
| 5 The Appendix. | 13 The Rectum. |
| 6 The Ascending Colon. | 14 The Anal Canal. |
| 7 The Hepatic Flexure. | 15 The Anus. |
| 8 The Transverse Colon. | |
- } The Sigmoid.

REFERENCES TO RADIOGRAPH I

- 1 The Iliac Bones.
- 2 The Sacrum.
- 3 The Twelfth Ribs.
- 4 The Twelfth Dorsal.
- 5₁ The First Lumbar.
- 5₂, 5₃, 5₄, 5₅ The Successive Lumbar Vertebrae upto the fifth.
- 6 The Cecum.
- 7 The Ileo-Cecal Valve.
- 8 The Ascending Colon.
- 9 The Hepatic Flexure.
- 10 The Transverse Colon.
- 11 The Splenic Flexure.
- 12 The Descending Colon.
- 13 The Iliac Colon.
- 14 A Part of the Pelvic Colon.

POINTS OF STUDY :—

- 1 — (a) The cecum is filled with the barium solution.
 (b) Its shadow is darker than the shadow of the right iliac bone and is to be seen clearly against it.
 (c) It is hanging as low as the fifth lumbar.
- 2 — (a) The cecum is divided from the ascending colon by a white patch.
 (b) This represents the ileo-cecal valve which is clear of all contents and therefore casts no shadow.
- 3 — (a) The ascending colon is full of the barium injection.
 (b) Its shadow is slightly narrower than that of the cecum.
 (c) It rises as far as the middle of the first lumbar.
 (d) The upper end represents the hepatic flexure which, therefore, occupies the middle level of the first lumbar.
- 4 — (a) The transverse colon also is filled with the opaque liquid.
 (b) It makes a very sharp angle with the ascending colon and is almost in contact with it.
 (c) It is hanging as low as almost the middle of the fifth lumbar.
 (d) Its curve is extremely pronounced.
 (e) It rises at the other end till it is in level with the lower border of the twelfth dorsal.
 (f) It ends in the splenic flexure which, therefore, is situated an inch above the hepatic.
- 5 — (a) The descending colon also is full of the barium injection, but not to the same extent as the parts noted above.
 (b) It does make an angle with the transverse colon, but it is not so sharp as at the hepatic flexure.
 (c) Throughout its course it hangs perpendicular and is almost parallel to the vertebral column.

X-RAY EXPERIMENTS ON UDDIYĀNA

- 6 — (a) The iliac colon and the first part of the pelvic colon have cast a darker shadow than the descending colon which shows greater concentration of the liquid in this part.
- (b) Both these colons are lying stretched in a straight line, making an obtuse angle with the descending colon.
- (c) They are seen clearly marked against the left iliac bone.
- 7 — According to the original radiograph the transverse colon is hanging as low as 7.25" from the root of the twelfth rib.
- 8 — In the original radiograph the space occupied by the first four lumbar vertebræ measures 5.25".

EXPERIMENT II

THE OBJECT OF THE EXPERIMENT :—

The object of the experiment was to know the position of the colon during Uddiyāna and to note the conduct of its contents during the same practice.

THE PREPARATION OF THE SUBJECT :—

Directly after the first experiment was tried, the subject was taken up for this experiment.

THE EXPERIMENT PROPER :—

The subject was not placed in any of the four poses shown in the illustrations III to VI, though they are the most usual postures for the practice of Uddiyāna. This was because they did not suit the X-Ray arrangements. A pose, therefore, had to be selected that would best serve the radiographic needs and also would accurately represent the position of the colon during the first three poses of Uddiyāna. So he was made to lie supine on the couch with the X-Ray tube moved underneath the lumbar region. He was asked to draw his legs in, bending the knees only so far as would allow a free movement of the abdominal muscles. After doing this the subject practised Uddiyāna according to the usual method. The X-Ray plate was placed on the abdomen and the following radiograph was taken.

NOTE —

While the plate was being exposed the subject relaxed his hold upon the left side of his abdomen. The accompanying radiograph, therefore, represents the position of the colon in this condition and not in a well controlled Uddiyāna.

X-RAY EXPERIMENTS ON UDDIYĀNA

Had this plate not been of a high therapeutical value, it would not have been produced here. The fluorescent screen observations of a perfect Uddiyāna have been recorded in a supplement attached to this experiment. It will be seen that only the points of difference have been noted and that these refer to the colon below the splenic flexure.

REFERENCES TO RADIOGRAPH II

- 1 The left iliac Bone.
- 2 The Twelfth Ribs.
- 3 The Twelfth Dorsal.
- 4₁ The First Lumbar.
- 4₂, 4₃, 4₄, 4₅ The successive Lumbar vertebræ upto the fifth.
- 5 The Upper fourth of the Ascending Colon.
- 6 The Hepatic Flexure.
- 7 The Transverse Colon.
- 8 The Splenic Flexure.
- 9 The Descending Colon.
- 10 The Iliac Colon.
- 11 One Anna piece marking the umbilicus.

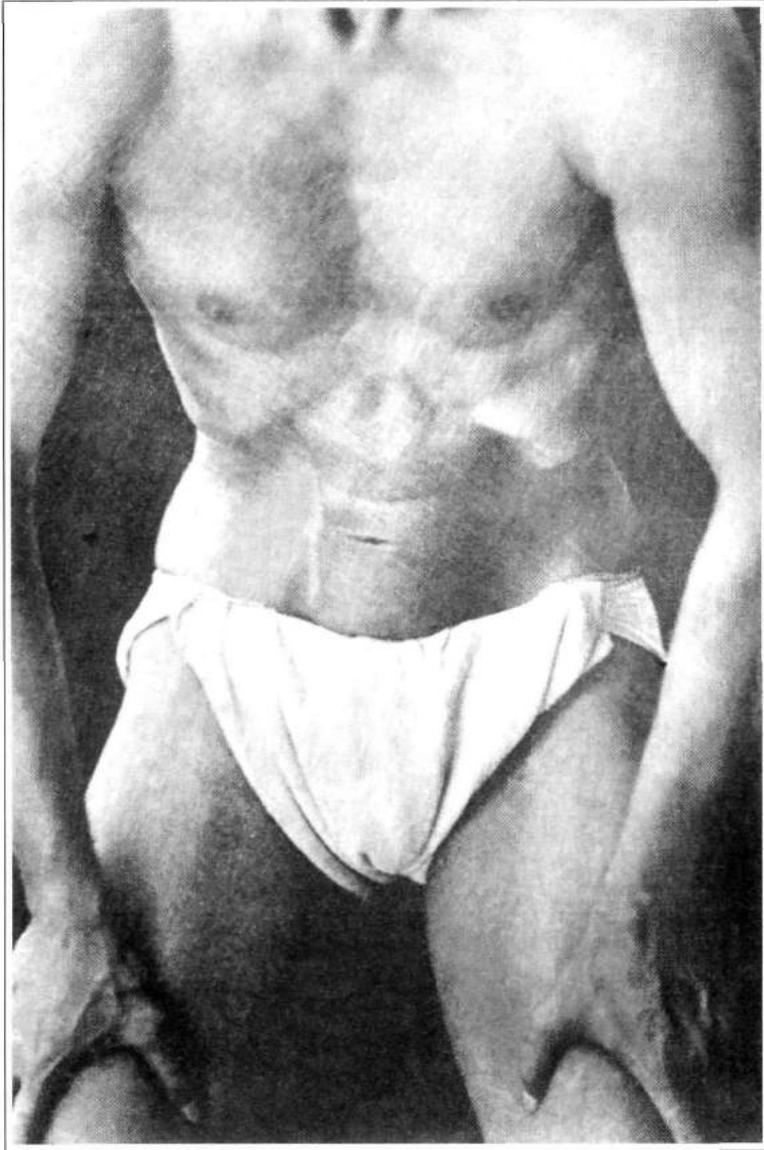
Fig. IX

Radiograph II



Position of the Colon and its Contents
during
Uḍḍiyāna.

Fig. X



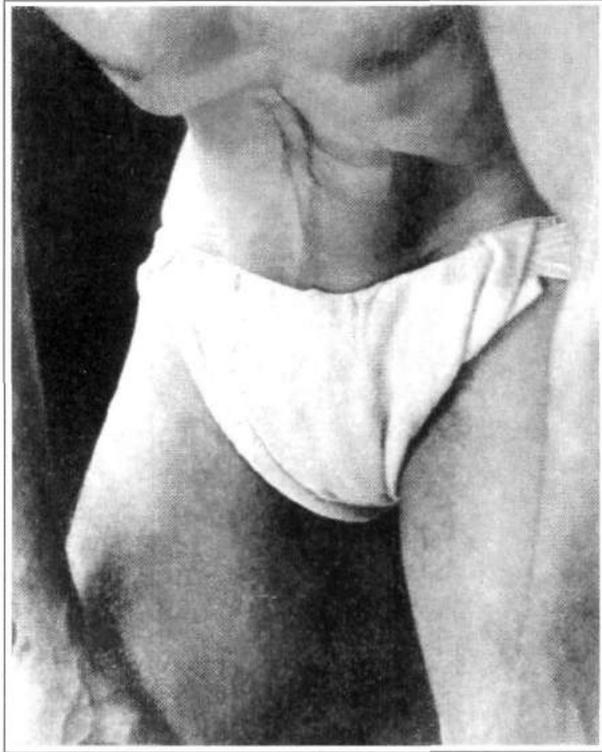
Nauli in Standing.

Fig. XI



Nauli in Squatting.

Fig. XII



The Rectus Abdominis Rolled to the Left.

Fig. XIII



The Rectus Abdominis Rolled to the Right.

POINTS OF STUDY:—

- 1 — (a) The cecum is completely emptied of all its contents.
- (b) Therefore it casts no shadow.
- (c) Though it cannot be seen in the present radiograph, the cecum is observed under the fluorescent screen to be considerably raised and drawn towards the vertebral column during other experiments on Uddiyāna. [See also 3 (d) below].
- 2 — (a) The ileo-cecal valve is not to be seen.
- (b) It did not allow any of the opaque liquid to be drawn back into the small intestine.
- 3 — (a) The lower three-fourths of the ascending colon are empty.
- (b) Therefore they cast no shadow.
- (c) The upper one-fourth is filled with barium.
- (d) Its inclination to the vertebral column shows that the remaining three-fourths as well as the cecum must be deviating to the spine during Uddiyāna.
- (e) The hepatic flexure is full of barium.
- 4 — (a) The transverse colon is not to be seen in its proper place.
- (b) From the middle of the fifth lumbar it is raised above the twelfth dorsal.
- (c) The fluid from the cecum and the lower three-fourths of the ascending colon is drawn up in the transverse colon which on account of its increased contents seems to cast very dark shadows.
- (d) Its angle at the hepatic flexure has altogether disappeared.
- (e) It no longer makes a sharp curve folding its two parts upon one another; but it now rises in almost a circular arch lying between the eleventh and the twelfth ribs.

- (f) The splenic flexure is full of the opaque solution.
- 5 — (a) The descending colon does not make an angle at the splenic flexure.
 (b) It is filled with the injection but not uniformly. The concentration of the liquid increases as the colon descends.
 (c) It does not hang perpendicular but is drawn towards the spinal column.
- 6 — (a) The iliac colon has increased in capacity and appears to have drawn up the liquid, *most probably*, from the lower parts of the colon.
 (b) Nothing can be seen of these lower parts in the present radiograph.
- 7 — According to the measurements of the original radiograph, the transverse colon appears to have risen 8" from the middle of the fifth lumbar to the base of the eleventh dorsal.
- 8 — In the original radiograph the space occupied by the first four lumbar vertebræ is 5.5", showing a clear stretch of nearly 5p c. due to the upward pull of the back muscles.

THE SUPPLEMENT :—

- 1 — The descending colon, the sigmoid and the rectum appeared to be clean. They had no contents.
- 2 — The whole liquid gathered in the transverse colon and the nearest parts of the ascending and descending colons.
- 3 — The middle of the descending colon was drawn to the spinal column to a greater degree than is represented in the radiograph II.

WHAT IS NAULI?

NAULI is the isolation and rolling manipulation of the rectus abdominis. This definition like that of Uddiyāna conveys very little sense to people that know nothing of Yoga. The denotation and connotation of the term, however, are so wide, that the readers must wait and study the various experiments that will be described in the pages of this Quarterly, before they can fully grasp the meaning of this Yogic exercise. For a practical student of this science, however, the following description will be sufficiently useful. It will also enable a theoretical student to follow clearly the scientific discussions bearing on the exercise.

THE TECHNIQUE:—

In its performance the exercise is only a step further than Uddiyāna. As it is practised in a squatting as well as a standing position, two full-page illustrations are given, (Figs. X and XI) It will be evident to the reader that these poses are the same as those shown in Figs. IV and V. Hence no description of these poses will be repeated. Only the after-Uddiyāna development will be noticed.

The practice of Nauli is nearly opposite of Uddiyāna at least in some respects, though the student proceeds to the former through the latter. Here the rectus abdominis is first contracted and then isolated from the abdomen. This isolation is effected by a forward thrust of the intestines backed up by a downward and forward push of the latissimus dorsi and the trapezius. The posterior part of the diaphragm also lowers down. Thus the intestines are pressed forward by the combined action of the three muscles, the diaphragm from above, the latissimus dorsi and the trapezius from behind. They are thus huddled up and stand bulging out under the isolated abdominal muscles. (See Figs. X and XI). In these figures the two

straight muscles of the abdomen stand side by side in the middle; whereas in Fig. XII the rectus abdominis is rolled off to the extreme left and in Fig. XIII to the extreme right. All these rolling manipulations are included in Nauli.

NOTE —

The caution given to persons of weak hearts in the practice of Uddiyāna, applies to them in this practice also, as it puts the same amount of strain upon the viscera. The standing pose is of general utility whereas the squatting pose is used for the Yogic flushing of the colon. A constant practice of this exercise gives full control over the rectal muscles, so that the organ can be forced open and water drawn into the colon through it. This Yogic flushing of the colon is called Basti. It will be dealt with in the next issue of this Quarterly.

POINTS OF STUDY:—

There are a number of points which deserve to be studied in the case of Nauli. Out of these only one has been singled out for this issue. The question of sucking up water through the rectum by Nauli, is to be discussed here.

THE DISCOVERY OF A PARTIAL VACUUM*
IN THE COLON
IN NAULI

EXPERIMENT III

THE ANTI-PERISTALSIS HYPOTHESIS:—

On account of the many prejudices entertained by men of science towards Yogic culture, the exercise of Nauli never engaged their serious attention. That Nauli enabled a student of Yoga to raise water into the colon without any external mechanical help, was known to many; but they had their own way of explaining away the thing. They put forth the anti-peristalsis hypothesis. It was argued that by the practice of Nauli, anti-peristaltic action could be started in the rectum and the anal canal which when in contact with water, sent back a current of it through the colon. No one cared to collect any experimental evidence for this proposition which remained, therefore, merely a matter of speculation. Had a man of science taken up the problem seriously, he would have arrived at the same conclusions as the present writer.

