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PAIN SENSITIVITY

IN

GENERAL PRACTICE
physician's occupations are connected with

all that is most curious in natural knowledge

or in the history of the mind."

Sir Charles Bell, 1816.

The second part consists of tabulated results and their analysis.

Finally, details are given of cases chosen from different sensitivity groups, from which it may be seen that the information provided by the test fits into the general clinical picture and on occasions is of value in management and diagnosis.
Introduction.

This investigation was carried out during the ordinary routine work of general practice. It consisted of applying a simple test and considering the result in relation to the general clinical picture.

The test is performed with an instrument known as a Pressure Algometer. The principle of this test and the technique of its application was fully described by Dr. K.D. Keene, M.D., F.R.C.P., Ashford Hospital, Middlesex, in the Lancet in 1954. The writer owes much to him for advice and encouragement in introducing this test into routine general practice.

The thesis is divided into three main parts.

The first part deals with the problem of pain and pain sensitivity, methods of estimating pain sensitivity including pressure algometry, a description of the instrument and the technique for its use in general practice.

The second part consists of tabulated results and their analysis.

Finally, details are given of cases chosen from different sensitivity groups, from which it may be seen that the information provided by the test fits into the general clinical picture and on occasions is of value in management and diagnosis.
Pain

Pain is the commonest recurring symptom met in general practice and yet it is most difficult to define. Man has always known pain and has been perplexed by it since he began to ponder on the nature of things. The word pain is derived from the Latin "poena", meaning punishment or penalty. It has a judicial or retributive sense and has in classical Latin no conception of bodily pain as we know it. In classical allusions it refers to the retribution of the gods. Since the end of the last century, Libman (1), one of the foremost authorities on pain, has written about the subject of pain. Wolff and Wolf (1) would have it that "Pain is a specific sensory experience mediated through nerve structures which are separate from those that mediate other sensations such as touch, pressure, heat and cold." Leriche (2), however, viewing it through the eyes of the practising clinician qualifies this statement with "Pain is not a simple physiological phenomenon involving specialised receptor pathways and nerve centres. It involves the individual as a whole." His attempts to define pain sensitivity have been met with indifference. Leriche (2) after a lifetime devoted to work on the problem wrote "Reflection tells me that I am so far from being able to define pain of which I write that the attempt could serve no useful purpose." There is a great accumulation of evidence to show that pain is transmitted through specific pathways but this is not enough to explain its nature completely. Each time pain is felt the psyche is involved. Physiological processes must first be converted into sensation itself and the method of this conversion is as yet beyond human comprehension. In addition, psychological factors play an important part and modify the pain felt. The result of this sequence of complicated physiological and psychological events is the pain experience.
Pain Sensitivity

The evaluation of the frequently occurring pain symptom is the commonest exercise in clinical practice. This is not always a simple matter since there is individual variation of the degree to which pain is experienced. In order to interpret a patient's pain correctly this individual variation, or the patient's sensitivity to pain, must be considered.

This problem in assessment has attracted the attention of many workers since the end of the last century. Libman (5), one of the early workers wrote "I became interested in the varying symptomatology of disease of the same kind occurring in different individuals. The subject of pain naturally received most attention."

Gibson (6) more than fifty years later writing on the assessment of cardiac pain stressed that "The degree of pain is always relative to the sensibility of the patient and this is a highly variable quantity."

During this interval of time, more than one hundred different methods (7) have been described for measuring pain sensitivity. On this Keele (8) remarks "The importance attached to tests for pain sensitivity may be gauged by the numerous methods devised for ascertaining it."

Pain Sensitivity Tests

The basis of all sensitivity tests is the ability to measure the stimulus which is just necessary to reach the threshold of pain.

In 1897 Von Frey produced the Hair Stimulator. With this delicate instrument he measured the pressure necessary to produce a sensation of pain. This was the first attempt to measure, with accuracy, sensitivity to pain. His work attracted much attention and inspired others to make further investigation in this field. In particular Libman applied himself to the problem, as he met it in his practice, and he evolved his own method of estimating pain sensitivity. In 1934 this investigator wrote his classic "Observations on
Individual Sensitiveness to Pain**, the fruit of a lifetime of work and an important contribution to the understanding of this subject.

The numerous sensitivity tests may be divided into four groups, depending on the method used to apply the stimulus. These are mechanical, electrical, thermal, and chemical. Many of them have limited practical value in everyday clinical work, varying as they do in convenience of application and in accuracy.

**Libman's Test.**

Pressure with the thumb is all that is required in this simple test which Libman described as follows:

".... by first pressing the thumb against the tip of the mastoid bone and then slipping the finger forward and pushing against the styloid process. Pressure on the normal mastoid bone causes no pain and therefore serves as a control. Pressure in the direction of the styloid process is painful to some individuals and not to others. The sensitive point is really not the styloid process but a branch of the auriculus magnus nerve."

With this test Libman classified people into three groups:

1. 0 sensitive. "No evidence of pain, and who state they feel none".

2. + sensitive. "Evidence of little pain or show none, but in response to questioning say 'Yes!'".

3. ++ sensitive. "Evidence of marked pain, or while they may control the expression of pain admit that the test is definitely painful."

Groups 1 and 2 Libman classed as being "hyposensitive", and group 3 as "sensitive".

This method has the virtue of simplicity but is lacking in accuracy due to the absence of a means of measuring or controlling the amount of pressure applied by the thumb.

The following are further tests which are recognised methods in estimating pain sensitivity, and are referred to in later parts of this work.
Hollander's Test. (9)

This consists of an elliptical metal grater under a sphygmomanometer cuff around the upper arm. The cuff is inflated at the rate of ten m.m. mercury per second until the patient winces or protests verbally. Hollander found that 44% of his subjects reacted thus between 110 and 260 m.m. of mercury. These he called "normosensitive". 27% reacted below 110 m.m. (hypersensitive). 29% reacted above 260 m.m. (hyposensitive). In the hypersensitive group extremely sensitive patients reacted as low as 40 m.m., although the majority in this group reacted about 90 m.m. In the normosensitive group the majority of patients reacted about 150 m.m.

