

this tendency is strengthened by repetition." Thus co-ordination of nerve-centres is built up. In the case of the infant, suppose the sight of the red ball forms groups AB, AD, CE, indicated by movements *ab*, *ad*, *ce*, on repetition of the experiment the action becomes more exact and more similar on successive occasions. In adult life neural arrangements corresponding to ideas (percepts) are formed by sight of objects, and the printed page, repetition of the sight thereof, deepens the impression and fixes it, and the neural impress is retained; trains of thought may thus be established, leading in the end to expression or action. In the adult, as in the child, inhibition of movement is favourable to thought, the motor action is suspended and replaced by the formation of a series of neural groups, which finally produce an expression by movement. A train of thought must, according to the hypothesis, correspond to the preparation of groups of centres for action in a series under some stimulus whose repetition is followed by increasing rapidity and accuracy, *e.g.*, repetition of a poem frequently read or a series of motor exercises imitated by sight from the teacher. The laws of logic may be shown to be in harmony with the physiological law. Good intellectual action does not produce more physical wear than defective action, because there is no greater amount of nerve energy in one group of cells than in another corresponding; the value of the intellectual act depends upon its complete control by the stimulus. Sound intellectual function is in harmony with the environment, because it has been built up by it.

I have but briefly sketched my own ideas on a difficult subject, hoping to learn from others the results of their observations and study.

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*Sensations of Cephalic Pressure and Heaviness. Carebaria, Pesanteur de tête. Kopfdruck.* By HARRY CAMPBELL, M.D.

Among the many abnormal cephalic sensations the following constitute an important group:—

- a. Sensations of pressure upon the head.
- b. Sensations in which the head seems heavy.
- c. Sensations of a vaguer character, though probably related to the other two, the patient often complaining of a heaviness in the head.

To this group the terms "carebaria," "pesanteur de tête,"

“Kopfdruck,” are applied indifferently. I shall for convenience use only the “Kopfdruck” of the Germans.

a. Cases of pressure upon the head. The most common site of this sensation is the crown. The following are from my note book :—\*

Feels a pressure upon the crown (several cases).

Feels as if someone were pressing the brain down.

“Feels as if the ceiling were coming down, and were close to her, instead of being a long way off.”

Sometimes this sensation is so marked that the patient fancies some heavy substance is resting upon the head :—

Feels as if something were actually resting on the head—“keeps feeling for it.”

Feels as if a ton weight were on the crown.

Feels as if “somebody were sitting upon the top of the head.”

Feels as if a hot plate were resting on the crown.

Feels as if something heavy were pressing on the crown.

Next to the vertex, the most common seat of pressure-sensation is the forehead, and when this is the case the eyes are often involved in it. One patient felt a weight over the bridge of the nose; another complained of a sensation as of a band held tight across the brow; another felt as if the forehead were bandaged lightly up; while in one case there was a feeling of something pressing against the right temple. The sensation is less often experienced at the occiput; to one patient it seemed as if a ton weight were pressing upon the occiput and nucha.

The pressure may be felt on any two of the above regions at once, *e.g.*, the forehead and crown, the occiput and crown, the forehead and occiput. Sometimes it is felt on both sides of the head :—

Feels as if something were pressing on either side of the head.

Has feeling as of a weight on the crown, and sometimes the head appears to be pressed on both sides.

Or the sensation may extend round the entire head :—†

Feels as if a cord were tied tightly round the head, especially in the frontal region.

\* Langius, referring to the vertex, observes :—“Ubi mulieres glaciei frigus et pondus se sentire fatentur.” Quoted by Stuckens, “De dol. cap.,” Brux., 1787. Bellini, “De Urinis et Pulsibus,” Leipsig, 1698, and many other of the older authors refer to the same passage.

† Wepfer writes of one of his cases—“There is, moreover, a constriction or tightening of the head as if it were bound round about by a cord or bandage.” “De Affect. Capitis.” Scaphusii, 1727.

Feels as if a string were tied round the head.

Feels as if something tight were tied round the head.

Feels as if a band of iron surrounded the head.

Feels as if an iron band encircled the head and were being tightened up.

In all the above instances the abnormal sensation was more or less limited to certain regions of the head. In the following it involved a much more extensive area, the whole, or a large part of the head seeming to be encased in a tight-fitting cap which exerted an equal pressure in its several parts:—

Feels as if the head and jaws were fixed in an iron vice.

Feels as if something were closely fitting the head, and were being screwed up tighter.

Feels as if the head were encased.

Feels as if the head were bandaged.

Feels as if the head were covered with a close-fitting skin, which was being tightened.

Perhaps some of the cases in which tightness is complained of are related to the last class, as, for example:—

Complains of tightness in the head.

Complains of a dreadful tightness.