The hypothesis, as it stood, had a highly dangerous import for Yoga. The anti-peristaltic action is unnatural in the rectum. If it develops there, it leads to serious constipation and to the consequent state of auto-intoxication. The practice of Nauli is advised in Yoga as a daily programme. Now according to this hypothesis if a Yogic student took to this daily programme, he would in course of time suffer from the fatal consequences of self-poisoning. Thus the modern view stood in direct opposition to the old view which looked upon Nauli as a curative exercise for constipation and auto-intoxication.

The writer could not take the hypothesis on trust,

* As this section has already become disproportionately lengthy, the full discussion of this point is reserved for the next issue, only a passing reference to it has been made here.

especially because it contradicted the experience of ages. He directly went to the laboratory for a study of the problem and soon found a number of scientific absurdities in the hypothesis. Only one will be stated here.

THE ABSURDITY OF THE HYPOTHESIS :—

A beginner in Nauli is not able to open his rectum through muscular force. So he is advised the use of a rectal tube of 4". It is to be partially introduced into the rectum for the purposes of colon-flushing. With the help of Nauli, water is drawn into the colon through this rectal tube.

Now, if anti-peristalsis were responsible for the rise of water, no current could flow through the rectal tube wherefrom the action is totally absent. But the fact that it does flow proves that the hypothesis is absurd.

THE DISCOVERY OF A PARTIAL VACUUM :—

The phenomenon of the rise of water had to be explained. One day it suggested itself to the writer that the rise of water into the colon must be due to the same reason as the rise of water into a water-pump, both being caused by a partial vacuum created inside the tube. On trying the following experiment with the barometer, the writer discovered this vacuum which out of his deep reverence to his Master, he has named after him as 'Mādhavadāsa Vacuum.'

THE EXPERIMENT PROPER :—

A syphon barometer was selected for this purpose. The free end of this was connected with the colon by means of a rubber tube passed through the rectum. As soon as the muscles were moved for Nauli, the mercury fell through 40 mm. indicating a clear partial vacuum. The experiment was often repeated on other occasions, and every time a partial vacuum of 30 to 47 mm. was indicated according to the cleanness of the colon.

THE OPPOSITE RADIOGRAPH :—

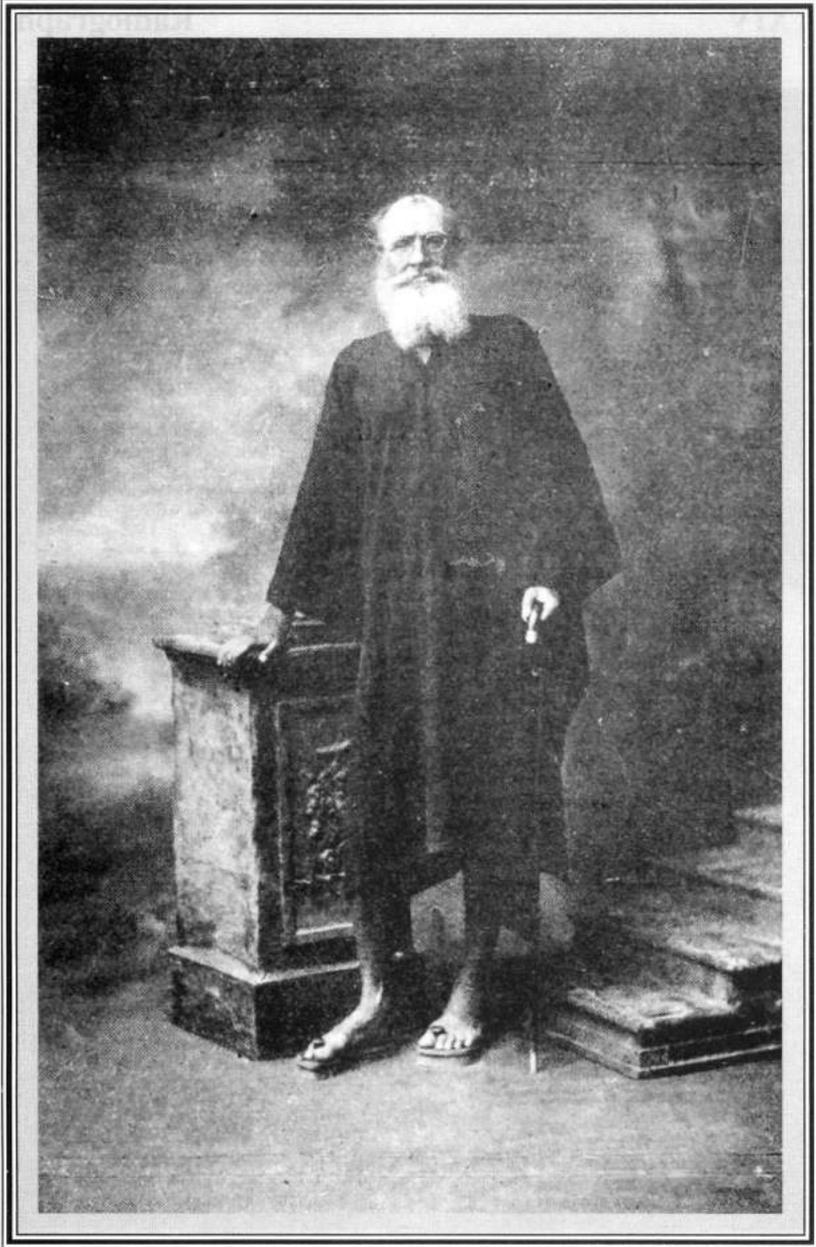
This was taken with an opaque meal when it had reached the rectum. It represents the intestines and their contents during Uddiyāna. A detailed study of this plate will be made in the next number. It is published here only for men of science who can get evidence from this plate in support of some of the points discussed in the foregoing pages.

Fig. XIV

Radiograph III



Intestines with an Opaque meal
in
Uḍḍiyāna.



His Holiness Paramahaṅsa
Śrīman Mādhavadāsa Mahārāja
of
Mālasara.

THE PARTIAL VACUUM

in the colon during Nauli is named

MĀDHAVADĀSA VACUUM

after his

MASTER

**This Holiness Paramahansa
S'rīman Mādhavadāsa Mahārāja**

OF

MĀLASARA

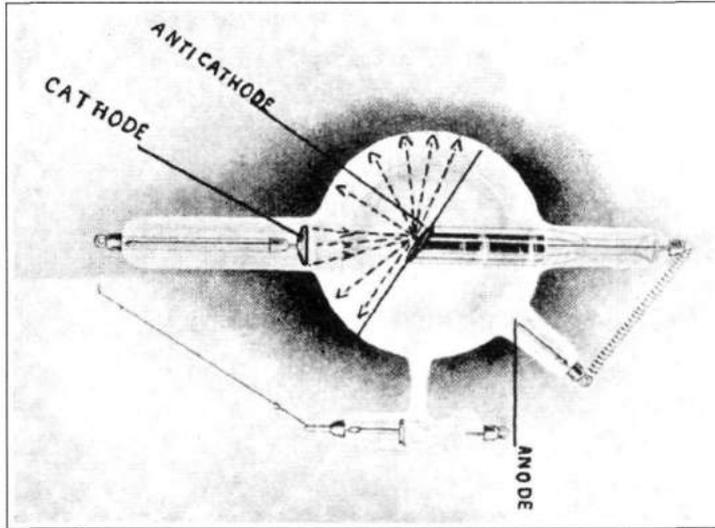
BY

the humblest of his disciples

Kuvalayānanda, the Discoverer.

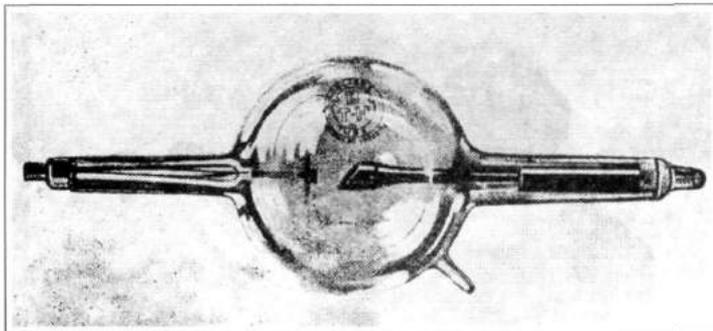
The Semi-Scientific Section

Fig. XIVa



Muller Special Heavy Anode Tube.

Fig. XIVb



The Coolidge X-Ray Tube.

A NOTE ON THE X-RAYS

SETTING aside all scientific details and technicalities, it may be at once stated that the X-Rays are produced by means of an electric current passed through a vacuum-tube. This tube is made of glass with arrangements to pass an electric current through it and is very highly exhausted of air. Two typical tubes have been shown in Figs. XIVa and XIVb.

The wire through which the current enters the tube is called the anode, and that by which it leaves the tube is called the cathode. The electric current while leaving the tube makes the cathode emit rays shooting in straight lines. These are called the cathode-rays. A stream of these has been shown by dotted lines in Fig. XIVa as flowing from the cathode. Here the cathode is made in the form of a concave mirror and hence the rays do not run parallel but converge at a point in the middle of the tube. Just at the point where they all meet, they are made to strike a plate of some hard metal such as platinum, tungsten, etc. This plate is called the anti-cathode. Now whenever the cathode-rays in a very highly exhausted tube strike on any surface, it is their property to give rise to a new type of rays that are more penetrating than themselves. These are the famous X-Rays, also known as Röntgen Rays from their discoverer. In Fig XIVa, they have been shown by dotted lines diverging from the anti-cathode. X-Rays are not, however, visible by themselves.

But if these invisible rays strike particular substances, the latter become illuminated with a fluorescent glow. One of these substances is platino-cyanide of barium. A piece of cardboard is evenly covered with a paste of this and is fixed on a wooden frame. If this be held up in front of the X-Ray tube, it glows with a peculiar yellow-green illumination, especially in the dark. Such a cardboard is called the fluorescent screen.

The penetrating power of the X-Rays differs very widely from that of the sunlight. Many substances that are opaque to sunlight are transparent to Röntgen Rays. Thus the Röntgen Rays will pass through a piece of wood and even a brick, though the sunlight cannot. They are, however, held back by most metals. A piece of nickel coin will not allow the rays to pass through it. Now whenever rays are obstructed by an article, the article casts a shadow showing itself up on the lighted surface opposite to it. Thus if a book is held in the sunlight, it will cast its shadow on the ground below. The sun-rays cannot pass through it. But if the same book is held between the X-Ray tube and the fluorescent screen, the screen will glow as if nothing was held between it and the tube, because the X-Rays can pass through the book without any obstruction. A metallic rod, however, will at once show itself up on the fluorescent screen.

Now it is found that the various parts of the body behave differently to the Röntgen Rays. The softer parts are transparent whereas the harder ones are opaque. The bones are more or less opaque while flesh and fat are transparent. If then, the hand is held up between the tube and the screen, the bones will cast a shadow; but the remaining parts will allow the rays to pass which will go straight to the screen and set it glowing. In this way all the bones of the hand will be figured clearly on the screen. The heart is a muscle. But it is so strong that it holds back the X-Rays to a considerable extent. Hence it is possible to watch its work on the screen. The intestines are transparent to the X-Rays. It is, therefore, necessary to administer an opaque meal or enema, if their movements are to be watched on the screen. The fluorescent screen, however, affords no opportunity of preserving its shadowy record. For this purpose photographic plates are required to be substituted. X-Rays affect these plates just as the sunlight does. Hence the shadows become fixed on the plates which can be

afterwards developed in the ordinary way. Röntgen Rays photographs are called radiographs.

For the purposes of radiography or screen-examination, a wooden couch is used. The working tube is placed underneath this couch. Wood is transparent to the X-Rays and the couch is no obstruction to their work. The person to be examined lies on the couch with his clothes on, for the clothes too do not keep the rays back. Then the fluorescent screen or the photographic plate is placed on that part of his body which is to be examined. In this position the shadows can be most conveniently watched on the screen or fixed on the plate. In the present issue Figs. VIII, IX and XIV represent three different radiographs.

THE ANATOMY OF THE COLON

WE introduce food into our body every day. The system takes up those portions of it that are useful to it for its work and excretes the remaining. While in the body, food has to pass along a particular path called the 'digestive tube' (alimentary canal). It is about 30 feet in length extending from the mouth to the anus. Roughly speaking the tube is divided into seven parts. The mouth, œsophagus, stomach, small intestine, colon, rectum, and anal canal. The small intestine and also the large which consists of the last three parts of the digestive tube, are situated in the abdominal cavity. In this note along with the anatomy of the colon, a few words will be said about the rectum and the anal canal. [See Fig. VII].

The colon consists of the cecum, the ascending colon, the transverse colon, descending colon and the sigmoid. This last joins the rectum which extends into the anal canal. The calibre of the colon is largest at its commencement at the cecum and gradually diminishes as far as the rectum. The colon is about 5 ft. in length, and 1.5 to 3 inches in diameter. In its course the colon describes an arch which surrounds the folds of the small intestine. This small intestine joins the colon by means of the ileo-cecal valve, an inch and a half above its commencement.

The cecum is the beginning of the colon. It consists of a pouch much broader than the rest of the colon, and is lodged in the hollow of the right iliac bone, (Fig. VIII). It is situated below the level of the ileo-cecal valve and to it the important little organ, the appendix, is attached. The cecum enjoys a considerable amount of movement. The appendix is a long, narrow, worm-shaped tube which starts from the lower end of the cecum. It varies from 1 to 7.5 inches in length. A small canal runs through this tail of the cecum and communicates with the main body through an orifice.

The ascending colon begins at the cecum and rises along

the right abdominal cavity to the under surface of the liver. Here it takes an abrupt turn to the left and forms what is called the *hepatic flexure*. At this point the capacity of the colon is very much reduced.

But the calibre of the colon improves as it proceeds onwards and reaches the lower end of the spleen. Here it curves sharply on itself and forms what is named *the splenic flexure*. From the hepatic to this flexure the colon is called the *transverse* colon and lies in an arch reaching the umbilical region of the abdomen. The splenic flexure is situated at a higher level than the hepatic. Its angle is so acute that the end of the transverse colon usually lies in contact with the front of the descending colon. Here also the tube is very narrow.