Lewis's Test. (10) requires the subject to grasp a metal bar and perform isometric contractions at a constant rhythmic rate until pain occurs. The metal bar is fixed on the under-side edge of a small table top and to it is attached a small index finger rest. The subject grasps the edge of the table with the index finger applied to the finger rest at one end of the bar. With each grasp this end of the metal bar is pressed upon a thick-walled rubber bulb from which a tube leads to a recording stylus. The grasping movements are made at the rate of one per second and develop a tension of 20 to 28 lbs. These vigorous gripping movements exercise the flexor muscles of the forearm and hand. Pain begins between the 24th and 45th second, the rate of onset depending on the subject's sensitivity to pain. Native patients gained more relief from placebos than from morphine.

Hardy (11) has done a great service in surveying the many sensitivity tests and enumerates the requirements of an adequate method for measuring the pain threshold as follows:
The Hardy Dolorimeter. (II).

This instrument developed by Hardy and his colleagues, has attracted much attention in recent years. The dolorimeter produces pain by heating a small area of the skin. The stimulus can be carefully controlled and measured and these workers believe that when the heat causes tissue damage, pain is produced (Ila). This damage is the essential initiating factor in the chain of events that results in pain sensation. Under strictly controlled conditions, in subjects carefully trained to identify the exact moment of onset of pain, Hardy, Wolff and Goddell consider that pain threshold is uniform for all individuals and is remarkably stable (IIb).

There is some danger in comparing experimentally induced pain in a selected and conditioned group of individuals, with clinical pain in patients. These workers make this clear (IIc) and point out that previous experience, emotional state and individual interpretation of pain in terms of "symbol of threat" all modify the individuals response. This response they prefer to call "pain reaction" and conclude that "those who would deal with pain as therapists must concern themselves especially with reactions to pain". (IIc)

There are circumstances (IIe) when the pain threshold can be raised. In particular these workers have demonstrated this with the administration of analgesics. However, Keats, D'Alexander and Beecher (12) have shown that in a group of post-operative patients 20% gained more relief from placebos than from morphine.

Hardy (IIf) has done a great service in surveying the many sensitivity tests and enumerates the requirements of an adequate method for measuring the pain threshold as follows:-
1. The stimulus should be measurable and reproducible.

2. The instrument should be easily controlled.

3. There should be an adequate range of stimuli from threshold to maximum.

4. The instrument should cause minimal damage to the tissues.

5. It should be convenient to use.

6. There should be an end-point easily recognised by the patient.

To this list Keene adds:

"there is a further necessity, that of simplicity, both as regards the apparatus as it appears to the patient and as regards the application of the test. Though the stimulus must of necessity be 'noxious', the apparatus should merit that term as little as possible. From this point of view nothing could be better than the use of the human thumb as in Libman's original test; the simplest modification of which, enabling such a stimulus to be measured is the pressure algometer."
The Pressure Algometer.

Plate 1.
The Pressure Algometer After Use.

Reading at 3.5 Kg.  

PLATE 2.
At the end of the last century Cattell (13) of New York first described and used a pressure algometer. In this country a modification of the algometer was made by Rivers for Professor Henry Head (plate 1). Head (14) used this instrument for investigating lesions of the nervous system and he described it as follows:

"The instrument, as made in New York, consists of a cylindrical rod with a diameter of 7.5 cm, which runs into a large handle. Pressure upon the free end of this rod compresses a spring, and the amount of this pressure can be read off from the movement of a marker on a scale let into the handle. The observer holds the instrument in his hand and presses the free end of the rod on to the skin of the patient, who cries out as soon as pain is produced. The amount of pressure applied is read from the movement of the marker on the scale. But we found that this instrument was liable to give faulty readings, due to the mechanical difficulties in constructing an inverted balance that will read correctly. The modification we have used was suggested by Dr. Rivers, who superintended the manufacture of our instrument. There is no scale in the handle which contains only the spring to be compressed, but on the rod slides a scale so arranged that when pressure is made, and the rod is driven into the handle, the scale is pushed down upon the shaft of the rod. Immediately the patient calls out that the pressure has become painful, the instrument is removed and the rod springs out of the handle again carrying with it the scale, which remains at that point emerged from the handle at the moment of maximum pressure. A line drawn around the rod acts as an indicator, and the amount of pressure applied can be read off at leisure from the relation of this line to the measure on the scale. This scale is graduated in kilograms and pounds. (Plate 2)

We have found an algometer, constructed with these modifications of the greatest use. It will give different readings in the hands of each observer on account of variation in the manner and rapidity with which the instrument is applied. We therefore neglect all small differences, paying attention only to those so gross that it is certain there must have been some grave defect in the patient's power of appreciating the pain of pressure".

The same distinguished observer many years later in his "Studies in Neurology" (15) is still of the opinion that the instrument is a satisfactory one. However, he repeats his warning that:

"It will give different readings in the hands of each observer according to the variations in the manner and rapidity with which it is applied".

He adds significantly:

"but although the actual amount of pressure necessary to cause pain varies according to the personal equation, a comparison of the record on the normal and abnormal sides in the same patient shows a remarkable similarity with different skilled observers. At least three or more readings must be taken over every part examined, as the answers vary considerably according to the state of expectation in the patient's mind".
In this series of experiments the instrument used is exactly the same as that described above by Head. In using it one must carefully guard against the errors he mentioned. The following technique was first described by Keele and has been carried out in obtaining all the readings in this work.

