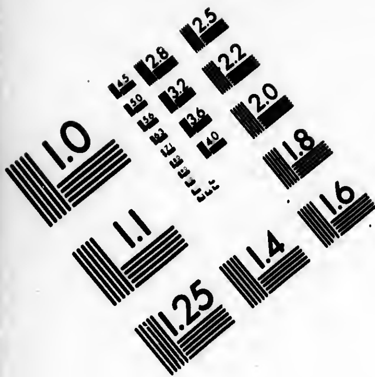
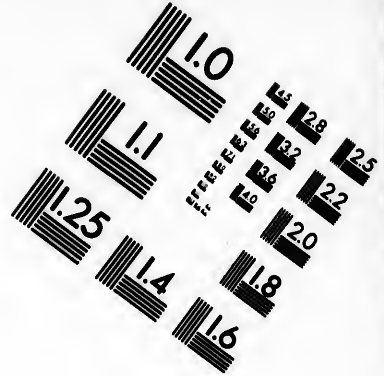

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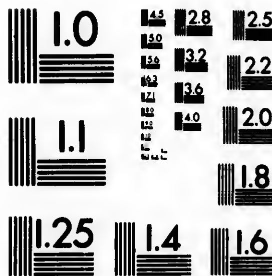
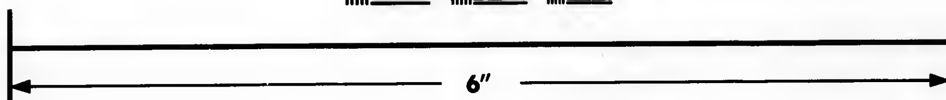

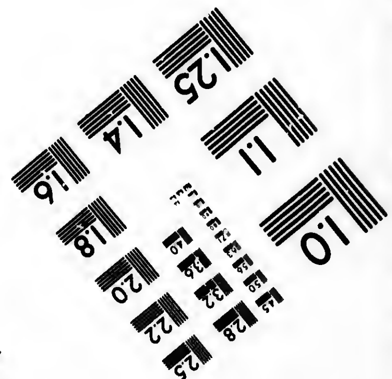

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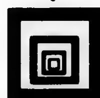

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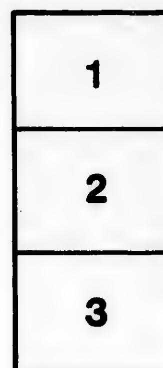