The descending colon begins at the splenic flexure and sinks as low as the hip-bone. It crosses the left border of the abdominal cavity and ends in the sigmoid

The sigmoid colon consists of two parts *the iliac* colon and *the pelvic loop*. The iliac colon is lodged in the hollow of the left iliac bone and the pelvic loop lies in the pelvic cavity. The sigmoid colon ends in the rectum. Though fixed at the two ends with the descending colon and the rectum, the loop enjoys a considerable range of movement in its central portion. When it is full it rises out of the pelvis into the abdominal cavity and forms a curve; but when it is empty it sinks into folds lying flat upon the rectum.

The rectum lies between the ends of the sigmoid colon and the anal canal. It is generally five to six inches in length. At the commencement, it is as narrow as the sigmoid; but near its termination it is dilated. There are certain transverse folds in the rectum, which are known as Houston's valves.

The anal canal is the last part of the colon. It lies between two circular muscles called the internal anal sphincter and the external anal sphincter. The latter forms the anus. The anal canal is something like an inch in length.

These sphincters are generally closed, but they open at the time of defecation.

The colon is a muscular tube and throughout its course is covered with two layers of muscles. The internal layer consists of circular muscle fibres whereas the external one is composed of fibres running lengthwise.

The nerves are derived from the second, third and fourth sacral nerves; and from the sympathetic through the pelvic plexuses, (Fig. XVII). They act not only through the central nervous system but also independently of it. Some of these nerve fibres terminate in the colon just above the internal anal sphincter and form what are called papillæ. These centres have a great physiological value.

A biological survey of the colon has proved that the carnivorous animals have a long colon, whereas the colon of the herbivorous animals is short. There are physiological advantages in this arrangement of Nature. If the useless residues of a flesh diet are not speedily discharged from the body, they would putrify and develop dangerously active poisons. For this reason the colon of the flesh-eating animals has been made short. But the residue of a vegetable diet ferments and produces acids which help the bowels in their movement. So it is desirable that the residue should be delayed in the colon for a time. To secure this delay the colon of the herbivorous animals has been made long. Looking to the length of the colon, one is convinced that the only diet natural for man is the vegetarian,

THE PHYSIOLOGY OF THE COLON

THE principal function of the colon is to receive unusable and waste matters from the small intestine and to discharge them. The ileo-cecal valve is the gate through which the contents of the small intestine are pushed into the cecum. Thence they are conducted to the end of the anal canal finally to be excreted from the body.

The ileo-cecal valve is composed of a circular muscle with lips projecting into the cecum. When the contents of the small bowel are presented to this valve for being thrown into the large intestine, it opens only if the food-stuff is fully digested and the absorption of the digested material is nearly complete. If these processes are yet to go on, the sphincter remains closed till they are nearly finished. Thus when the contents are thrown into the cecum, they are almost devoid of any material that can be useful to the system.

The matter discharged by the ileo-cecal valve is nearly in a fluid condition, being ninety per cent. liquid and only ten per cent. solid. The solid part mainly consists of indigestible food-residues, waste products of the liver and the mucous membrane; and the bacilli produced in the last part of the small intestine. The liquid portions are to be absorbed and the solid contents are to be pushed forth. For these purposes, the colon undergoes various movements which are briefly noticed below.

One of these movements is the *peristalsis*. This consists of a wave of contraction preceded by a wave of relaxation travelling down the colon. The contraction squeezes the contents of the tube before it and thus pushes them forward through the relaxed parts. The relaxed parts, in their turn, contract afterwards, and give a further push to their contents. Thus the whole stuff is carried, bit by bit, from one end of the colon to the other.

The process of absorption, though it is nearly completed

in the small intestine, has one-sixth of its part to be finished in the cecum and the ascending colon. These organs are abundantly provided with the absorbent vessels. But to facilitate the work of absorption, it is necessary that every portion of the bowel contents is presented to their walls. Now if the peristalsis were to be the sole movement, a column of the contents would be pushed down the cecum and the ascending colon once for all. In that case only the external portions of the column would be presented to the intestinal walls and absorbed; but the internal portions would get no such opportunity. Hence this portion of the colon is provided with another movement called the *antiperistalsis*. This is the reverse of the peristalsis and pushes back the fecal matter.

Thus the two opposite movements constantly going on, push the bowel-contents backward and forward till the necessary absorption is completed.

But there is a third movement which is perhaps the most useful for mixing up the different portions of the food-stuff, so that every part of it may be presented to the intestinal walls for absorption. This is the *pendulum movement*. Under the action of this movement the bowel-contents are divided into small segments, which then join together to form longer masses, these being in turn again divided. Thus every time new portions are presented to the absorbent vessels for their work.

Under normal conditions all the three movements cooperate and enable the cecum and the ascending colon to functionate properly. But in unhealthy states they fail, allowing the contents to accumulate and putrify. Then highly dangerous poisons are produced from the putrifying matter and are slowly absorbed into the system causing various diseases.

By the time the bowel-contents reach the transverse colon, their consistency is greatly increased. Henceforth the peristalsis is mainly responsible for their conduct. It

slowly takes them through the splenic flexure, the descending and iliac colons; and deposits them in the pelvic loop. Fecal matter takes nearly six hours to reach the pelvic loop from the ileo-cecal valve. But here it has to stay for about six to eight hours.

When empty the pelvic colon is lying folded on the upper end of the rectum. As portions of matter pass the iliac colon, they slowly fill these idle folds of the last part of the colon. As it fills, the pelvic loop rises, by degrees, in a curve till it stands on the pelvic ground like an arch projecting into the abdominal cavity. When the accumulation is sufficiently large to be discharged, a very strong peristaltic wave starts in the descending colon forcing its contents downwards. The pelvic loop also contracts and squeezes some of its matter into the rectum. These portions of the fæces stimulate the defecating centre, the anal sphincters are relaxed and opened, and the left half of the colon is emptied of all its contents.

These actions of the bowels are helped by the adjacent muscles. The diaphragm lowers down upon the intestines with a great force and the abdominal muscles press upon them tightly. This external pressure adds to the stimulation of the intestines and is necessary for their satisfactory work.

The practice of resisting the call of nature for evacuation is fraught with dangerous consequences. The nerves responsible for defecation are repeatedly stimulated into action and are soon exhausted. After a time, they refuse to act. When this practice becomes a habit, it leads to constipation.

CECAL CONSTIPATION

PART I

ONE of the functions of the intestines is to conduct the unusable food residues to the other end of the alimentary canal and to discharge them from the body. For various reasons which will be noticed on some other occasion, the bowels are not able to perform this function satisfactorily, with the result that the fecal matter accumulates at different centres. This condition is called constipation. In the popular mind there is, at times, a confusion between this condition and the condition known as indigestion. But the two are quite distinct from each other in their nature. The digestive tube secretes different juices as the food passes along it. These juices act upon the food and render it capable of being absorbed into the system for its maintenance and growth. This process is called digestion. As this process of digestion and absorption chiefly goes on in the small intestine, indigestion is a disease of this part of the food-tube; but constipation is a disease mainly of the colon. Very often the two conditions of constipation and indigestion go together. But constipation may exist even without indigestion. This happens when a healthy man takes to an exclusively milk diet. In this case the fecal matter is very small in quantity while the bowels require a larger quantity for their movement. Hence the fæces are not discharged and constipation follows as a consequence.

The aim of this article is to study the effects of the fecal matter delaying in the cecum, that is to say, of cecal constipation; and to see how Yoga proposes to cure it. The modern world has devised various remedies against this disease. A reference to these will first be made with a view to see how the Yogic methods compare with the modern ones.

When food-stuffs linger in the different parts of the bowels, they begin to undergo a destructive change as a

result of the action of germs upon them. Starches and sugars ferment while proteins putrefy. The products of fermentation are acids which are harmless; but the products of putrefaction are poisons some of which are extremely dangerous.

Now of all the intestinal parts, the cecum affords the most favourable conditions for putrefaction. The putrefactive bacteria thrive best in liquid food-stuffs. The food residues as they are discharged into the cecum, are ninety per cent. liquid. Again these bacteria are helped in their growth by poisons that are originally present in the matter thrown out by the ileo-cecal valve. The liver discharges into the intestines a very large quantity of bile which is a highly poisonous substance. A part of it is used in digestion; but the remaining is to be thrown out of the body. During cecal constipation, large quantities of bile accumulate in the cecum. Just as the liver secretes bile, the mucous membrane of the intestinal walls secretes highly active poisons and throws them into the food canal to be ultimately expelled from the body. But the cecum being constipated does not allow these poisons to pass on. To this accumulation are added the secretions of the neighbouring glands. Thus the great liquidity of the cecal contents and the presence of the poisons eliminated by different organs, lead to rapid putrefaction. This condition is made worse if portions of unabsorbed proteins are present in the cecum.

As a result of this increased putrefactive activity, deadly toxins are developed in the cecum. Now this part of the colon is provided with numerous absorbents. Through these the new toxic products are absorbed into the system; and poison the different organs rendering them incapable of performing their own functions. Thus the liver and the kidneys are broken down and allow the toxic products to accumulate in the body. Slowly the whole system is poisoned and chronic diseases establish themselves permanently in the body. These poisons are not absorbed

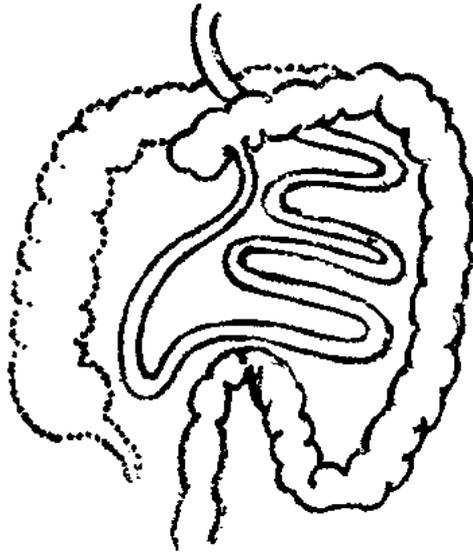
only from the cecum, however. The lower end of the small intestine is not cut off by any bacteria-proof barrier from the cecum in which putrefaction is constantly going on. It has been experimentally shown that small particles suspended in water, soon reach the stomach when injected into the rectum. So the micro-organisms from the cecum are able to work up their way above the ileo-cecal valve, even against the downward peristaltic movement of the small intestine. Thus the cecal poisons spread all over the alimentary canal and are absorbed through all its parts.

In this way the whole system is poisoned with its own toxins. This state is called auto-intoxication. Dr. Kellogg gives a very long list of diseases resulting from constipation. According to him, headache, loss of appetite, coated tongue, appendicitis, malaria, insomnia, nervous exhaustion, dropsy, chronic rheumatism, tuberculosis, etc. are all due to constipation. Many women supposed to be suffering from disorders peculiar to their sex, are really suffering from the effects of toxins habitually absorbed from the colon in general and the cecum in particular.

This will show how dangerous an organ the cecum is. The remaining parts of the colon are also dangerous, though not to the extent of the cecum, because they are also liable to constipation.

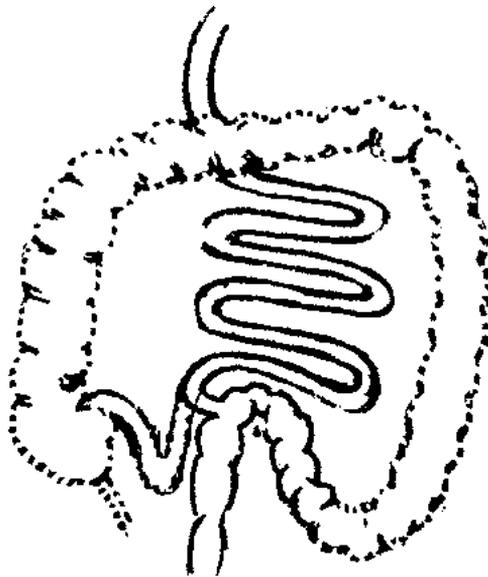
Is there no way to get rid of the tyranny of this dangerous structure? Modern surgery, that wonderful achievement of the western medical science, would return an emphatic 'yes.' Dr. Arbuthnot Lane, head surgeon of Guy's Hospital, London, has actually devised and put into practice the operation of short-circuiting, (Fig. XV); and the still more radical operation of excision of the colon, (Fig. XVI). But here the question arises, whether the organ is *really superfluous* so that it can safely be dispensed with and the organism made the better for the loss? Expert opinion is distinctly divided on the point. The following

Fig. XV



Half The Colon cut off.

Fig. XVI



The whole Colon cut off.

observations of Dr. Keith, Royal College of Surgeons, England, deserve attention.

'To anatomists who knew that the great intestine was an intrinsic part of every air-breathing vertebrate, that it reached a high degree of development and specialisation in every animal that included a vegetable element in its diet, that in all the animals immediately allied to man his contemporaries and his very ancient predecessors the great intestine was shaped, arranged and developed as in him, *the conclusion that the human great bowel was a useless structure seemed a flat contradiction of every law applicable to the human body.* It is hard to believe that a great structure that has served that long chain of ancestors carrying man's lineage through the secondary and tertiary periods of the earth's formation and assisted man to become the dominant, and universal species of the world, should suddenly fail him.'

When doctors differ, it is always desirable for a layman to err on the safe side. It is better for the man to be with the colon than to be without it. Then must he die for this dangerously noble prehistoric heritage of his? No man need die for the possession of his colon, if he only knew how to make use of it. Physicians who have made a lifelong study of the colon in its pathological conditions, have come to the conclusion that a surgical operation is very rarely indicated, as in almost all the cases auto-intoxication can be successfully tackled by mild methods. Dr. Lane himself, in his most recent recommendations would advise internal medical treatment before surgery was thought of. The practical utility of these operations is almost completely discounted when the universal spread of constipation and self-poisoning in the civilised countries is taken into consideration.

Next to surgery comes the claim of purgatives and laxatives in the treatment of the disordered colon. But as the sober medical opinion is ranging itself against them, a

passing reference to their evil effects is sufficient for the purpose of this artical.

All purgatives and laxatives are irritating. They are administered through the mouth ; and before they reach the cecum, they have to pass through the stomach and the whole length of the small intestine. Now these parts are irritated for nothing, because the disease lies at the other end of the digestive tube. Again these drugs though they may give a temporary relief, render the whole alimentary canal weaker every time they are taken by the patient. The Yogic tradition never looked upon these with favour and it is a lucky circumstance that the modern medical world has begun to set them aside.

To-day the medical man is inclined to think that the best method of treating the ill functioning cecum and consequent diseases, is the use of the enema. He would also recommend some muscular exercises aided by mechanical helps. In addition to these he might prescribe regulation of diet to aid the bowel movement.