**Technique for Use of the Pressure Algometer.**

On choosing a patient for testing he is first told that it is desirable to carry out a simple test to find out "how pain behaves in his nervous system". The patient is usually interested and co-operative. He is first shown the instrument and its simple mechanism demonstrated. As Keele pointed out it is important to remove any "fear or threat" that the instrument may create in the patient's mind. It is important to explain that this test does not set out to measure how much pain the person can stand. The test is to find out the level at which the sensation of pain is first felt. These explanations vary in degree of simplicity and are adapted to the intelligence and understanding of the patient. The patient lies on an examination couch in a relaxed, comfortable position with no third party present who might distract him and affect his response to the test. The instrument is placed on the patient's forehead, (Plate 3). It is held at right angles to the surface and it is pressed with a steady pressure until the patient cries "Stop". He is instructed to cry out when the sensation of pressure changes to one of pain. This occurs quite suddenly, making it simple for the patient to identify the end point. It is important that the pressure is applied at right angles to the surface since an oblique pressure, causing a drag on the skin, alters the sensation felt. It is also advisable to steady the applied end of the rod with the thumb and index finger of the examiner's left hand, pressure being applied to the instrument by the palm of the right hand; the instrument is thus easily controlled. As Head pointed out the rate at which
pressure is applied is important. A rate of 1 kilogramme per second is convenient. The examiner should practise applying pressure with the instrument at this rate. Three readings are taken in every case, one in the mid-line and one on each frontal region.

The forehead is chosen because it is easily accessible and has a relatively flat surface on which several points can be selected.

The Pressure Algometer in Use.
PAIN SENSITIVITY DISTRIBUTION IN 865 PERSONS (KELLE).
Pressure Algometry of a normal group of subjects.

Using the pressure algometer on a large number of normal persons chosen from all walks of life, Keele found the mean value of the pain threshold studied in this series was 2.6 kilogrammes, the range being from 0.5 to 6.0 kilogrammes or more. The distribution is shown in Fig. 1.

The practice deals almost entirely with working—Comparison with sensitivity distribution obtained by other methods.

Comparing his findings with those obtained by other methods, Keele found a great similarity in the results. He concluded that "The distribution of the three grades of sensitivity found by Libman's test, pressure algometry, Lewis's test and Hollander's test among normal persons, when compared, is shown to be similar."

Pressure algometry can thus be considered as an acceptable method of measuring pain sensitivity.

Over two hundred patients were examined and the results recorded. About fifty were re-examined subsequently and these results are also included.
Pressure Algometry in General Practice.

There is much scope for study of the individual variation to pain in general practice. The cases studied in this series were chosen at random during routine surgeries.

The material examined.

The practice deals almost entirely with working-class people employed in the local light industry, offices and at London Airport. The nature of general practice precluded adopting the method of unbiased selection in choosing the cases for testing. For example, very young children, because of fear or lack of co-operation are unsuitable subjects. There are occasions when introducing such a test at an interview or examination would be tactless. Very often pressure of work prevented tests being carried out. From the list of cases chosen it will be seen that a great variety of conditions were included, representing a fair sample of cases usually met with in general practice.

The selection has been made in as unbiased a fashion as possible. The patients chosen do not represent a cross section of the community but a selection of patients who attended this particular surgery during a period of about six months.

Method of recording results.

Over two hundred patients were examined and the results recorded. About fifty were re-examined subsequently and these results are also included.
The date of each test was recorded as was the age and sex of the patient. Three readings were taken in each case. Column R refers to the reading on the right frontal region, L the left frontal region, and M the mid-line.

In those cases where pain was a symptom, the patients were divided into two groups. One group (O) consisted of those cases in which it was reasonably certain that there was an organic basis for the pain. The other group (O.N.D.) consisted of those cases in which an organic basis could not be demonstrated as a cause for the pain. This group no doubt included cases of psychogenic pain, but not all of this group necessarily fell into this category, since the fact that an organic cause failed to be demonstrated did not mean that one did not exist.

In each case the presence or absence of emotional factors at play was noted and, where present, indicated in the tables by the letter "E". The presence of pain was indicated in the table by the letter "P".
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**Diagnosis:**