Feels as if the skin of the head were too tight—as if the head were bursting. (This sensation is very common).

It must here be pointed out that the abnormal sensation is not always limited to the same position in the same individual. It may be felt sometimes in one part, sometimes in another, as in one patient who complained that the pressure sometimes involved the sides of the head and sometimes the crown.

It will be observed that the sensation of pressure was, in one of the above cases, felt at the back of the neck. I have met with instances in which it involved other regions—for example, the shoulders and upper part of the back. Dyspeptics, as is well known, often complain of “weight on the chest,” but how far the sensation is related to that under consideration I cannot say.

*b.* In the case of the second class of abnormal cephalic sensations, viz., heaviness of the head, the sense of pressure may or may not be present:—\*

Head feels too heavy (several cases).

Head feels too heavy on shoulders—as “heavy as lead.”

\* Willis describes the case of a woman suffering from headache who was also “vexed with a weight of her whole head, a numbness of her senses, and a dulness of mind.” (Eng. Trans. of his works.)

Head is so heavy, feels she must rest it.

Feels "top-heavy."

Has to hold head up—it is so heavy.

Whole head feels heavy; feels she cannot lift it from the pillow.

Sensation as of a heavy load at the back of the head.

A ton weight seems to be weighing the back part of the head downwards.\*

c. In the third class the vaguely-defined sensation is not one of compression, nor of the head being unduly heavy; it is rather one of heaviness, or some allied sensation, usually described as felt *within* the head. It is, I need hardly say, by no means easy to identify the sensation patients thus try to describe. It is, perhaps, like that which many feel before a thunderstorm, or which occurs as a result of *suppressio mensium*, or when one is morbidly sleepy. I presume that it answers to the *χαρηβαρια* (*χαρη*=head; *βαρη*=weight) of Galen, alluded to several times in his works. Thus, according to him, one of the evils of the west wind was "carebaria"† which might also be induced by too much sleep, or sleep taken at unwonted times.‡ Another supposed cause is referred to in the following words:—"Alii, nisi assidue coeant, capitis gravitate molestantur."§ These and many other passages suggest that his "carebaria" describes rather a confused sensation of heaviness within the head than pressure upon it, or a feeling of unwonted weight. The following are illustrative cases from my notes:—

Has unpleasant feeling at back of head as if wanting to go to sleep.

Heavy feeling in the head (several cases).

Heaviness in the forehead during stooping.

The word "oppressive" was occasionally employed by patients.

Any of the three varieties of sensation just considered may occur with or without pain. Sometimes the pain is felt as distinct from the "Kopfdruck," when the patient will complain, *e.g.*, of headache and pressure on the crown. Often, however, the sensations cannot be mentally differentiated, the

\* One of Wepfer's cases felt "as if a weight of lead were suspended from the back of the head" (*op. cit.*, p. 103).

† Kuhn's edition, Vol. xvi., p. 412.

‡ Vol. xv., p. 625.

§ Vol. viii., p. 417.

patient complaining of a *pressing* or *heavy pain*. The following are instances :—

- Has “heavy” pains (several cases).
- Has heavy agony.
- Has pressing pain.
- Has pressing pain, as if she would “go out of her mind.”
- Compares the pain in the head to a pressure on it.
- Complains of a heavy, stupid, “silly” headache.

The sensations of heaviness, pressure on the head, etc., may be unattended by any other abnormal sensation, or they may occur in combination with tenderness, pain, burning, irritation, a sense of coldness, and other sensations. The accompanying table exhibits combinations I have observed :—

Pressure, etc.	Tenderness.	Pain.	Burning.	Irritation.	Sensation of cold.
x	x				
x	x		x		
x	x				
x	x	x	x		
x	x	x		x	
x	x		x	x	
x	x				
x	x	x		x	
x		x	x		
x				x	
x		x			x
x		x			
x			x		
x					

Pain, tenderness, and pressure, involving generally the crown, perhaps constitute the most frequent combination. Tenderness and weight also frequently occur in the same region, and it is worthy of remark that when the sensation of pressure on the crown is combined with pain, the patient has more than once

complained of feeling as if he would go out of his mind. Pain and pressure are often felt in the forehead.

The various combinations exhibited in the table affected the same part of the head at the same time, but the areas involved by the component sensations were not in all cases exactly co-extensive. It may happen, however (though such cases are not taken account of in the table) that while the *pressure* is felt in one part of the head, the other sensations—pain, burning, or what not—involve some other part. Thus there may be frontal pain with tenderness and pressure on the crown; occipital pain with a sensation of pressure on the forehead.

These various facts tend to show that the sensation of pressure does not stand in any necessary relation to the other sensations enumerated—that, in fact, its nervous mechanism is separate from, or independent of, that belonging to any of the others.