In acute conditions of diseases, the modern enema is a wonderful help and may be said to be almost indispensable. But as a preventive measure and as a remedy against chronic disorders, it has serious disadvantages. In order to cure chronic states of auto-intoxication as well as other chronic diseases, a constant use of this appliance is needed. In a short time bowels get into the habit of yielding only under a particular pressure and then for creating that pressure the enema becomes a life-long companion. But the trouble does not end there. Large quantities of water continue to distend the intestine and weaken its strength. Its elasticity and natural functioning power is on the wane. As pointed above, the cecal constipation is the most dangerous. But water introduced by the enema very often fails to reach this pouch; and even when it is made to reach there, by a large influx of the liquid, it remains in the cecum to be absorbed by its walls, as the sluggish bowels evacuate only a part of the injected water.

CECAL CONSTIPATION

The J. B. L. cascade of Dr. Tyrrell that has been so widely advertised in American magazines and so enthusiastically recommended by the physical culturists of that country *may be more comfortable* than the ordinary enema; but it can hardly be said to have any therapeutical advantage over the latter as the physiological actions in both the cases are the same.

The muscular exercises prescribed by modern scientists are superficial and can only help patients in the early stage of their disease. Some of the mechanical treatments are much better; but they have the disadvantage of not being within the reach of every body, as they are very costly.

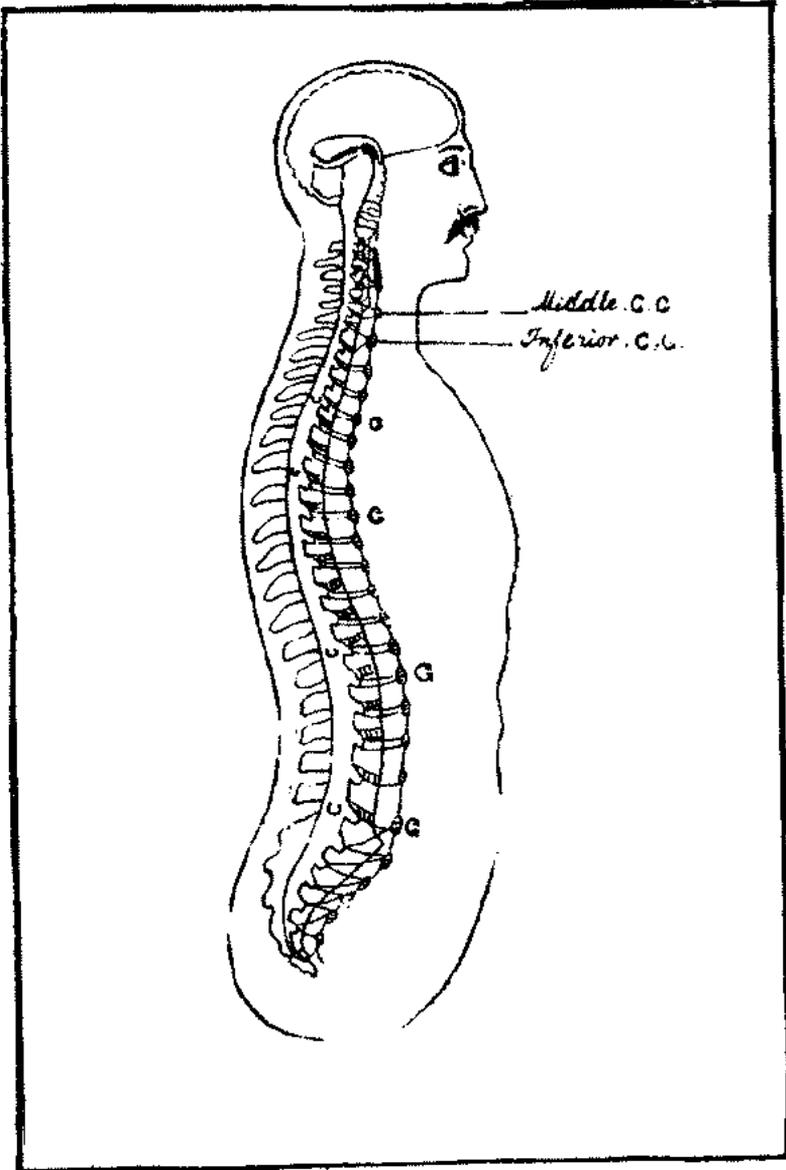
Thus it will appear that the remedies suggested in modern times against the cecal constipation, suffer from various disadvantages. The cures should be such as would enable the constipated patient to empty his cecum completely and to throw the foul putrefying matter out of his body. The use of the cures should strengthen the cecum and not weaken it. They should be within the reach of every-body whether rich or poor. All these advantages are combined in the Yogic cures, Uddiyāna and Nauli, as will be clear from the X-Ray experiments given in the Scientific Section. For the purposes of this section, however, the therapeutical application of these exercises to constipation requires to be explained. This will be done in the second part of this article which will appear in the next issue. The use of the milk regimen as a remedy against constipation, will also be discussed there.

N. B. Instruction in Yogic culture higher as well as lower will be given gratis at the Ās'rama to every one that earnestly seeks it.

The Popular Section

N. B. The Director of the Kaivalyadhāma entreats every man of means to show his active sympathy for the Ās'rama.

Fig. XVII



**The Vertebral Column
with
The Sympathetic Nervous System.**

THE VERTEBRAL COLUMN WITH THE SYMPATHETIC NERVOUS SYSTEM

THE VERTEBRAL COLUMN

THE vertebral column originally consists of 32 separate pieces of bones, each piece being called a vertebra. In the adjoining illustration they are marked with Roman figures. The reader will discover that they are only 26 because several of them have become fused together as they do in the case of an adult. The first seven vertebræ are situated in the neck and hence are called 'cervical,' from cervix: the neck. The twelve that follow are located in the region of the back and are, therefore, named 'dorsal.' The next five are called 'lumbar' because they support the loins. Below these is the sacrum, originally consisting of five bones but afterwards of one continuous piece, the separate parts being united. The last piece is the coccyx.

These vertebræ are arranged one on the top of the other, so that every one of them fits in with the one immediately above it and also with the one immediately below it, through partially movable joints. Between these vertebræ soft bony substances are placed to serve as cushions. They are called cartilages and allow free movements to the vertebræ. Strong fibrous bands called ligaments bind together these 26 separate pieces of the vertebral column. Each vertebra has a hollow ring inside it. The column is so arranged as to keep these rings one above the other, forming a canal for the spinal cord to lie in. It is, therefore, called the spinal canal. In the accompanying illustration this canal is indicated by C.

THE SYMPATHETIC NERVOUS SYSTEM

The nervous system consists of two divisions, the central or cerebro-spinal system and the autonomic system. The latter is subdivided into two parts, the para-sympathetic and

the sympathetic. The para-sympathetic will not be referred to here. A short and rough description of the sympathetic and the central nervous system will be attempted.

The Central Nervous System :—

The central nervous system mainly consists of the brain, 12 pairs of brain nerves called cranial nerves (Kranion-skull), the spinal cord, and 31 pairs of spinal nerves. The 12 pairs of cranial nerves start from the brain, come out through the base of the skull, and are distributed to the different parts of the body. The spinal cord is the tail of the brain. It is in continuation with it and is lodged in the spinal canal. It extends as low as the first lumbar, though the nerves issuing from it hang far below its termination. The 31 pairs of spinal nerves exit through the spaces left between every two adjoining vertebræ. Thence they reach the different organs of the body. The cerebro-spinal nerves unite the brain and the spinal cord with the various physical parts. They are associated with the functions of the special and general senses, and with the voluntary movements of the body.

The Sympathetic Nervous System :—

This is represented by two chains of central ganglia placed one on either side of the middle line of the vertebral column. In the illustration they are indicated by g. A ganglion (plu. ganglia) is a mass of nervous substance which serves as a centre of nervous influence. From these ganglia start fibres and are distributed over the whole system. The chief involuntary structures, e. g. the heart, the liver, the glands, etc. are under the influence of the sympathetic. This system is connected with the central one by means of the branches of communication which every ganglion sends to the adjacent spinal nerves. Some of these nerves return these branches to the adjacent ganglia. Thus a constant exchange of influences is maintained. The branches are shown in

THE VERTEBRAL COLUMN

Fig. XVII by lines passing between the ganglia and the vertebræ. They are called rami communicantes and a single one is called a ramus communicans.

PLEXUSES

A plexus is a tangle of nerves and blood-vessels. Plexuses are formed in both the central and sympathetic nervous systems and are great centres of nervous influence.

SARVĀṄĀSANA
or
THE PAN-PHYSICAL POSE

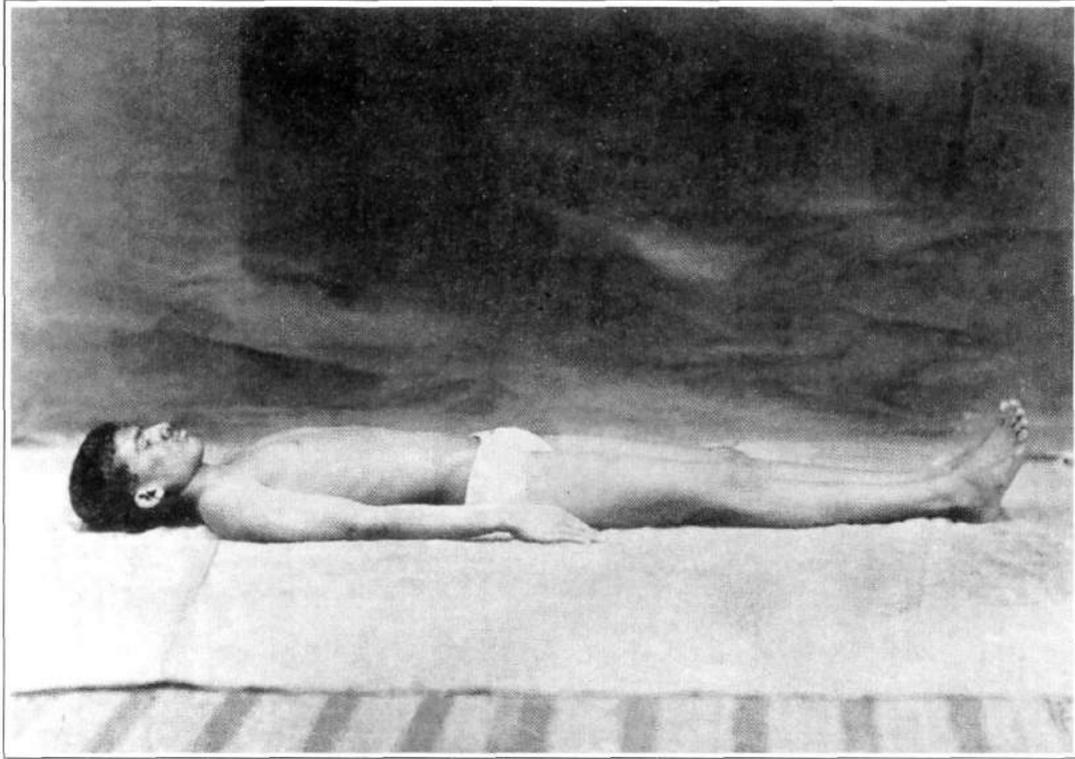
THE NAME :—

The pose is called Pan-Physical because it influences the thyroid (see Fig. XXVII) and through it the whole body and its functions.

THE TECHNIQUE :—

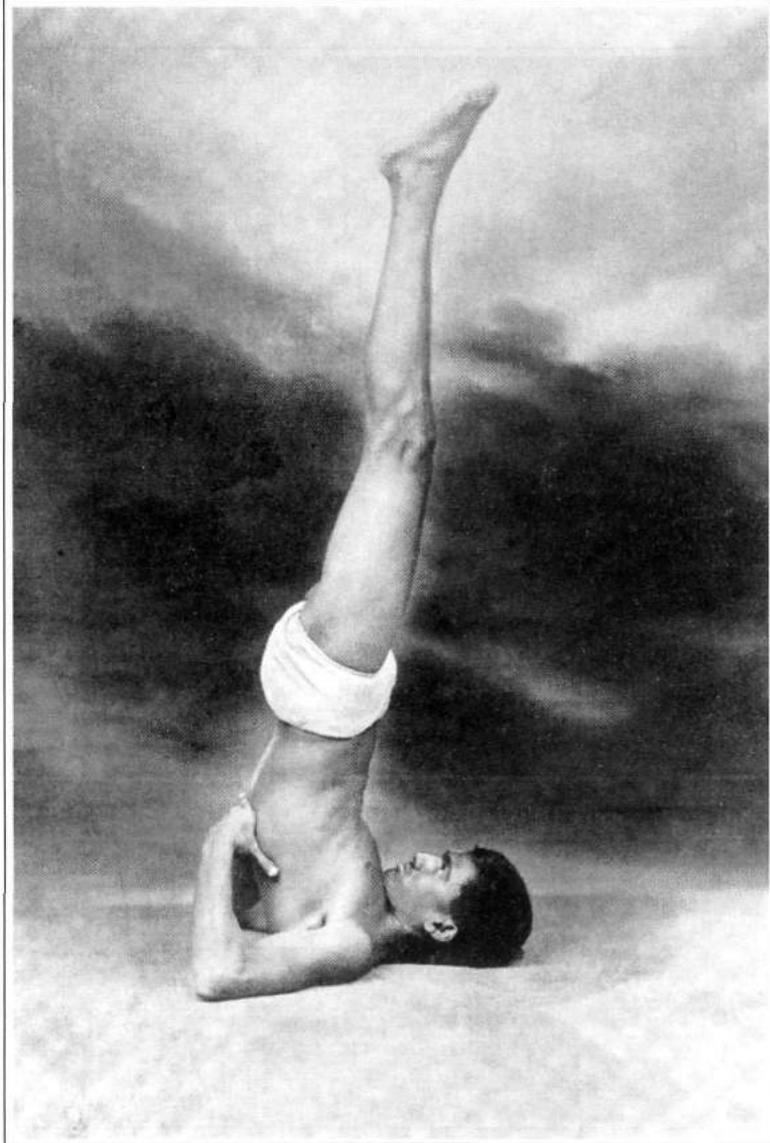
The student first lies supine on his seat with all his muscles completely relaxed and his mind thoroughly concentrated, as shown in Fig. XVIII. Then he slowly raises his legs through the hip-joint till they make a right angle with the ground, all the while maintaining stiff knees. Upto now he does not bring into action his arms and elbows which play only a passive part. But here he raises his whole body with his legs thrown up; and resting his weight on his arms, assumes the position shown in Fig. XXI. At this point the student must see that his chest presses against his chin. Further, in order to complete the chin-lock, he bends his forearms through the elbows; and with his hands presses his trunk against the chin, till it is well set in the jugular notch, Figs. III & XXVI. Fig. XIX represents the full pose. In this practice the posterior part of the neck lies close along the ground, the trunk and the legs are in a straight line and the mind is fixed on the thyroid. Only under exceptional circumstances such as noted in the second part of the article, attention is directed to the toes as shown in Fig. XIX. Weaklings should make haste slowly. They may start even with half a minute's practice. Patience and perseverance will overcome every difficulty and in course of time the student will be able to build a healthy

Fig. XVIII



Lying Supine for the Pan-Physical Pose.