- Headache.
- Synovitis knee joint.
- Duodenal ulcer.
- Post coronary disease.
- Ulcerated carcinoma.
- Headache.
- Pain in chest.
- Tonsilitis.
- Tenosynovitis extensor tendons at wrist.
- Pain in thighs.
- Depression.
- Abdominal pain.
- Abdominal pain.
- Abdominal pain.
- Abdominal pain.
- Duodenal ulcer.
- Anxiety neurosis.
- Abdominal pain.
- Abdominal pain.
- Ankylosing spondylitis.
- Otitis media.
- Routine medical examination.
- Dysmenorrhoea.
- Pain in left renal area.
- Haemorrhoids.
- Pain in left side of chest.
- Abdominal pain.
- Anxiety neurosis.
- Headache, Hypertension.
- Slipped disc.
- Dyspepsia.
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<td>2.5</td>
<td>2.5</td>
<td>2.0</td>
<td>Pain in eye</td>
</tr>
<tr>
<td>199</td>
<td>10.2.56</td>
<td>F</td>
<td>25</td>
<td>3.0</td>
<td>3.2</td>
<td>3.0</td>
<td>Tonsillitis</td>
</tr>
<tr>
<td>200</td>
<td>10.2.56</td>
<td>F</td>
<td>36</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>Arthritis of cervical spine</td>
</tr>
<tr>
<td>201</td>
<td>10.2.56</td>
<td>M</td>
<td>50</td>
<td>3.0</td>
<td>3.0</td>
<td>3.5</td>
<td>Fractured rib</td>
</tr>
<tr>
<td>202</td>
<td>13.2.56</td>
<td>M</td>
<td>41</td>
<td>0.5</td>
<td>1.0</td>
<td>1.0</td>
<td>Psychoneurosis</td>
</tr>
<tr>
<td>203</td>
<td>13.2.56</td>
<td>M</td>
<td>35</td>
<td>2.0</td>
<td>3.0</td>
<td>2.5</td>
<td>Sub-ungual infection</td>
</tr>
<tr>
<td>204</td>
<td>17.2.56</td>
<td>M</td>
<td>39</td>
<td>1.5</td>
<td>2.0</td>
<td>2.0</td>
<td>Hemaena</td>
</tr>
<tr>
<td>205</td>
<td>19.2.56</td>
<td>M</td>
<td>74</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>Angina of effort</td>
</tr>
<tr>
<td>206</td>
<td>21.2.56</td>
<td>M</td>
<td>53</td>
<td>4.0</td>
<td>4.5</td>
<td>5.0</td>
<td>Hiatus hernia</td>
</tr>
<tr>
<td>207</td>
<td>21.2.56</td>
<td>M</td>
<td>36</td>
<td>2.0</td>
<td>1.5</td>
<td>2.0</td>
<td>Schizophrenia</td>
</tr>
<tr>
<td>208</td>
<td>22.2.56</td>
<td>F</td>
<td>31</td>
<td>1.0</td>
<td>1.0</td>
<td>0.8</td>
<td>Pain in chest</td>
</tr>
<tr>
<td>Case No.</td>
<td>Date</td>
<td>Sex</td>
<td>Age</td>
<td>R</td>
<td>L</td>
<td>M</td>
<td>Diagnosis</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>209</td>
<td>27.2.56</td>
<td>M</td>
<td>37</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
<td>Strained abdominal muscle</td>
</tr>
<tr>
<td>210</td>
<td>5.3.56</td>
<td>F</td>
<td>32</td>
<td>1.2</td>
<td>1.0</td>
<td>1.5</td>
<td>Headache</td>
</tr>
<tr>
<td>211</td>
<td>5.3.56</td>
<td>F</td>
<td>69</td>
<td>1.0</td>
<td>0.5</td>
<td>0.2</td>
<td>Anxiety neurosis</td>
</tr>
<tr>
<td>212</td>
<td>8.3.56</td>
<td>M</td>
<td>47</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Back ache</td>
</tr>
<tr>
<td>213</td>
<td>8.3.56</td>
<td>M</td>
<td>47</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Infection of finger</td>
</tr>
<tr>
<td>214</td>
<td>12.3.56</td>
<td>M</td>
<td>15</td>
<td>1.5</td>
<td>1.0</td>
<td>1.2</td>
<td>Gyneacometia</td>
</tr>
<tr>
<td>215</td>
<td>13.3.56</td>
<td>M</td>
<td>61</td>
<td>7.0</td>
<td>6.0</td>
<td>7.0</td>
<td>Hypertension</td>
</tr>
<tr>
<td>216</td>
<td>14.3.56</td>
<td>M</td>
<td>47</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>PND Painful elbow</td>
</tr>
<tr>
<td>217</td>
<td>14.3.56</td>
<td>M</td>
<td>45</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Abdominal pain</td>
</tr>
<tr>
<td>218</td>
<td>14.3.56</td>
<td>F</td>
<td>21</td>
<td>2.5</td>
<td>2.5</td>
<td>2.0</td>
<td>Acne vulgaris</td>
</tr>
<tr>
<td>219</td>
<td>14.3.56</td>
<td>F</td>
<td>36</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>Odema of ankles</td>
</tr>
<tr>
<td>220</td>
<td>14.3.56</td>
<td>M</td>
<td>19</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>Sprained ankle</td>
</tr>
<tr>
<td>221</td>
<td>14.3.56</td>
<td>F</td>
<td>37</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Abdominal pain, Pregnancy</td>
</tr>
<tr>
<td>222</td>
<td>15.3.56</td>
<td>F</td>
<td>39</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>Rectal abscess</td>
</tr>
<tr>
<td>223</td>
<td>15.3.56</td>
<td>M</td>
<td>38</td>
<td>3.4</td>
<td>3.0</td>
<td>4.0</td>
<td>E Bronchitis</td>
</tr>
<tr>
<td>224</td>
<td>15.3.56</td>
<td>F</td>
<td>25</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Ante-natal examination</td>
</tr>
<tr>
<td>225</td>
<td>15.3.56</td>
<td>M</td>
<td>43</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>PND Bruised rib</td>
</tr>
<tr>
<td>226</td>
<td>15.3.56</td>
<td>M</td>
<td>73</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>Post-herpetic neuralgia</td>
</tr>
<tr>
<td>227</td>
<td>16.3.56</td>
<td>M</td>
<td>29</td>
<td>2.0</td>
<td>3.0</td>
<td>2.0</td>
<td>Sprained ankle</td>
</tr>
<tr>
<td>228</td>
<td>16.3.56</td>
<td>M</td>
<td>27</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>PND Backache, Pregnancy</td>
</tr>
<tr>
<td>229</td>
<td>16.3.56</td>
<td>F</td>
<td>22</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>Abdominal pain</td>
</tr>
<tr>
<td>230</td>
<td>16.3.56</td>
<td>M</td>
<td>35</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>Paralysis of shoulder muscles</td>
</tr>
<tr>
<td>231</td>
<td>16.3.56</td>
<td>F</td>
<td>25</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Post-natal uterine descent</td>
</tr>
<tr>
<td>232</td>
<td>16.3.56</td>
<td>F</td>
<td>36</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>Parametritis</td>
</tr>
<tr>
<td>233</td>
<td>17.3.56</td>
<td>M</td>
<td>47</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>PND Pain in chest</td>
</tr>
<tr>
<td>234</td>
<td>19.3.56</td>
<td>F</td>
<td>29</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>PND Tonsillitis</td>
</tr>
<tr>
<td>235</td>
<td>19.3.56</td>
<td>F</td>
<td>17</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>PND Painful toe</td>
</tr>
<tr>
<td>236</td>
<td>20.3.56</td>
<td>F</td>
<td>22</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>E Palpitation</td>
</tr>
<tr>
<td>237</td>
<td>20.3.56</td>
<td>F</td>
<td>24</td>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>PND Mastitis</td>
</tr>
<tr>
<td>238</td>
<td>20.3.56</td>
<td>F</td>
<td>27</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>PND Backache</td>
</tr>
<tr>
<td>239</td>
<td>20.3.56</td>
<td>F</td>
<td>41</td>
<td>0.5</td>
<td>1.0</td>
<td>0.8</td>
<td>PND Abdominal pain</td>
</tr>
<tr>
<td>240</td>
<td>21.3.56</td>
<td>F</td>
<td>31</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>Post miscarriage</td>
</tr>
<tr>
<td>241</td>
<td>22.3.56</td>
<td>M</td>
<td>35</td>
<td>3.0</td>
<td>3.5</td>
<td>3.5</td>
<td>PND Post dental extraction</td>
</tr>
<tr>
<td>242</td>
<td>24.3.56</td>
<td>M</td>
<td>39</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>PND Rhinitis</td>
</tr>
<tr>
<td>243</td>
<td>24.3.56</td>
<td>M</td>
<td>43</td>
<td>2.0</td>
<td>2.0</td>
<td>2.5</td>
<td>E Anxiety neurosis</td>
</tr>
<tr>
<td>244</td>
<td>7.5.56</td>
<td>F</td>
<td>35</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>PND Joint pain</td>
</tr>
<tr>
<td>245</td>
<td>3.5.56</td>
<td>M</td>
<td>20</td>
<td>4.5</td>
<td>5.0</td>
<td>4.5</td>
<td>PND Acute tonsillitis</td>
</tr>
<tr>
<td>246</td>
<td>2.3.57</td>
<td>M</td>
<td>44</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>PND Pleural effusion</td>
</tr>
<tr>
<td>247</td>
<td>12.3.56</td>
<td>F</td>
<td>37</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>PND Pain in chest</td>
</tr>
</tbody>
</table>
Accuracy of the readings.