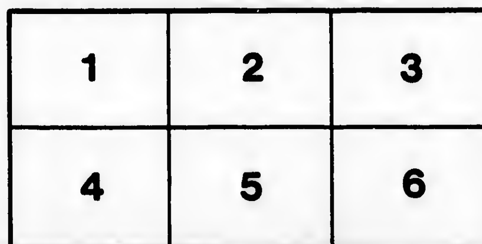

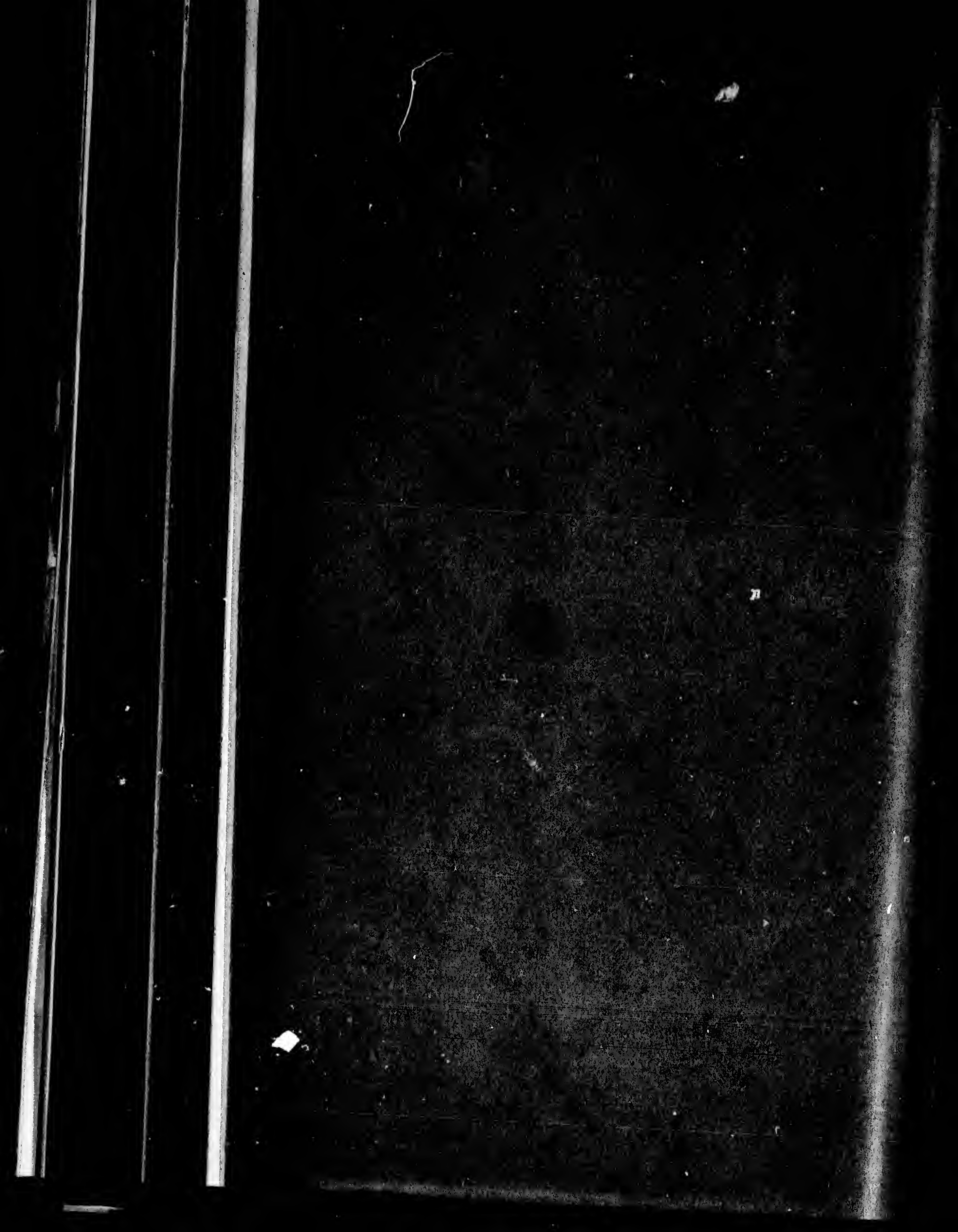

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HEADACHE FROM EYE-STRAIN; ITS DIAGNOSIS AND TREATMENT.

BY

CASEY A. WOOD, M.D.,

OF CHICAGO;

PROFESSOR OF CLINICAL OPHTHALMOLOGY IN THE UNIVERSITY OF ILLINOIS;
PROFESSOR OF OPHTHALMOLOGY IN THE CHICAGO
POST-GRADUATE MEDICAL SCHOOL.

FROM
THE MEDICAL NEWS,
July 28, 1900.

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In 1892 I presented to the Chicago Medical Society a paper on "The Diagnosis of Ocular Headache" and endeavored to point out that this form of distress might, with some certainty, be distinguished from other kinds of headache. Although my own experience, as well as that of other ophthalmologists and neurologists, has since that time led me to slightly modify the opinions expressed upon that occasion, I still believe that the exercise of a little care and patience will enable any practitioner to differentiate between headaches of extra-ocular origin and those that are wholly or partially due to eye-strain. I still think that it is the duty of every medical man, be he a specialist or an non-specialist, to instruct himself in the natural history of all forms of headache, whether he aspires to remove the cause in a given case or not. Such knowledge would, for instance, deter the oculist from attempting to treat a malarial headache by cutting the external rectus muscle; the surgeon from dividing the supra-orbital nerve for the cure of a unilateral neuralgia due to monocular astigmatism; the physician from persevering with quinine, phenacetine, antipyrine and even "antikamnia" to effect a cure of that frontal distress which accompanies and is one of the common symptoms of recurrent glaucoma; the

rhinologist from making the devious ways of the nasal meatus straight because his female patient complains of the dull vertical headache of uterine disease, and so on to the end of the chapter.