Fig. XIX



Sarvāṅgāsana or The Pan-Physical Pose.

(Side View)

thyroid. To reap full advantages one must devote at least 20 minutes a day to this exercise. Fig. XX represents the back view of the pose.

POINTS OF STUDY:—

(a) *Blood-vessels* :—

The arch of the aorta, the common carotids, the innominate, the subclavians, the inferior and superior thyroids are all inverted and send a richer blood supply to the brain, (Fig. XXIX). It is checked at various points and diverted to the thyroid gland. The course of the thyroid veins, from the gland to the heart, is kept open. This gives a free play to blood circulation.

(b) *Vertebræ* :—

The cervical vertebræ receive a steady pull posteriorly. [See Fig. XVII].

(c) *Nerves* :—

The 5th and 6th cervicals and the middle and inferior ganglia of the sympathetic are toned up, (See Fig. XVII).

(d) *Miscellaneous* :—

The hyoid bone presses on the 2nd cervical vertebra and almost closes the pharynx, (See Fig. XXVII).

NOTE—

For additional points of study, see the next issue of the *Yoga-Mīmāṃsā*.

SARVĀṄĀSANA
OR
THE PAN-PHYSICAL POSE
with
HANDS EXTENDED

THE NAME :—

This pose is only a variation of the one represented in Fig. XIX and bears the same name.

THE TECHNIQUE :—

Details have already been noted on p. 54. Persons practising Sarvāṅgāsana for therapeutical advantages noted in the following article, should devote to this variation only 1/5 of the time given to the original pose. The same proportion may be allowed from the point of view of physical culture. Fig. XXII represents only the back view of this variation.

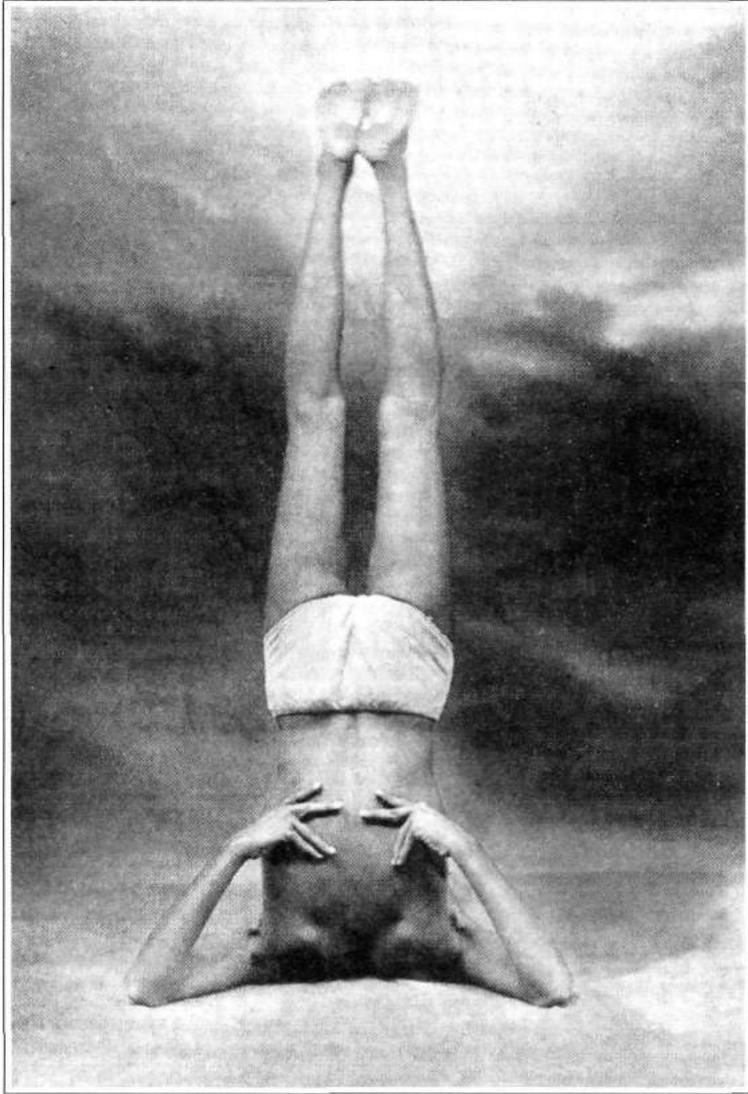
POINTS OF STUDY :—

These will be noted in the next issue where the Popular Section will contain discussions on the physiology of this variation with its application to therapeutics.

NOTE —

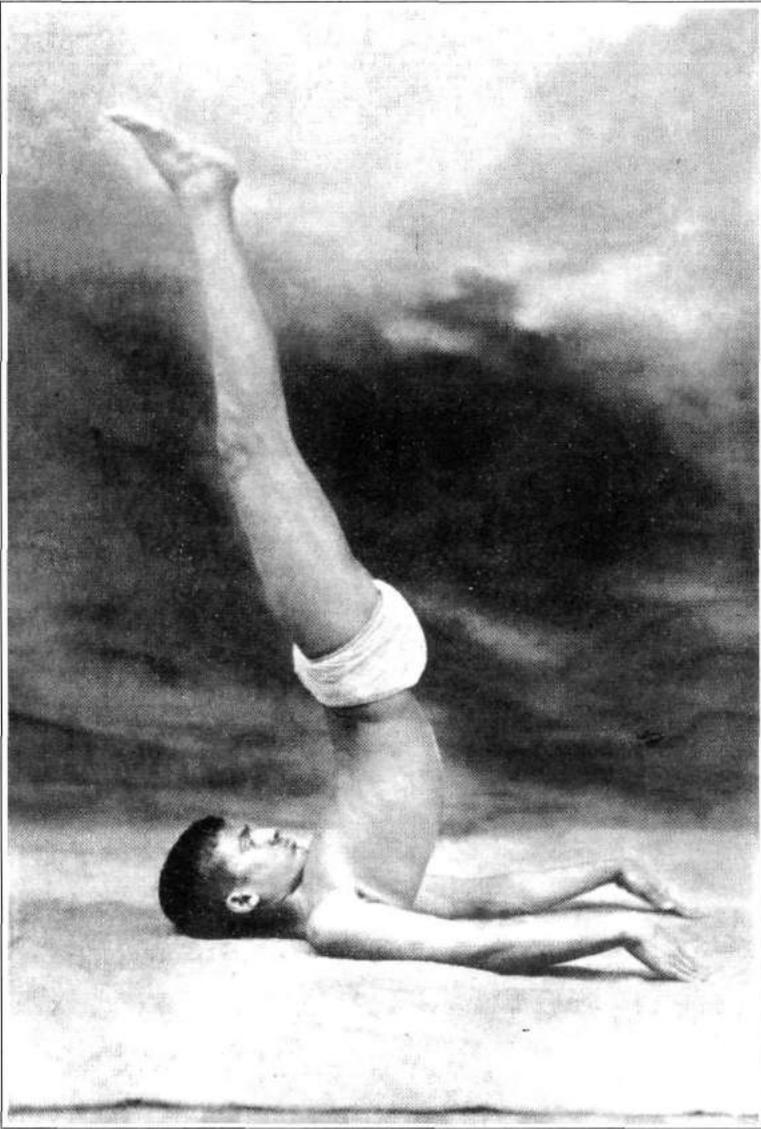
The practice of this variation is essential as a complement of the Pan-Physical Pose. This and the next figure have been introduced here simply to enable the students of Yoga to start their exercises in Āsanās systematically.

Fig. XX



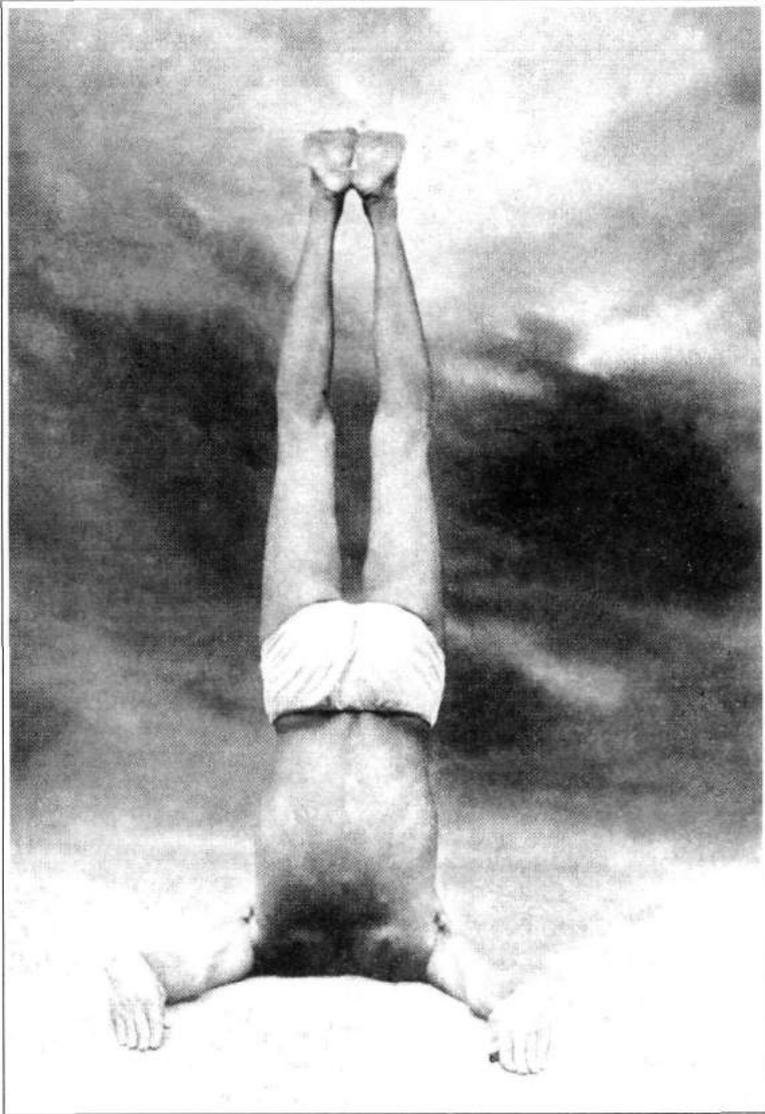
Sarvāṅgāsana or The Pan-Physical Pose.
(Back View)

Fig. XXI



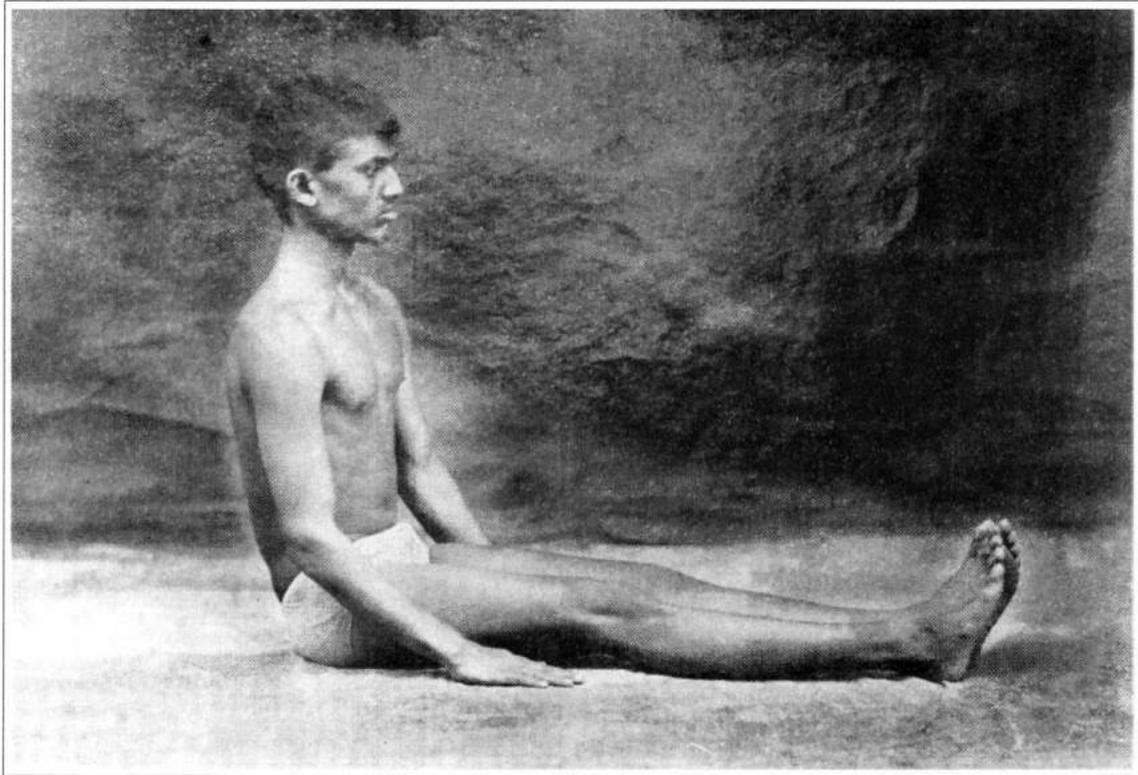
Sarvāṅgāsana or The Pan-Physical Pose.
with
Hands Extended.
(Side View)

Fig. XXII



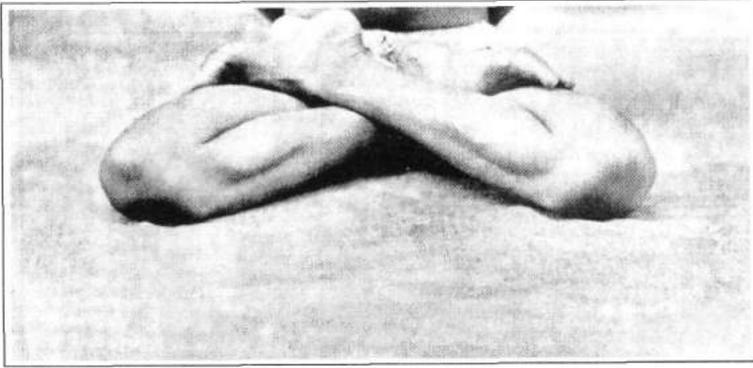
Sarvāṅgāsana or The Pan-Physical Pose.
with
Hands Extended.
(Back View)

Fig. XXIII



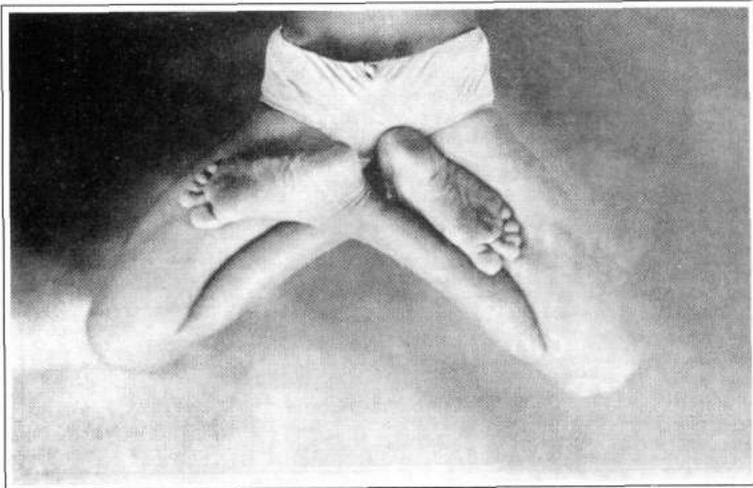
Preparation for the Fish Pose.