In each test the three readings were averaged to the nearest 0.5 kgm. The distance between each kgm on the scale is approximately 1.5 mm, which limits the degree to which fractions of kgms can be judged visually. In the above tables it will be noted that readings were taken to the nearest 0.1 kgm. However, when the average was estimated the figure was taken to the nearest 0.5 kgm. This degree of accuracy of the instrument permits its use in grouping the results into three categories, or sensitivities, two with a range of 1.5 kgm, and the third with a range of 3 kgm.

Errors in identifying the end point.

There are two possible sources of error in identifying the end point of the test:

The patient error: There is the possibility of the patient failing for some reason to cry "stop" when he first feels pain.

Hardy and his co-workers make use of the galvanic skin response to indicate the moment of reaction to pain. They used this sudden change in electrical potential, which occurs in the skin on exposure to stressful situations, as the end point. They consider that this is an accurate method of indicating the exact moment of tissue damage.

In practice using a skin galvanometer makes the procedure more complicated and elaborate and it has been shown by Landis and De Wick (16) that, in addition to stressful conditions, many other emotional states may affect the skin electrical state. Skin temperature, muscle activity and respiration can produce deflections in the skin galvanometer.

Careful explanation beforehand eliminates gross errors due to the patient misunderstanding what is required of him. In the experience of this worker, this misunderstanding can be recognised as a marked difference between the first and subsequent readings. Adopting Keele's procedure, this
error can be excluded by repeating the test "on different areas until constant readings are obtained on three occasions".

**Observer error:** The second possible source of error might be on the part of the observer. There may be a discrepancy between the moment the patient cries out, and the moment the observer ceases applying pressure.

A series of tests were made to measure the possible extent of this error.

It was thought that there was a likelihood of a delay in the observer reacting to the patient's cry of "stop".

A rough model of a patient was made and laid on the examination couch. An assistant wrote out a series of readings from 0 to 6 kgm. The instrument was applied to the "forehead" in the usual way and the assistant carefully watched the indicator on the algometer. When the predetermined reading was reached he cried out "stop". The observer then took the reading on the algometer and after several "tests" were carried out, both sets of figures were compared.

The following are these figures:

<table>
<thead>
<tr>
<th>Readings at which the cry &quot;stop&quot; was made.</th>
<th>Readings when the pressure applied ceased.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kg.</td>
<td>1.5 kg.</td>
</tr>
<tr>
<td>2 kg.</td>
<td>2.5 kg.</td>
</tr>
<tr>
<td>3 kg.</td>
<td>3.5 kg.</td>
</tr>
<tr>
<td>4 kg.</td>
<td>4.5 kg.</td>
</tr>
<tr>
<td>5 kg.</td>
<td>5.5 kg.</td>
</tr>
<tr>
<td>6 kg.</td>
<td>6.5 kg.</td>
</tr>
</tbody>
</table>

...
Readings at which the cry "stop" was made.  
Readings when the pressure applied ceased.

<table>
<thead>
<tr>
<th>2.5 kg.</th>
<th>3 kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>0.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

It can be seen that where an error exists it is one of "over-reading" and in no case was the error greater than 0.5 kilogrammes.

It was first thought that the chance of over-reading at low pressures was greater than it was at high pressures. It was thought that the observer might be taken by surprise by an early cry of "stop" and the pressure would be continued by the momentum of the test. At the other extreme, however, there might be greater anticipation by the observer of the end point as the application of pressure increased and the fear of causing the patient harm increased. This would reduce the tendency to over-read at high pressure.

The figures were subjected to a statistical analysis by Mr. Trevor David, B.Sc. (Econ.), to whom I am greatly indebted for advice.