I propose to present, in a necessarily brief and incomplete fashion, the peculiarities of the headaches that proceed from impaired ocular function. It is somewhat difficult to define what is meant by ocular headache and yet some sort of definition is called for. Probably this one will be sufficiently comprehensive: Those aches and pains in and about the head that directly or indirectly result from organic disease in, or from impaired function of, any part of the visual apparatus may be called ocular headaches. I purposely exclude all forms of discomfort that find expression in the lids or the eyeball and other contents of the orbit.

The most important, because often the most obscure, kind of irritation is that which lies in incomplete or unsatisfactory muscular effort, and then we obtain examples of a reflex pain. It is well to consider the path of the nervous influence in these cases. The commonest example is the supra-orbital headache so frequently encountered in ciliary strain. The exhausted ciliary muscle in its endeavors to bring about effective vision, through its sympathetic fibers or directly, causes an irregular discharge in the region of, or irritates, the third nerve nucleus which supplies it with the impulse to functionate. Close by the oculomotor nucleus lies the nucleus of the great sensory nerve of the face, the trigeminus. This in its turn becomes irritated and its final terminations on the forehead suffer. It is very likely that along with the severer peripheral aching there also goes a duller and deeper pain, probably

situated in the cerebral centers, as well as in the sympathetic fibers supplied to the dura mater.

The proportion of the ocular element in all forms of headache is large. Including the mixed cases, I believe I am within bounds if I put it at 40 per cent. On the other hand, I feel certain that fully 80 per cent. of all frontal headaches are concerned in affections, mostly functional, of the eyes.

To come to the subject of diagnosis proper, I have first to speak of the *site* of ocular headaches. In the order of frequency we have, (1) the supra-orbital, (2) the deep orbital, (3) the fronto-occipital, and (4) the temporal. All sorts of variations from and combinations of these will be met with. A unilateral supra-orbital neuralgia, as indeed a hemicrania of any sort is not, in my experience, commonly due to eye-strain.

The character of the pain in ocular headache is not peculiar, but it is more likely to be dull and heavy than very acute, or, to answer to what is generally known as neuralgia. In the supra-orbital form it is very generally accompanied by aching in the eyeball and by the deep intracranial ache before referred to. Migraine, when accompanied by eye symptoms, has received several names indicative of the fact, *amaurosis partialis fugax* (Förster), *scotoma scintillans,* and ocular migraine (Galezowski). It is sometimes of ocular origin and when due to eye-strain, and the latter can be removed, the distressing attacks always diminish in severity or in frequency, and may even disappear altogether.

The exciting causes of ocular headache, aside from acute and chronic diseases of the eye, are peculiar and may help the diagnosis. First of all are those tasks which require the use of the accommodation and convergence; reading, writ-

ing, drawing, painting, typewriting, sewing, music, card-playing, draughts, billiards, etc., furnish the most common examples.

It sometimes happens that the pains do not come on until the next morning after over indulgence in near work; but as a rule the eyes and head commence to ache after a certain number of minutes or hours of close work with such regularity that the sufferer attributes it at once to some trouble with the eyes. Astigmatic, hypermetropic, and heterophoric patients also suffer when called on to use their eyes much for distant vision. A question which I invariably ask asthenopic female patients is whether their headaches are brought on by shopping excursions. This I have come to regard as an ideal test, since shopping is universally done, and it reaches the weak points in the ocular apparatus. The necessity for keeping a lookout in all directions to avoid collisions with fellow-shoppers in a crowded store, with pedestrians on the pavement and with men, women and vehicles on street crossings, the close examination of fabrics, often in a poor light, with intervals of rest to mentally dissect a passing bonnet—all these efforts make large demands not only on the general nervous energy, but particularly on the extrinsic and intrinsic muscles of the eye. When these latter are handicapped by muscular anomalies and refractive errors, the shopper usually goes home with a "raging" headache. In the same way riding in a railway-train or street-car, with the ever-changing panorama to be viewed through the car window, is especially trying to defective eyes. I am also sure that church, concert and theater headaches are mostly due to efforts made by abnormal eyes to stare at distant objects, while the cerebral centers are meantime being further

irritated by rebreathed air and unshaded lights.