Fig. XXIV



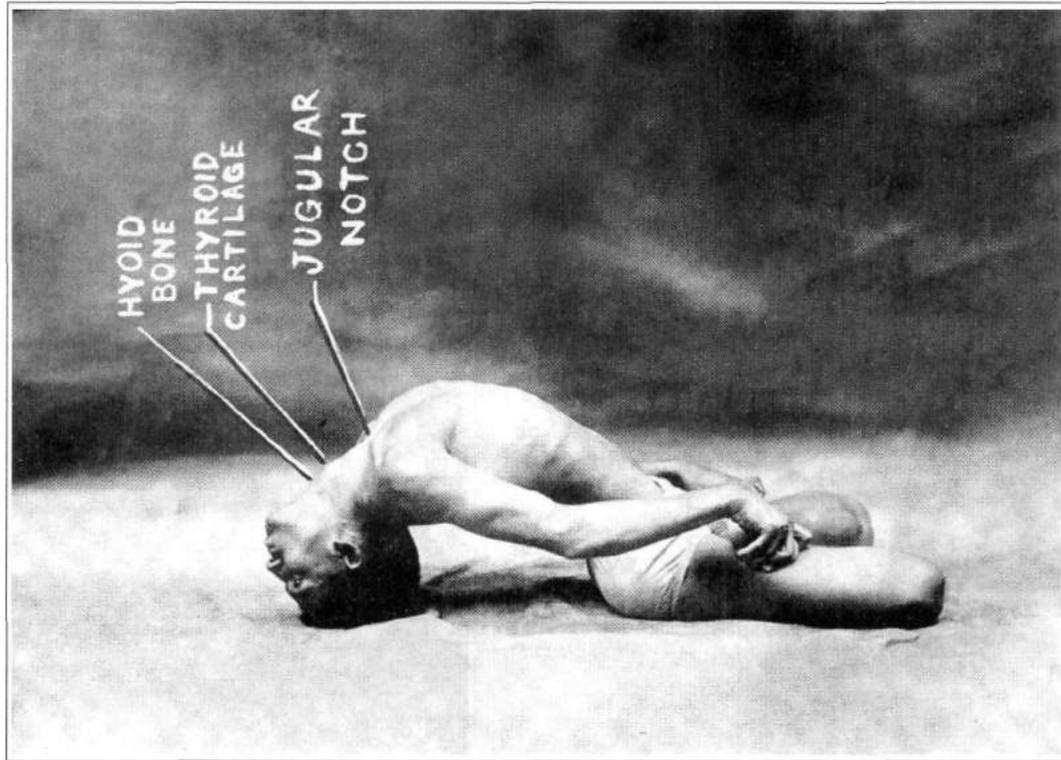
Foot-Lock for the Fish-Pose.
(Folded)

Fig. XXV



Foot-Lock for the Fish-Pose.

Fig. XXVI



Matsyāsana or The Fish Pose.
(Side View)

MATSYĀSANA

OR

THE FISH POSE

THE NAME—

This pose is called Matsyāsana because in swimming a person can float on water, like the fish, for a considerable time if he steadily lies there in this posture.

THE TECHNIQUE :—

The student first takes his seat with his legs fully stretched out as shown in Fig. XXIII. He then bends one of his legs, preferably the right, in the knee-joint; and folding it upon itself, sets the same in the opposite hip-joint, so as to allow the foot lie stretching at the root of the thigh with its sole upturned. The other leg is similarly folded and set in the opposite hip-joint. Both the heels he adjusts in such a way that each of them presses on the adjacent portion of the abdomen. This forms the foot-lock shown in Figs. XXIV & XXV. Fig. XXIV represents this foot-lock folded on the abdomen at right angles as is done in a sitting posture. Fig. XXV shows the same unfolded and held in a straight line with the abdomen. After this the student lies supine on his seat. Then resting his weight on the elbows, he raises his trunk and head; and throwing the latter backward with an arched spine, makes a bridge on his seat, (Fig. XXVI.) Subsequently he makes hooks of his forefingers and with these lays hold of the opposite toes which are now available on their wrong sides. Very often the hands instead of being given this position, are folded round the head. Fig. XXVII gives the front view of the pose.

This exercise when undertaken as a complement of the Pan-Physical Pose, should be given only 3/10 of the time devoted to the main pose.

POINTS OF STUDY :--

The pose is antagonistic to the Pan-Physical Pose at least as far as the cervical and upper dorsal regions are concerned. Additional details will appear in the pages of this periodical when a separate article will be devoted to this posture.

NOTE—

The practice of this pose cannot be neglected if one wants to reap the full benefits of the Sarvāṅgāsana. The anatomical parts named in the Fig. XXVI are indicated here simply because they are markedly seen in this posture.

SARVĀṄGĀSANA

OR

THE PAN-PHYSICAL POSE

PART I

YOGIC culture divides itself into eight parts of which the third takes notice of the different poses. These are calculated directly to hold the physical forces in balance and indirectly to develop mental and spiritual powers.

This and the subsequent articles of this nature will, however, deal with the physical side only, as far as the present researches of the Ās'rama would allow it.

A soft seat covered with a white cloth is generally used for the performance of these postures. As some of these are practised while lying prostrate on the ground, this seat is made to agree with the dimensions of a bed. The evening time is best suited for these exercises, as the muscles are most flexible at this hour of the day. Care must be taken to see that they are performed only with a light stomach. Needless to note that a well-ventilated and a quiet room greatly improves the efficacy of these practices. It is to be particularly borne in mind that these are postures and not movements, and should be performed with a serene and concentrated mind.

These poses constitute an excellent system of physical culture. The rationale of this part of Yoga would, however, be attempted after the most important of these postures are separately treated in this section of the periodical; because a clear knowledge of the details of these is essential for intelligently following a statement of the general principles underlying them.

The Pan-Physical Pose which is the theme of the present article, holds a very conspicuous place in the field of Yogic physical culture; because it is one of the most power-

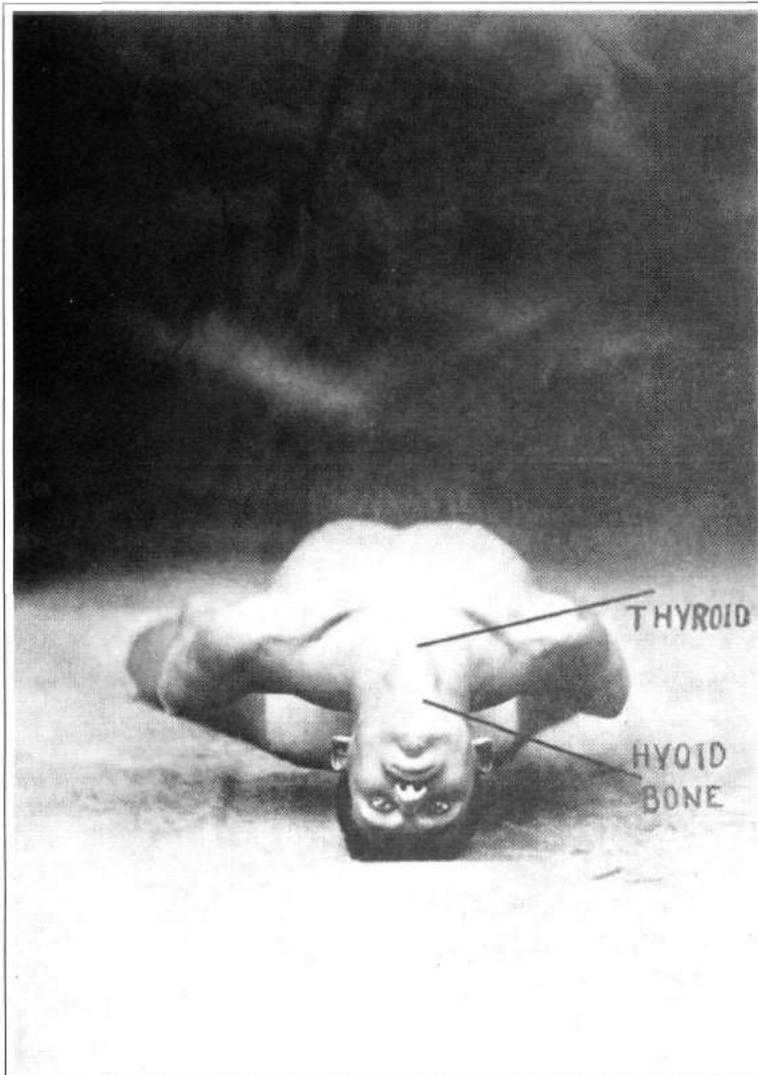
ful agencies that ensure and improve the health of the thyroid; and the health of the thyroid means, for the most part, the health of the whole body. What this thyroid is and how it is influenced by the present practice will first be noted, so that a discussion bearing on the physiology of this pose and its application to therapeutics may be readily intelligible.

The thyroid is a ductless gland. The ductless glands are distinguished from other glands of the body by the fact that they have no ducts, the products of their activity being discharged into the blood either directly, or indirectly through the lymphatic vessels. Each of these ductless glands produces an internal secretion which contains one or more active substances and is distributed to other organs and tissues by the blood stream. The parathyroids, the adrenals and the spleen which will be referred to in the course of this article, are other examples of ductless glands*. Glands having ducts throw their formations into other parts of the body, as when the liver discharges its bile into the small intestine through the common bile duct. These formations are not directly absorbed into the system as in the case of the ductless glands.

A reference to Figs. XXVII, XXVIII, and XXIX will show that the thyroid is situated at the front and sides of the lower part of the neck opposite the fifth, sixth and seventh cervical vertebræ. The arteries supplying the thyroid gland are the superior and inferior thyroid arteries; sometimes there is an additional branch from the innominate artery or the arch of the aorta, (see Figs. XXVIII and XXIX). These arteries of the thyroid are remarkable for their large size and bring to it a rich supply of fresh blood. The veins that drain this ductless gland correspond in size to its arteries and make a free and constant play of blood possible. The nerves are derived from the fifth and the sixth cervicals

* Reference to the first two of these three glands will appear in the second part of this article for which please see the next number.

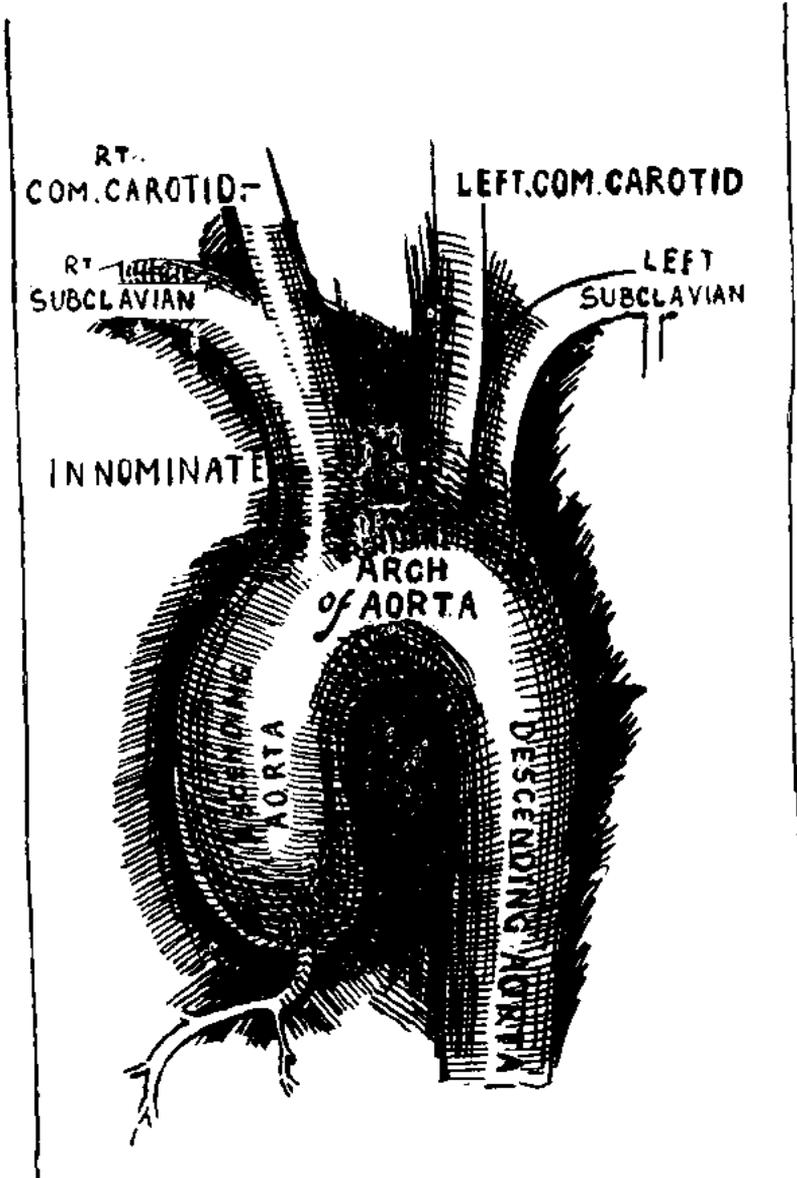
Fig. XXVII



Matsyāsana or the Fish-Pose.