He writes "Among the small groups of test measurements there are 21 at true pressures of 2.5 kilos or less and 13 at true pressures of 3.0 kilos or more. Among the first group there were 9 cases of over-reading and among the second only 2 such cases. It would appear that the chance of over-reading at low pressures is greater than the chance of doing so at high pressure. However, the difference is not statistically significant; the difference between the proportions over-read at pressures less than 2.5 kilos and at pressures greater than 3.0 kilos is \( \frac{9}{21} - \frac{2}{13} = 0.274 \) and to be significant at the 5% level the difference would have to be greater than:

\[
2 \sqrt{\frac{34}{11} \cdot \frac{23}{34} \left( \frac{1}{21} + \frac{1}{13} \right)} = 0.33.
\]
Consistency of the test.

When the same patient was examined on different occasions only small variations were found in the results.

Case 1: $0.5 \ 0.5 \ 0.5$

Case 7: $1.5 \ 2.0 \ 2.0$

Case 4: $0.75 \ 0.5 \ 0.2$

Case 14: $0.5 \ 0.5 \ 0.5$

In all, over fifty cases were examined on more than one occasion, and in no instance was it necessary to alter the sensitivity grouping of the patient. In many of the repeat tests the patient presented with an altered or different clinical condition.

From this it would appear that the sensitivity of a patient, as measured by the pressure algometer, is a stable entity.
Fig 2.

Distribution of sensitivity in 200 normal people. (after Kuss).

Distribution of sensitivity in 200 patients seen at surgery.
Analysis of Results.

The distribution of pain sensitivity in 200 surgery attenders.

Fig. 2 shows the curve representing the distribution of pain sensitivity in 200 surgery attenders. This distribution differs from that found by Keele in his group of "normals". Keele's group, which contained 363 individuals, was converted into an equivalent group of 200, (Fig. 2) to make comparison with the surgery patients easier. The following shows the two groups compared according to the three sensitivity ranges:

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Keele's group</th>
<th>Surgery group</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Kg m. - 1.5 Kg m.</td>
<td>24%</td>
<td>52%</td>
</tr>
<tr>
<td>1.5 Kg m. - 3.0 Kg m.</td>
<td>57%</td>
<td>36%</td>
</tr>
<tr>
<td>3.0 Kg m. and over</td>
<td>19%</td>
<td>12%</td>
</tr>
</tbody>
</table>

There are significantly more hypersensitives in the surgery group than in the group chosen at random from the population as a whole. There are correspondingly less in the normosensitive and hyposensitive ranges in the surgery attenders than in the normal group.

The sex relationship to pain sensitivity.

Sherman (17), using Hollander's method, found that in 260 routine surgery attenders 75% of the hypersensitives were female. In this investigation 63% of the hypersensitives were female. Sherman also noted that 90% of his hyposensitives were male. The corresponding figure in this investigation was 72%.

Wilder (18) using the Hollander method examined 394 patients in the Mayo Clinic. His results also show that the pain threshold is higher for men than for women.

Fig. 3 represents the distribution of pain sensitivity in 100 successive male surgery attenders, and of 100 successive female surgery attenders. An analysis of these two groups is as follows:

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Kg m. - 1.5 Kg m.</td>
<td>42%</td>
<td>65%</td>
</tr>
<tr>
<td>1.5 Kg m. - 3 Kg m.</td>
<td>40%</td>
<td>23%</td>
</tr>
<tr>
<td>3 Kg m. and over</td>
<td>18%</td>
<td>7%</td>
</tr>
</tbody>
</table>

This shows that there are appreciably more female hypersensitives amongst surgery attenders than there are male.
Fig. 5.

Distribution of Sensitivity in 100 Successive Female Surgery Attendees.

100 Successive Male Surgery Attendees.

Pressure in Kgs.

Number of Persons.
Detecting an organic basis for pain.

The search for an organic basis takes place each time a patient complaining of pain is examined. Often it is an easy matter to be certain that there is an organic basis to the pain, but this is not always so. Demonstrability of the cause of pain depends on several variable factors. Not the least important of these is the clinical ability of the investigator and the laboratory and other special diagnostic facilities available to him.

Because the facilities for investigation in general practice are limited, as is often the time for full physical examination, there is a danger of overlooking the organic cause of pain.

Recent correspondence in the journals indicate that some practitioners rate the incidence of neurosis as high as 40% amongst surgery attenders, many of whom complain of pain. It is worth recalling Larke's maxim that "The easiest pain of all to bear is that suffered by another", and Fry's sober remark that "All neurotics eventually die of organic disease". Keeping in mind the possibility that the pain complained of may be organically induced, all cases in the present series were classified as having either a definite organic basis, or that an organic basis had not been demonstrated. It was thought that the latter group was more appropriately described thus than to be labelled as "functional".

Cases where an organic basis was not demonstrated.

This group consists of the following three types of cases:

1. "Functional" cases. Here the pain is psychogenic. Of this type of case Walshe (19) writes, having first described the pathway of organic pain, "\ldots none of these anatomical or physiological processes is involved, and the symptoms so named have no sensory quality to which the term 'pain' can rightly be applied. They are not
primary sensations but complex states of mind, emotionally
toned ideas .... using the word 'pain' figuratively because
he cannot more adequately describe the distress of mind from
which he suffers. Thus stated the difference between
physiogenic and psychogenic pain should be clear".

In practice, however, it often happens that the
sufferer of psychogenic pain gives a description of his
symptoms which differs little from sensations originating
from parts of the body outside the psyche.

2. Hypersensitivity. The patient who is very sensitive to
pain will respond to noxious stimuli originating from minor
lesions or from slight deviations from normal function. These
conditions may not be easily demonstrable by the usual
clinical methods. Because of this the hypersensitive may
complain of pain when there is no apparent physical cause.