It is characteristic of ocular headaches that they are almost always accompanied by signs and symptoms easily referred to the eyes. After reading for a time, for example, the lines and letters may run together or become mixed up—a sort of temporary diplopia—the sclera is prone to get red from hyperemia of the conjunctival vessels, the lids often show signs of inflammation and may burn, smart and itch. The patient sometimes complains also of photophobia and of specks floating before the eyes, *muscæ volitantes*.

Finally, and this fact seems to me to be most important in connection with the diagnosis of ocular headache, the eye may appear, as far as symptoms and the results of inspection go, to be entirely free from disease. There is an ocular headache, but no apparent trouble with the eye. Moreover, as every ophthalmologist knows, the vision is frequently normal or even above normal, while many of the asthenopic symptoms just detailed may be altogether wanting. It is usually the person with unusually good distant vision, or who at twenty years of age has had it, who complains of eye-strain. The short-sighted individual has troubles of his own. He cannot distinguish objects in the distance but he does not suffer from headache.

Since astigmatism is probably the most frequent cause of headaches from eye-strain, the diagnosis of the latter may rest upon establishing the presence of the former. To the expert this is easy enough, especially when the Javal ophthalmometer and the skiascope are employed, or some of the other well-known objective tests made use of. The visual test card, the astigmatic chart and Pray's astigmatic letters I believe to be the most effective subjective tests for astig-

matism that the non-specialist physician can employ. These, with directions for use, can be had from any optician. Gould has suggested that a few drops of a one-per-cent. solution of hydrobromate of homatropine be instilled into the patient's eye every five minutes for an hour or so and if at the end of that time he cannot read with each eye separately the normal line on the test-letter chart, or if astigmatism be indicated, he should be examined further. I prefer a couple of homatropine and cocaine disks introduced beneath the lids and allowed to remain an hour and a half, the eyes being closed, before the examination. This is a harmless and efficient test both of the presence of astigmatism and hypermetropia, the two commonest causes of ocular headache.

Heterophoria, or weakness of the extrinsic eye muscles, is to some unknown degree a cause of ocular headache. One so rarely meets with an absolutely emmetropic eye that it is difficult to define the causal relations of ametropia and heterophoria in the production of cephalalgia.

Of the headaches that simulate ocular headaches the most common and the most difficult for the general practitioner to differentiate is the supra-orbital and supranasal pain of nasal disease. Polypi, hypertrophic rhinitis, deviations of the septum, mucous and purulent collections in the frontal sinuses, all produce headaches which resemble in character the frontal pains of eye-strain. In such cases there are usually other symptoms of "catarrh." Moreover, the chronic frontal headache of nasal disease usually continues during the night, while a purely ocular headache ceases when the patient has retired and the lights in his room are extinguished; there is no headache when there is no eye-strain.

Supra-orbital malarial neuralgia may usually be detected by its periodicity and by its being almost always paroxysmal and unilateral and not accompanied by other asthenopic symptoms. Then we have a form of headache which I should like to dub Roosa's headache, as he has best described it. It is ocular in character but occurs in a class, a rapidly increasing class, of neurotic men and women. These so-called "nervous" headaches may or may not be accompanied by refractive errors, but, when they are, correction of them rarely produces a complete or lasting cure. The pains, as well as the general condition, are often hereditary and occur mostly in men and women of weak constitution, nervous temperament, poor digestion, and deficient circulation. When these unfortunates are free from a pain in the forehead, they have it in the back of the neck, or it may leave both places and appear in the cardiac region, or in the pelvis. Often they are persons of marked intellectual development and may be quite free from what we usually term hysteria, but their ocular pains seem to be mere incidents of the general condition.