*The Eyes.*—A word as to the sensations of weight and pressure in connection with the eyes and eyelids. Patients frequently complain of a weight in the eyes, and it is difficult to determine whether the sensation is in the eyeball itself or in the eyelid. The patient generally specifies the lids, often unconsciously quoting from Shakespeare :—\*

Heavy frontal ache ; seems to weigh eyelids down.

Frontal pain ; eyelids pressed down.

Vertical pain ; weight over eyelids with it.

Sometimes, however, he complains—more vaguely—of the eyes being heavy and compelling him to close the lids :—

Heavy dreary feeling in the eyes ; can scarcely open them.

Frontal headache and weight in the eyes ; cannot keep them properly open.

The weight in the eyes causes them to shut.

It seems certain that the feeling of weight may be actually located in the eyeball :—

Frontal ache ; feels as if the eyes would drop out.

Heavy feeling, as if someone were dragging the eyes down the face.

When pain comes on, feels as if a weight were pressing the eyeballs down.

\* The following passage from Stahl is interesting in this connection :—“ Es drücke ihnen in den Stirn nicht anders, als ob ein Stein darinnen läge ; Können kaum die Augen dafür aufthun, und ins Licht sehen.”—G. E. Stahl, *Med. Dog. Syst.*, etc., Sec. II., *Halae*, 1707, p. 683.

Feeling of weight in the eyes; feels as if they would drop out on looking down.

In one patient the weight seemed to be between the back of the eyes and the top of the head.

*Causation.*—1. *Clinical Aspect.*—Kopfdruck is essentially a manifestation of nervous debility (neurasthenia), and Runge's long article on the subject\* is largely devoted to a description of what would now be called the neurasthenic state. Gowers, who regards it as a symptom of hypochondria, maintains—in accordance with this view—that it is more frequently met with in men than women, but my experience is the reverse of this: I find it exceedingly common among women, especially those who are debilitated from excessive nursing, or from poverty, those who are suffering from menstrual derangement, and, above all, those who are passing through the climacteric. It is, therefore, very common among the poor women met with in London out-patient rooms. I scarcely think I am exaggerating when I say that it and scalp-tenderness are more frequently present than not among them.

Regarding, then, general nervousness as the chief factor in its causation, two or three minor causes should be noticed.

(a.) Catarrh involving the frontal sinuses is very apt to be complicated by pain and a sensation of weight in the forehead—a fact noted by more than one writer (Labarraque, Runge).

(b.) Affections of the eye, *e.g.*, errors of refraction, may lead to a similar result (Runge).

(c.) Ear-disease is a frequent cause of Kopfdruck. Thus McBride writes: "A symptom very commonly met with in various forms of ear-disease is a sensation of pressure or weight in the head."† Runge also refers to this cause, and Morison points out that Kopfdruck thus arising is often limited to the side of the head on which the ear-disease is situated—a fact which I can confirm. He writes: "Among the minor and painless, but nevertheless very disagreeable symptoms of unilateral catarrh of the outer or middle ear, is that of a sense of weight and numbness over the affected half of the head;"‡ and he elsewhere points out that these sensations may be relieved by packing the opposite and unaffected ear.§

(d.) Finally, it may be mentioned that some have thought

\* "Archiv f. Psych.," Band vi., p. 627.

† "Diseases of the Throat, etc.," 1892, p. 395.

‡ "Practitioner," Vol. xxxvii., p. 173.

§ "Lancet," Vol. i., p. 519, 1883.

Kopfdruck a characteristic of syphilitic headache. J. Rumpf,\* *e.g.*, states that a "nightly increasing sense of pressure on the crown, though not always, is sometimes referable to syphilis," and he cites a case of syphilis in which such a sensation became intensified towards evening, reaching its height at 2 a.m., and then diminishing, but never actually disappearing. He adds: "This symptom (wie ich schon früher gegenüber Seeligmüller ausgeführt habe) is certainly not absolutely characteristic"—thereby implying that it had been so considered. Ross also † speaks of syphilitic headache as being attended by Kopfdruck.

2. Anatomical Aspect.—Concerning the anatomical changes which lead to the phenomena of Kopfdruck, nothing can be said with certainty. Ziem explains vertical headache with a sensation of pressure by supposing congestion of the superior longitudinal sinus and its emissary veins; ‡ while Runge § attributes the sensation to pressure on the sensory nerves of the cranium and scalp, owing to disturbance in the circulation wrought through the vaso-motor nerves. He manifestly regards it as set up essentially in the periphery.