3. Misdagnosis. This element may always be present. In
general practice there is continuity of observation of the
patient and so one's mistakes come home to roost. In this
series it is hoped that the number of cases in this category
are sufficiently small so as not to affect the results
materially. So far, subsequent observation in the year
following the recording of most of the readings has resulted
in no alteration of diagnosis.
Pain sensitivity and the detectability of an organic basis for pain.

169 surgery attenders complaining of pain were divided into two groups as described on page 11. Group O consisted of 104 cases and group OMD 65. The distribution of sensitivity is shown in Fig. 4.

Analysis of the two groups.

<table>
<thead>
<tr>
<th>Pressure range</th>
<th>Group O</th>
<th>Group OMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Kg. - 1.5 Kg.</td>
<td>37%</td>
<td>72%</td>
</tr>
<tr>
<td>1.5 Kg. - 3.0 Kg.</td>
<td>34%</td>
<td>22%</td>
</tr>
<tr>
<td>3 Kg. and over</td>
<td>17%</td>
<td>6%</td>
</tr>
</tbody>
</table>

This analysis shows that there are many hypersensitivities in the group of cases where an organic cause for pain could not be demonstrated.

It should be noted that of the two curves in Fig. 4, the one representing cases with an organic basis approximates nearer in distribution to Keele's normal group.

Sherman in his investigation of surgery patients using Hollander's method, divided his patients into two groups, those with organic disease and those suffering from "functional"ailments. In the latter group were "...... cases of nervousness, chronic exhaustion, anxiety neuroses, and those with vague and ill-defined pains". His results were as follows:

Functional disease (130 cases). Organic disease (130).

30% **** Hypersensitive **** 6%
54% **** Normosensitive **** 77%
16% **** Hyposensitive **** 17%

Sherman concluded that "...... patients with organic disease have a higher threshold to pain than those with functional disease".
Wilder in his series correlated hypersensitivity with functional and organic disease and with the sex of the patient.

His results were as follows:

37% of males with functional disease were hypersensitive.
75% of females with functional disease were hypersensitive.
21% of males with organic disease were hypersensitive.
53% of females with organic disease were hypersensitive.

He concluded that the pain sensitivity level of patients with functional disease was significantly lower than those with organic disease.

Saul (23), using Lidsen's method, discovered with 100% of American Indians of the Pacific tribes were hypersensitive to pain. He reported that they were able to endure great hardship with apparent equanimity. The same investigator noted that in a group of 97 publicans in the State of New York who were registered with the State Board of Control, 90% were hypersensitive to pain.

Sharman investigated a large group of Canadian miners. He discovered that 75% were hypersensitive to pain, the remainder were nonsensitive. He stated that they all agreed that working in the mines for years had increased their sensitivity considerably. Most of them, on being questioned, had had no major illnesses, and spoke very lightly of such ailments as tonsillitis, influenza, wounds and accidents.

He concluded that hazardous occupation over a period of years may result in raising a patient's pain threshold.
The emotional state of the patient.

When a patient experiences pain, due to an organic cause or not, his emotional state is involved to a greater or lesser degree. Guttman and Mayer (20) state that pain sensation cannot be separated from its emotion.

Becher (21) described soldiers being unaware of battle wounds during the excitement on the battlefield. This phenomenon is described by Wolf and Ripley (22) as an alteration in the perception of pain which was conducive to a biological adaptation. They described P.O.W.'s, who in the face of physical torture, could "turn off the pain". Such extremes of environment are very special examples but they serve to demonstrate the interplay that exists between pain and the emotions. Pain can influence the emotions which in turn can modify the pain, as indicated in the table by the letter "e".

Other modifying psychological factors.

Heredity, upbringing, previous experience of pain, environment, all are important modifying factors.

Saul (23), using Libman's method, discovered that 100% of American Indians of the Pueblo tribe were hyposensitive to pain. He reported that they were able to endure great hardship with apparent equanimity. The same investigator noted that in a group of 97 pugilists in the State of New York who were registered with the State Board of Control, 90% were hyposensitive to pain.

Sherman investigated a large group of Canadian miners. He discovered that 75% were hyposensitive to pain, the remainder were normosensitive. He stated that "They all agreed that working in the mines for years had toughened them considerably. Most of them on being questioned had had no major illnesses, and spoke very lightly of such ailments as tonsillitis, influenza, wounds and abscesses." He concluded that hazardous occupation over a period of years may result in raising a patient's pain threshold.
to the hyposensitive range.

As would be expected the above special groups of individuals contrast with surgery attenders, amongst whom are found so many hypersensitives and individuals who display emotional instability.

During the examination of a patient a general impression develops in the mind of the examiner of the extent to which psychological factors are at play which might modify the pain. The patient and his background is usually already familiar to the family doctor. He notes the demeanour of the patient, the content of the history and the way in which it is delivered, the reactions of the patient during the physical examination, and from this can often decide the extent to which emotional disturbance is present. Where it was thought that this element was present to a significant degree is indicated in the tables by the letter "E".

The total of cases where emotional disturbance was present was 59; distributed as follows:

- Hypersensitive: 26
- Normosensitive: 23
- Hyposensitive: 10

This shows that emotional disturbance is found more frequently among hypersensitives.

The total of "E" cases in group 6 was 17 (16%).

The total of "E" cases in group 0 was 42 (6%).

From this it can be seen that emotional disturbance was more evident amongst those cases where no organic basis for pain could be demonstrated.

The distribution of emotional disturbance is shown as the stippled areas in Fig. 4.
Distribution of cases showing emotional ("E") disturbance.

Organic Basis: Total - 104 cases.

Group 0:
- Male 60 (58%) 6 "E" cases (1%).
- Female 44 (42%) 5 "E" cases (12%).