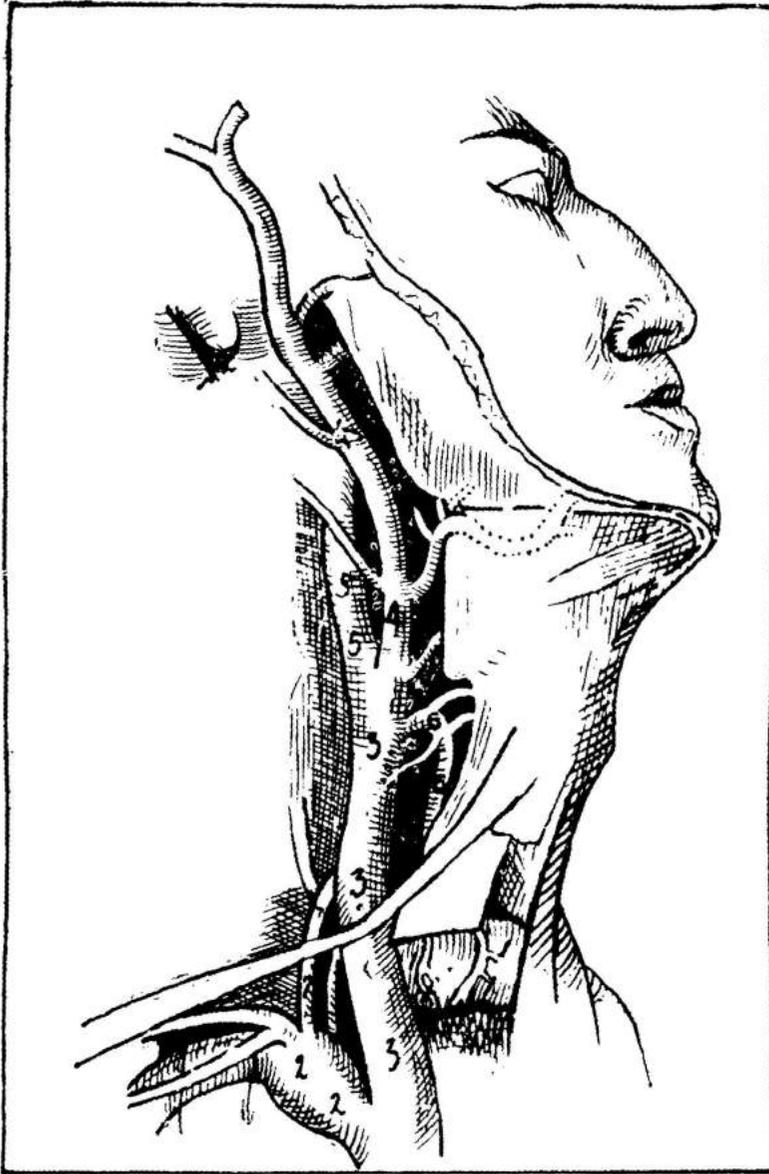
(Front View)

Fig. XXVIII



The Arch of the Aorta
and
Its Branches.

Fig XXIX



The Thyroid Gland
and
The Arteries Affected
by
The Pan-Physical Pose

- | | |
|-----------------------------|-------------------------|
| 1 The Thyroid Gland. | 5 The Internal Carotid. |
| 2 The Subclavian, 1st Part. | 6 The Superior Thyroid. |
| 3 The Common Carotid. | 7 The Inferior Thyroid. |
| 4 The External Carotid. | |

and through the middle and inferior cervical ganglia of the sympathetic, (Vide Fig. XVII).

It is to be noted that the fifth cervical nerves exit between the fourth and the fifth cervical vertebræ and that the sixth cervical nerves exit between the fifth and the sixth cervical vertebræ.

The health and activity of the thyroid chiefly depend upon the sound functioning of the arteries and nerves that supply it. Like all other organs of the body, the thyroid is constantly at work. If it is not fed with material that is necessary for the nourishment of its different parts, they will soon be exhausted and strike work endangering the health of the whole system. So nutrition must be perpetually brought to the tissues of this gland. Physiological work means chemical action. This chemical action produces in the thyroid waste substances which, if they are allowed to be in their original places, would develop toxins and poison the whole structure. These useless products must be ceaselessly removed. There is a third requirement of the gland for its being useful to the body. Its function is to manufacture particular internal secretions. Now this manufacturing requires certain substances and these must be made available to the gland. All these three needs are met by the circulation of blood carried on by the thyroid blood-vessels. The arteries bring in a fresh stock of blood rich with vitalising substances and keep it playing about the different parts of the gland. As the current of blood flows past the tissues, they pick up the material necessary for their own nourishment and also absorb substances out of which they manufacture the fluids which they secrete. The stream of blood also sweeps off with it the waste products.

Infections, diseases, frequent pregnancies, sexual excesses, and many other agencies lead to the degeneration of this gland. Under these circumstances the ordinary blood current that flows to the structure is not sufficient to restore it to its health. But if a richer blood flow is secured

the gland improves and begins to perform its normal functions.

Now the Pan-Physical Pose enables the thyroid arteries to bring this richer supply of blood to it, thereby preventing its degeneration and ensuring improved health. How the pose influences the arteries is discussed in the following lines with reference to Figs. XXVIII and XXIX.

The arterial blood circulation is mainly under the influence of nerves which govern the activity of blood-vessels. Whenever a larger supply of blood is needed for the functions of a particular part of the body, these vessels dilate and allow a stronger current to flow to that side. But when a smaller quantity of blood is required these vessels contract. The influence of nerves, however, is not the only force that governs the blood circulation in the body; the universal law of gravitation also plays an important part therein. If one keeps his hand raised straight above his head for a considerable time, one will discover that the fingers have suffered in blood circulation as the current had to rise against gravity. But if he lowers the same hand again and allows it to hang by his side, blood begins to course through out the limb very forcibly, because it is attracted by the force of gravity. This very influence of gravity is taken advantage of in this pose for inducing a richer flow of blood through the inferior and superior thyroid arteries.

If these arteries are traced back (Vide Figs. XXVIII and XXIX), the superior thyroid arteries will be found to branch off from the external carotids which themselves spring from the common carotids. These arteries are derived from the arch of the aorta, the left getting its blood supply directly from it, whereas the right getting it through the innominate artery. The inferior thyroid arteries also get their blood supply through the first part of the subclavians which like the common carotids are derived directly on the left and indirectly on the right from the arch of the aorta. Now this aorta is the sole carrier of the

pure blood from the heart to all parts of the body. Just after it rises from the heart, it sends its blood through the common carotids and the subclavians to vitalise those portions of the body that are situated above the heart. Thus these four vessels get the best of blood from the heart; and if a substantial part of it can be driven through the thyroid, the gland can be maintained at its highest efficiency. This exactly is done through the Pan-Physical Pose.

A reference to Figs. XIX and XX will show that in this pose the whole body is made to stand almost at a right angle with the neck, the posterior part of which is quite level with the ground, the chin being closely set against the V-shaped jugular notch. [Figs. XXVI and III]. The sixth and seventh cervical vertebræ stand vertical whereas the remaining five are lying stretched horizontally. The hyoid bone (Fig. XXVII) presses tightly upon the second cervical (Fig. XVII) and very nearly closes the pharynx. This is indicated by the difficulty experienced in respiration and the deglutition of the salivary contents of the mouth during the pose. The sharp angle of the neck and the consequent pressure of the hyoid bone exert a considerable check on the blood circulation of the two carotids (Fig. XXIX), at a point which is situated just above the root of the superior thyroid arteries. Thus the blood stream running through the common carotids gathers volume and is largely driven through the superior thyroids considerably increasing their normal supply. The hands supporting the trunk as shown in Fig. XIX contract their biceps. These contracted muscles check the blood flow of the brachial arteries which run past them in the arms. Here too the current swells backward and is gathered in the first part of the subclavians. This larger volume is sent through the inferior thyroids in addition to their normal supply. Thus the different checks put upon the arteries enrich the blood flow of the thyroid arteries. But the advantages of this pose regarding the blood circulation of the thyroid gland do not end here. The law of gravitation plays a prominent part in helping the

thyroid in getting its nourishment. Normally blood has to rise against gravity when it flows from the heart to the thyroid. But the up-side-down position of the trunk in the Sarvāṅgāsana inverts the arch of the aorta, common carotids and the subclavians.

Then the law of gravitation operates and attracts far more blood through them than is ordinarily available; and as seen above, sends it to the thyroid gland.

This abnormally large supply of blood that is brought to the gland by this Pan-Physical Pose is easily drained by its veins. As has been noted above, the veins of the thyroid match with its arteries in their size. Both of them are conspicuously large. Again the path of the veins from the gland to the heart is kept free by the pose which allows a free flow of the returning blood.

In this way the Pan-Physical Pose keeps a liberal supply of blood playing from the heart to the thyroid and from the thyroid to the heart, giving the gland opportunities to get its nutrition, to manufacture its secretions and to wash off its waste products.

But the pose helps the thyroid not only through the circulatory system but also through the nerves. It may be truly said that the nerves are responsible for every physical function. No organ whether small or large, can carry on its work without getting its energy through the nervous impulses. So long as the nerves supplying a particular organ are healthy and normal, it gives its usual work; but as soon as the nervous force becomes abnormal, the organ gets out of order. Nervous disturbance may cause acute pain in the parts supplied by the affected nerves. The whole nervous system, however, including ganglia which are only groups of nerve-cells, continues to functionate well so long as it gets its normal blood supply. But the spinal nerves stand in the danger of suffering in their function even if some vertebra is slightly misplaced. So for the sound

functioning of the thyroid only an efficient arterial service is not sufficient, its nerve supply must also be kept healthy. Even this is done for the gland by the Pan-Physical Pose.

It has already been observed that the nerve supply of this gland comes from the fifth and the sixth cervicals and also from the middle and inferior cervical ganglia. In order that the fifth and the sixth cervicals may not suffer from the subluxation of the bones of the spinal column, the fourth, fifth and sixth vertebræ must be kept in their respective places. This can be done if the ligaments that bind them are strong and healthy. This pose by inducing a large blood supply to the whole cervical region bathes the fibrous tissues of ligaments in copious fresh blood and gives them a superior tone. Slight subluxations in the vertebræ are corrected by the steady pull exerted on the cervical part of the spine through this posture. In this way the danger of the thyroid nerve supply being affected is effectively avoided. The free play of fresh blood which this pose brings about, also enervates the middle and inferior cervical ganglia. So by helping the thyroid through the circulatory as well as the nervous system, the Pan-Physical Pose is calculated to bestow upon it the best of health.

The Fish-Pose (Fig. XXVI) is complementary to this Pan-Physical Pose. The cervical vertebræ and ligaments must undergo a steady pull both anteriorly as well as posteriorly in order that they may be strong, healthy and set in their proper places. The two postures, bending all the cervical parts backward and forward, between them accomplish this purpose. The Matsyāsana completely opens the pharynx and affords one of the most comfortable postures, for rapid and incessant deep breathing technically called Bhasrā in Yoga. So, whenever, the Sarvāṅgāsana is practised, the Matsyāsana should also follow. It would largely help the Sarvāṅgāsana in producing the desired results.

Upto now it has been theoretically shown that the Pan-Physical Pose is calculated to build a healthy thyroid. It is now to be seen whether or not there is any clinical evidence to prove that the pose under discussion profoundly influences this ductless gland.

Before examining the clinical evidence available, it is necessary to consider briefly the physiology of the thyroid; so that if it could be conclusively proved that the Sarvāṅgāsana influences this physiology, it would logically follow that the said Āsana must be influencing the said gland.

There is not even one-thousandth inch of our body-surface which does not swarm with innumerable bacteria. These are ever ready to get into the body; and as soon as the smallest opportunity is offered to them, as by a slight wound, they at once invade the tissues and create diseases. The dust in the streets of the thickly populated cities bears millions of microbes; and as the people hurry about their business, these terrible foes find their way to their blood and seriously poison it. The food and drink is also more or less teeming with these microscopic foes of life and are voluntarily admitted to our body to work its ruin. Besides these outsiders, the body itself is busy giving birth to these destructive lives. The food and drink may putrefy while yet it lies in the body undischarged and may propagate these formidable enemies. The food is to be assimilated and converted into energy. The process by which this is done is called, metabolism. This metabolism produces many waste products which may be turned into terrible toxins in the body. Thus life is in the midst of destructive agencies actively operating on all sides

But Nature has very carefully provided the body with defences which counteract these fatal forces. Some of these poisons are destroyed and others are eliminated. The thyroid gland is a very important toxin-destroying organ as it greatly influences the production of antitoxins in the

body. So long as this gland is strong and healthy, it will, as far as possible, defend the body against bacillary attacks by destroying the bacilli with its secretions; but its degeneration impairs its secretions with the resisting power of the body and diseases easily establish themselves. Therefore in diseases that are due to the degeneration of the thyroid, extracts of this gland are administered to the patients. These extracts serve the purpose of the natural secretions and destroy the invading bacilli. This method of treating diseases is called organo-therapy and the administration of thyroid extracts is called the 'thyroid treatment.'

Now if the Sarvāṅgāsana is capable of restoring to health a degenerated thyroid, it must prove to be a substitute of this modern thyroid treatment. For a healthy thyroid must be able to produce those elements which are artificially introduced into the body in organo-therapy. And if the Sarvāṅgāsana treatment could take the place of the thyroid treatment, it undoubtedly follows that there is conclusive clinical evidence to show that the Sarvāṅgāsana profoundly influences the thyroid.

Organo-therapy prescribes thyroid treatment against leprosy. Dr. Sajous, a leading authority on this system of therapeutics, says that the aim of the treatment should be to destroy the bacteria by increasing the bacteriolytic (killing the bacteria) power of the blood. For this he recommends the use of the thyroid gland in a particular proportion. Even according to this savant, the thyroid treatment has not yet given satisfactory results in leprosy. But he thinks it to be most useful in improving the patient.

Now in India Yogic tradition claims to cure lepers by the Sarvāṅgāsana treatment which requires a milk diet. A great Yogin of the Deccan used to prescribe this practice to his leper patients. The Yogin has left the mortal coil long since; and the writer could get no opportunity of observing the progress of such patients, after he began to take active interest in Yoga. But luckily or unluckily for

him, he had to be in close touch with a leper who was following the Sarvāṅgāsana treatment at the instance of the Yogin referred to above.

The patient was wayward. In spite of the dangerous disease threatening him with prolonged suffering and miserable death, he would devote only a few months to a particular treatment and that too not very seriously. Fortunately he continued the Yogin's treatment for about a year, and though the disease had well established itself, to the great surprise of himself and his friends, the leper showed great improvement. His fingers and toes he could move with ease, though he had lost his control of these parts, their muscles being atrophied. He had gaping ulcers between his toes and fingers that discharged loathsome fluids; but these ulcers healed in a year's time. The general metabolism improved and as a consequence of better health, the patient's outlook on life became brighter.

But this would not last long. Some of the worst morbid tendencies of the leper asserted themselves in spite of the holy atmosphere in which he lived on the banks of the Narbuda. There was a fearful relapse when the patient preferred to be in a leper asylum where he died of the disease some three years later.