The feeling of tightness in the head, as if a tight skin were enveloping the cranium, or a tight cap compressing it closely, may possibly be sometimes associated with local vascular distension,|| indeed, in some of these cases the patient feels "as if his head were going to burst." Gowers obviously attaches little importance to anatomical changes in the envelopes of the brain as a cause of the phenomena, regarding the mental state of the patient as the chief agent in the production of Kopfdruck and other cephalic sensations. "There is probably at the outset some actual sensory impression, often some headache, and the attention is constantly directed to the part, with the result that the patient perceives sensations which, under normal circumstances, would be unperceived. Nerve-impulses, in health unnoticed, must be continually passing from all parts to the centres, and they may be readily perceived if attention is directed to them. . . . If the reader will direct his attention to the vertex, he will probably soon be able to detect a distinct

\* "Die Syph. Erkrankungen des Nervensystems," Wiesbaden, 1887, p. 252; also p. 273 and p. 275.

† "Diseases of the Nerv. System," Vol. i., p. 692.

‡ "Monatsch. f. Ohrenheilkun.," Nos. 8 and 9, 1886.

§ *Op. cit.*, p. 641.

|| The following passage from Galen—Kuhn's edit., Latin translation—is worthy of quotation in this connexion: "Alii caput contundi distendique sentiunt."—Vol. viii., p. 204.



sense of pressure there, especially if he is fatigued or has been engaged in mental work.”\*

That a concentration of attention on the affected part may be partly responsible for the abnormal sensations thus felt, especially in men, I fully admit, but I do not think it is an essential element in causation. In the vast majority of the cases I have met with, the sensation has arisen spontaneously.

*Psychic Nature of the Abnormal Sensations.*—Concerning the psychic nature of the vague sensations of heaviness felt within the head, I shall say nothing further than that they are essentially morbid, like giddiness—not related, that is to say, to any normal sensations, to any sensations met with in perfect health. Those cases, on the other hand, in which the head feels abnormally heavy, might possibly be explained by assuming some modification in the muscular sense belonging to the muscles which support the head—indeed, one does not quite see how it could actually feel heavy except through this sense. Similarly, a feeling of weight in the upper lids is probably a modification of the muscular sensibility of the levatores palpebrarum. I may here remark that I have found posture exercise a variable influence on the sensation of heaviness of head, a change of position, as from sitting or standing to lying down, sometimes diminishing it, at others having no effect; and in the latter case the origin of the sensation must, one would think, be essentially central.

As regards the pressure-sensations: when a weight is placed on the top of the head, not only is the scalp pressed, but the action of the muscles supporting the head is modified; therefore, in this case the feeling of weight is a complex of cutaneous sensation and muscle-sensation (= “muscular sense”), and the like is true when pressure is applied to one side of the head (if the pressure is equal on both sides or all round, no muscles are called into action). The question we have to decide, therefore, is whether the abnormal sensation of pressure involves a muscular element. The fact that it generally continues when the head is entirely supported, as in lying down, suggests a negative answer, since the supporting muscles of the head are not then called into action. I say *suggests*, for the muscle sense might be involved independently of muscular action.

\* “A Manual of Diseases of the Nervous System,” 1888, Vol. ii., p. 802.

*Historical.*—I have already referred to some passages from Galen, in which he alludes to carebaria, and may now add the following:—

In Vol. xvii. (Part 1, p. 33), the influence of Auster is again alluded to. In Vol. xvi. (p. 115) he mentions a redundancy of humours, and in Vol. xv. (p. 781) stagnation of blood as causes of carebaria; while in Vol. xvi. (p. 798) he speaks of this sensation as a sign of hæmorrhage. According to him, the bath removes it (Vol. xv., p. 719), and sneezing appears to alleviate it (Vol. xviii., Part 1, p. 159).

Aretæus, writing on chronic headache, observes that it may be accompanied by great dulness and weight in the head.\*

Stahl† has an interesting passage referring to “pressing” pains.

Jott,‡ writing on nervous headache in women, says the pain in his cases was severe, and often combined with a sensation of weight.

Carebaria is frequently mentioned by authors from the time of Galen down to the present. See, for instance, Colin§ and Labarraque.|| Runge, in a paper already referred to, devotes 54 pages to the subject, under the title of “Kopfdruck,” but he occupies himself chiefly with a description of nervousness in general, citing a number of cases, and dealing in detail with treatment. He remarks upon the tendency displayed by patients afflicted with Kopfdruck to rub the head, and states that pain is present in one-fifth of the cases only. Among the causes he gives are affections of the eyes, ears, frontal sinuses, throat, gastric and uterine troubles, and many of the recognized causes of nervousness.

\* “On the Causes and Signs of Acute and Chronic Diseases,” translated by T. F. Reynolds, Lond., 1837, p. 59.

† *Op. cit.*, p. 680.

‡ “Neue Zeitsch. f. Geburtskunde,” 1842, Band ii., p. 70.

§ “Dict. Ency. des Scien. Méd. Art. Céphalalgie.”

|| “Essai sur la Céphalalgie.”