There is another class of practically incurable ocular headaches due to a combination of eye-strain and organic disease of the retina, choroid, or ciliary body. In defective development of the eyeball, in diseases of the macular region, broadly speaking, in almost all these cases where vision is not, or, in the nature of things, cannot be normal, headache produced by eye-strain is practically incurable. The headaches from iritis, glaucoma, and other acute diseases of the eye, are to be recognized by the presence of the affections themselves. The same may be said of true peripheral neuritis, supra-orbital herpes,

supra-orbital neuromata, and growths within or at the margin of the orbit, in all of which there is frontal and supra-orbital pain.

While the effective treatment of ocular headache involves a careful examination of all the ocular structures, and an inquiry into the refraction, accommodation and oculomuscular balance of the patient, temporary (and occasionally permanent) benefit may be obtained from certain topical applications to the orbital region and by attention to the general health and habits of the sufferer. Although it may be stated as a truism that any departure from health may affect the eye and so act as an exciting cause of ocular headache, there are some disorders that appear to especially invite this form of distress. *Insomnia,* whatever be its origin, is one of these, and one may be well assured that complete relief is impossible as long as the patient's sleep is disturbed or insufficient, even if the underlying, local incentive to headache be removed. *Dyspepsia,* especially when it takes the form of an autointoxication due to too much eating and too little exercise, is a frequent accompaniment of frontal headache and should receive quite as much attention as the purely ocular symptoms. The possibility of excessive indulgence in tobacco and alcohol among male patients and in tea and coffee among female sufferers should not be overlooked. Among the latter class it is perhaps unnecessary to refer to the common coincidence of pelvic and ocular headaches. This is one of the most frequent forms of mixed headache. As a common example of the sympathy between ovarian disturbances and headache due to eyestrain, one may confidently expect an exacerbation of the latter during or immediately before each menstrual period. Such an experience does

not always mean that there is something abnormal about the reproductive organs requiring attention; it frequently indicates that the nervous discharges involved in menstruation act as the "last straw" to break down the normal resistance of the peripheral and central neurons interested in the defective accommodation or the ocular imbalance, or both.

It follows from the foregoing that it is the duty of the surgeon to remove, as far as possible, all sources of nervous irritation so that the treatment of the eye-strain pure and simple may be as effective and the relief therefrom as lasting as possible.

As far as local applications are concerned (I am opposed to the internal drug treatment of this symptom) the simplest, most effective and least harmful is the use of very hot or very cold fomentations. As a rule, the latter are the more grateful and more effective, but the choice can usually be left to the patient. He may be allowed to try both and then chose for himself. Take a medium-sized towel, folded so as to measure twelve inches long by four wide. Grasp an end in each hand and dip into a basin of cold (40° F.) or hot (160°-180° F.) water. Bending over the basin, press the dripping towel gently against the closed eyes, forehead and temples. Change frequently and continue the applications for five or ten minutes, stopping them if additional pain or discomfort be produced. Do this every hour or oftener while the headache lasts. In conjunction with these fomentations the following mixture may be rubbed over the forehead and temples, or a towel, wet with one part in ten of ice water, may be laid over the closed eyes and forehead while the patient is lying down:

Spirits of lavender, alcohol, of each 3 fluid-ounces; spirits of camphor, 1 fluid-ounce.

The official ointment of veratrine or aconitine —a little carefully rubbed on the skin supplied by the supra-orbital nerve—is occasionally an effective remedy, but it is a dangerous one and not to be generally recommended. A similar application, requiring less caution, is the following liniment, to be well rubbed in:

℞ Chloroform .... ℥ss
Camphor .... ʒi
Tincture of aconite .... ʒi
Oil of peppermint .... ʒi
Alcohol .... ℥ii

Shake well and apply every two or three hours.

Finally, temporary relief may usually be obtained by the use of a weak, interrupted (or continuous) galvanic current, 3 to 5 ma., the positive pole applied to the nape of the neck, the negative, preferably by means of a double eye-electrode, to the closed lids, for from two to ten minutes.

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