Notwithstanding the tragic end of the case, the results of the Sarvāṅgāsana treatment were clearly favourable to Yogic therapeutics and substantiate the proposition that this Pan-Physical Pose helps the thyroid to improved health enabling it to destroy bacilli by its increased secretions.

A few words about the milk diet prescribed by Yoga may not be out of place here. According to the researches of Breisacher, Blum, Kishi and others, it has been established that milk contains some of the principles present in the thyroid secretions. Animals whose thyroid was extirpated lived long, if fed on milk; but succumbed otherwise, indicating that milk could be a substitute for the thyroid secre-

tions at least in some respects. This will show how helpful milk diet must be to a leper. Not only in the pathological conditions but in healthy practices also, the Yogins never failed to prescribe a milk diet whenever there was a chance of the thyroid being adversely affected. A condition of low vitality follows as a consequence of some Yogic practices for awakening certain spiritual forces that are ordinarily dormant. Yogins make milk diet obligatory whenever these practices are undertaken, showing thereby the high degree of intelligence that they brought to bear upon the physiological problems of their science and art.

The preceding discussion will show that the Sarvāṅgāsana treatment is capable of largely controlling leprosy, although it may not completely eradicate it. Reports have reached the writer of lepers being cured of their disease by Yogic therapy; but he has yet to know a cure where microscopic examination did not discover the bacillus lepræ. There is no doubt, however, that the Yogic treatment can wonderfully help the sufferer and relieve him of his misery to a considerable extent. In India Yoga is looked upon as a religious activity and hence the Indian patients' psychology is likely to be very favourably influenced by this treatment. So claiming this additional advantage, Yogic therapeutics has many chances of success in the cure or control of Indian lepers. The writer is simply appalled when he thinks of the havoc the bacillus lepræ is working among his countrymen. Nearly a hundred thousand souls have been damned to unending agonies by this insidious bacillus. The Director of the Kaivalyadhāma would be only too glad to develop a leper asylum if a princely donation is coming forth for the purpose.

The effect of the Sarvāṅgāsana treatment on lepers is not the only evidence that can be adduced as a proof of the truth that this Āsana can build a healthy thyroid. There is ample additional testimony which is of a more convincing character.

Modern researches in the field of the physiology of ductless glands, have proved that they are very closely related to one another. The thyroid exerts a very great influence on the sexual glands which in their turn affect the thyroid. The testes are ductless glands and are in intimate relationship with the thyroid. If it can be clinically shown that the Pan-Physical Pose can restore to health the atrophied testes, it would demonstrate that this pose does help the thyroid to health.

The following is a typical case in point. A young man in his thirties developed a mode of life which was calculated to lead to the degeneration of his testes. The expected results followed and these glands became visibly atrophied. At a rough calculation the two glands must have lost between them four gm. of weight. The youth changed his mode of life as far as his sexual glands were concerned; but during the next six months no symptoms of improvement made themselves visible. Afterwards he took to the practice of the Sarvāṅgāsana and in the next three months found that his glands were improving. Another three months of close application to the pose and the testes reverted to their original size and weight. There are other cases also yielding the same proof; but they are not so telling.

This influence of the Pan-Physical Pose on the testes leaves no doubt about its capacity to help the thyroid; because that is the only ductless gland which the pose approaches directly through the circulatory and the nervous systems and which very largely affects the other glands of the type.

A number of young men suffer from testicular degeneration for various crimes committed against themselves and the society. The Sarvāṅgāsana treatment is one of the best remedies they can adopt to repair their losses. In delicate cases requiring a cautious handling, the treatment should not start save under competent supervision; for Yogic therapy like every other system of therapeutics, demands a detailed knowledge of its working.

What the testes are to men, the ovaries are to women. The Sarvāṅgāsana treatment is likely to help the female world to get rid of the manifold maladies due to the degeneration of their sexual glands. The writer uses the word 'likely' because he has no clinical evidence to show in support of his statement. But when it is theoretically as well as practically proved that the testes improve under the Sarvāṅgāsana treatment, there is hardly left any doubt regarding the capacity of this treatment to help the ovaries to better health. The writer will briefly indicate here a typical disorder which is due to the ovarian degeneration and can be set right by the practice of this pose.

According to Dr. Lorand and others, particular ladies suffer from obesity. This is caused by the degeneration of their ovaries due to some infectious disease, frequent pregnancies, sexual excesses, or the absorption of certain toxic products. This obesity is called "Endogenous," i. e. 'having its origin within our own economy, and depending on changes in the ductless glands. This has little to do with the other type which is termed 'Exogenous', because it arises out of agencies coming from without such as the food we introduce into our body. Females addicted to rich food, with little exercise, are often red in the face and they are plethoric. These can reduce their fat if they take to simple diet and some physical exercise. They are rarely constipated and perspire freely. But women suffering from exogenous obesity are very much constipated, have little appetite and very seldom perspire. Their looks are pale and their skin is dry and cold. In India an experienced dame can easily detect the endogenous obesity in her sister folks. This condition is often accompanied by sterility because it is due to the degeneration of the ovaries. Very frequently ladies suffering from this malady are made to observe fasts for reducing their fat; but the measure gives little relief to the sufferer and she continues to be sterile.

Under these circumstances, the Sarvāṅgāsana treat-

ment is sure to be of great help. The improved thyroid would promote metabolism and lead to the disappearance of fat. It would also restore the ovaries to health which would make conception possible. *

Women are more religious than men, at least in India. Therefore, Yogic practices are likely to help ladies much better than men; for in the case of the former psychology would come to the help of physiology. There are clear references in the ancient literature of India proving that the weaker sex was strongly attached to Yogic life. To-day the Indian ladies have almost completely lost their touch with this phase of religious activity. Will the most advanced of the lot come boldly forward to regain the ground which they have lost; and through the Yogic culture try to evolve a womanhood in India that would be the envy of other nations on account of its physical, mental and spiritual excellence? But this is only by the bye.

The effect of the Pan-Physical Pose on the thyroid can further be demonstrated by the clinical facts gathered from the Sarvāṅgāsana treatment of the spleen, the appendix and the liver.

The spleen is the biggest ductless gland in the human body and plays a very prominent part in defending it against the bacilli that are either introduced from without or developed in the system itself. The leucocytes, i. e. the white blood-corpuscles, are largely formed in the spleen and spread to the different parts of the body through the circulatory system. During their career if they cross any bacilli, they are immediately rendered harmless by these leucocytes by eating them up. Thus the spleen carries on its antitoxic activity throughout the system. But there is another way

* There are various causes of female sterility. The writer is theoretically convinced that some of these can be effectively removed by particular Yogic practices. He strongly suspects that some of the Yogic exercises may be highly useful in solving the problem of birth control, in a way that would be free from the objections taken against the western methods. He is anxious to collect clinical evidence in the matter and earnestly requests his country-men to help him in his efforts.

by which this gland protects human life. It arrests the invasion of microbes and keeps them from entering the circulation. In infectious diseases, such as the typhoid fever and malaria, the spleen is swollen; because it confines the bacillary infection to itself and prevents it from spreading to other parts, in order to save the whole organism from its serious consequences.

This spleen is highly under the influence of the thyroid. Clinical evidence shows that the Pan-Physical Pose can set right a disordered spleen. The natural conclusion is that the Sarvāṅgāsana must be directly influencing the thyroid and only indirectly the spleen, for the Āsana has very little to do with the spleen directly.

Only a typical case is quoted here. A boy of sixteen had a degenerated spleen. His power of resistance to bacillary infection being consequently weakened, he repeatedly suffered from the attacks of malaria, every time the boy being left in a worse state of health. Prolonged medical treatment against malaria had little effect on his system. Afterwards he took to Sarvāṅgāsana and in something like six months became permanently free from his spleen trouble. It now began to function well and could save the boy against malarial infection.

The degenerated spleen and thyroid of the boy, during the period of his illness had affected his appendix. This organ too showed distinct improvement after the Sarvāṅgāsana treatment, indicating thereby the influence of the pose on the thyroid gland. For according to physiology, if the pose could work upon the appendix, it could do so only through the thyroid.

Now only the effect of this pose on the liver will be cited as an evidence of its influence upon the thyroid and this part of the article will be closed. The next part will appear in the next issue of the Yoga-Mīmāṃsā.

The liver is not a ductless gland; but it has also its internal secretions. The researches of modern scientists have proved that this gland too is, to a large extent governed by the thyroid. The Sarvāṅgāsana is found to help the liver to health.

A man suffered from liver complaints ever since his boyhood. For years he was medically treated. He did get temporary relief from these treatments; but the trouble would soon recur. His digestion suffered and his bowels were constipated. He got rid of his digestive troubles with the help of different gymnastic exercises and yet his liver would not be long in order. At last he zealously took to the practice of Sarvāṅgāsana and now in a period of something like two years has never found his liver gone bad.

The clinical evidence produced here when taken collectively irresistibly leads to one conclusion only. It clearly proves that the Pan-Physical Pose very effectively helps the thyroid to regain its health and strength. When it is seen that the same pose can influence structures so widely situated in the human body, one cannot but conclude that it must be acting on a centre that is responsible for the functions of these different organs. Such a centre is supplied by the thyroid.

Independent of these clinical considerations, the anatomical and physiological studies of the pose point to the same gland as the object of its work.

So both theoretically as well as practically it is established that the Sarvāṅgāsana can build a strong and healthy thyroid.

Curative physical exercises, as a general rule, are available as preventive practices. For instance the exercises which remove liver complaints are also useful in keeping the organ perfectly healthy. It is in the interest of every human being to maintain his physique in a high state of efficiency. The thyroid is a centre which if kept in the best of health,

THE PAN-PHYSIOAL POSE

would generally ensure full efficiency in every part of the body. The Sarvāṅgāsana has been proved to be a very effective exercise for this thyroid. Is it not desirable that every one should devote some of his time to the practice of this pose and thus secure for himself high physical efficiency ?

N. B. Following diseases, especially in their chronic condition, can be effectively treated by the Yogic methods:

- 1 Constipation.*
- 2 Dyspepsia.*
- 3 Head-ache.*
- 4 Piles.*
- 5 Heart-disease.*
- 6 Neuralgia.*
- 7 Diabetes.*
- 8 Hysteria.*
- 9 Consumption.*
- 10 Obesity.*
- 11 Sterility (certain types).*
- 12 Impotence, &c.*

Therapeutical advice is given gratis at the Ās'rama to patients coming for consultation.

(Continued from cover page 2.)

tant conclusions. They are being published through its organ, the Yoga-Mīmāṃsā. [Vide Yoga-mīmāṃsā Advertisement.] The Kaivalyadhāma proposes to push forth this research with a view to give a scientific basis to these two sides of Yoga.

The Ās'rama will not be satisfied merely with the research work, however. It is anxious to train youths who will thoroughly imbibe the Yogic culture and with the Yogic spirit in them religiously serve humanity.

The Activities of the Ās'rama.

(1) The Ās'rama has started experimentation in Yoga, and is tackling the physiological, therapeutical and physical culture sides of it. The psycho-physiological side will soon be taken up.

(2) For the publication of its researches the journal Yoga-Mīmāṃsā is issued by the Ās'rama.

(3) Lectures are delivered at different centres for directly explaining the researches of the Institute, and popularising the Yogic culture.

(4) Therapeutical advice is given gratis at the Ās'rama to patients that come for consultation. As soon as it becomes economically possible, a regular Yogic hospital will be managed by the Institute.

(5) Instruction in spiritual and physical culture according to Yoga, is given gratis at the Ās'rama to persons that seek it. They have to make their own arrangements for boarding and lodging.

(6) A school of spiritual culture is to be founded by the Ās'rama at an early date. Two types of students will be admitted to it. Those that want to lead an exclusive Yogic life and those that want to do some social service with Yogic equipment. The latter will be taught, along with Yoga, different systems of philosophy, history, economics, etc. Students will be maintained by the Ās'rama, and will be in duty bound to work for humanity under the direction of the Ās'rama.

An Appeal

Yogic culture is one of the richest legacies the ancient Indian savants have left to the world. The noble spiritual elevation that is seen in India even in her present deplorable condition, is mainly due to the influence of Yoga in one form or another. A revival of this culture is sure to raise her to her former position of glorious dignity. The Ās'rama is trying to bring Yoga in correlation with the present day culture by attempting a scientific interpretation of its truths. It undertakes to train youths who will stand for whatever is best in the different cultures of the earth, ancient or modern. Under these circumstances, the Director humbly begs to suggest that it is the duty of every individual who cares for the progress and well-being of humanity, to show his active sympathy to the Ās'rama and enable its workers to realise its noble ideals.

Kun'javana,
Lonavla,
7-10-24

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Kuvalayananda,
(J. G. GUNE),
Director, Kaivalyadhāma.

Yoga-Mīmāṃsā

A Quarterly Organ of the Kaivalyadhāma
Recording Scientific Researches

IN

Psycho-physiology, Spiritual and Physical Culture, etc.
with their application

TO

Therapeutics.

For the first time, Yoga is being subjected to scientific experimentation by the Asrama Kaivalyadhāma. The results are highly interesting. Yoga-Mīmāṃsā is a faithful record of these researches. It also gives a popular exposition of the same with copious scientific notes.

The research work of the Kaivalyadhāma, as far as it has reached to-day, leads to the following conclusions. The Yogic system of physical culture compares very favourably with others obtaining in the field, as it has none of the disadvantages which the others have. Its aim is to secure greatest longevity with highest physical efficiency and maximum brain power. It is peculiarly fitted for the females. Yoga as a system of preventive exercises is simply marvellous as it keeps the whole nervous and glandular mechanism in the healthiest condition. Even as a system of therapeutics, Yoga stands above all the other types of Naturopathy. It is peculiarly fitted to cure chronic diseases. Against constipation, dyspepsia, head-ache, piles, heart-disease, neuralgia, obesity, diabetes, hysteria, consumption and a number of other dangerous diseases, its work is simply surprising. Impotence in young men can be invariably cured and certain types of sterility, especially in women, can be easily removed. No system of treatment can boast of being even equal to the Yogic in making up for the ravages of masturbation. Mental disorders can best be set right by Yogic therapeutics. The undersigned feels confident that the results in the field of psycho-physiology and spiritual culture will be equally encouraging. He has come to the conclusion that a time has come when the results already arrived at should be placed before the public both in scientific and popular forms.

With this object in view this Quarterly Yoga-Mīmāṃsā is started from the 7th October, 1924. Each number will cover 80 pages of the royal 8vo size including 16 full page illustrations. For the arrangement of matter appearing in the present periodical, please see the Editorial Notes of this issue.

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Kun'javana,
Lonavla.

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