Pressure Readings

<table>
<thead>
<tr>
<th>Male (&quot;E&quot;)</th>
<th>Female (&quot;E&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 kgm.</td>
<td>1</td>
</tr>
<tr>
<td>0.5</td>
<td>3</td>
</tr>
<tr>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>2.5</td>
<td>1</td>
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<tr>
<td>3.0</td>
<td>1</td>
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<tr>
<td>3.5</td>
<td>1</td>
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<tr>
<td>4.0</td>
<td>1</td>
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<tr>
<td>4.5</td>
<td>1</td>
</tr>
<tr>
<td>5.0</td>
<td>1</td>
</tr>
<tr>
<td>5.5</td>
<td>1</td>
</tr>
<tr>
<td>6.0</td>
<td>1</td>
</tr>
</tbody>
</table>

Organic Basis: Not Organically Related: Total - 65 cases.

Group OND:
- Male 27 (42%) 13 "E" cases (52%).
- Female 38 (58%) 23 "E" cases (74%).

Pressure Readings

<table>
<thead>
<tr>
<th>Male (&quot;E&quot;)</th>
<th>Female (&quot;E&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 kgm.</td>
<td>1</td>
</tr>
<tr>
<td>0.5</td>
<td>6</td>
</tr>
<tr>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td>2</td>
</tr>
<tr>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>3.0</td>
<td>1</td>
</tr>
<tr>
<td>3.5</td>
<td>1</td>
</tr>
<tr>
<td>4.0</td>
<td>1</td>
</tr>
<tr>
<td>4.5</td>
<td>1</td>
</tr>
<tr>
<td>5.0</td>
<td>1</td>
</tr>
<tr>
<td>5.5</td>
<td>1</td>
</tr>
<tr>
<td>6.0</td>
<td>1</td>
</tr>
</tbody>
</table>

The total of cases where emotional disturbance was present was 59; distributed as follows:
- Hypersensitive 36 (61%)
- Normosensitive 19 (32%)
- Hyposensitive 4 (7%)

This shows that emotional disturbance is found more frequently among hypersensitives.

The total of "E" cases in group 0 was 17, (16%).

The total of "E" cases in group OND was 42, (64%).

From this it can be seen that emotional disturbance was more evident amongst those cases where no organic basis for pain could be demonstrated.

The distribution of emotional disturbance is shown as the stippled areas in Fig. 4.
Sensitivity to pain and demand for medical attention.

In general practice it is not easy to record accurately the extent to which an individual patient demands medical attention. Recording attendances at the surgery may appear to be a good indication of demand, but whilst this may be true of many cases it is not always so. This age of highly organised health services requires the patient, not at work because of some disability, to attend his doctor at weekly intervals to obtain the requisite certification. The patient attends the doctor not because of some pressing medical reason but because the State requires it. There are also the occasions when patients make an unorthodox approach. With the surgery waiting-room full, messages and requests for advice arrive via the receptionist. There are times when the doctor is accosted in the street and consulted, or when on a visit is asked to see another member of the family, or even the neighbour next door, "to save a visit to the surgery". There are also occasions when the doctor is asked for advice by telephone.

In recent surveys of general practice, demand for attention is assessed by the number of "items of service" carried out by the doctor. An "item" being any single occasion on which a doctor performs a medical service of any nature for his patient.

In this survey, attendance because of statutory reasons is ignored and not counted as demand for medical attention. The "items of service" referred to are those where it was based on spontaneous action by the patient to see, or to obtain medical advice from, his doctor.

Taylor (24) gives the figure of 5 - 6 items of service per annum as being a national average. Many observers consider that this is a low estimate.
Figs. Sensitivity and Demand for Medical Attention.

Frequent Demand:
(15+ items per annum)

Moderate:
(5 - 15 items per annum)

Infrequent:
(less than 5 items per annum)

Pressure in Kgyms.

Number of patients (expressed as a percentage)
Three categories were decided upon, frequent, moderate, and infrequent demands. Frequent demands were 15 or more items per annum, moderate between 5 and 15 items, and infrequent were less than 5.

215 patients were grouped accordingly and the results are shown as follows:

<table>
<thead>
<tr>
<th></th>
<th>Infrequent</th>
<th>Moderate</th>
<th>Frequent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypersensitives</td>
<td>2</td>
<td>37</td>
<td>49</td>
</tr>
<tr>
<td>Normosensitives</td>
<td>14</td>
<td>63</td>
<td>13</td>
</tr>
<tr>
<td>Hyposensitives</td>
<td>21</td>
<td>11</td>
<td>nil</td>
</tr>
</tbody>
</table>

The diagram, (Fig. 5) indicates more clearly how the demand for medical attention is related to sensitivity.

The hypersensitives make the greatest demand, 79% of the frequent group. This drops to 32% of the moderate group and only 6% of the infrequent group.

56% of the infrequent demanders are hyposensitive, and form only 10% of the moderate group, and no hyposensitives were found in the frequent group.

The greatest demand on the doctor is made by the hypersensitive and the least by the hyposensitive. The normosensitive's demands fall between these two extremes.
Summary of Results.

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Hyper-sensitive</th>
<th>Normal-sensitive</th>
<th>Hypo-sensitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keele's normal group</td>
<td>24%</td>
<td>57%</td>
<td>19%</td>
</tr>
<tr>
<td>Surgery attenders</td>
<td>52%</td>
<td>36%</td>
<td>12%</td>
</tr>
<tr>
<td>Males</td>
<td>42%</td>
<td>40%</td>
<td>18%</td>
</tr>
<tr>
<td>Females, I.E.</td>
<td>65%</td>
<td>28%</td>
<td>7%</td>
</tr>
<tr>
<td>Organic basis of pain demonstrated</td>
<td>37%</td>
<td>46%</td>
<td>17%</td>
</tr>
<tr>
<td>Organic basis of pain not demonstrated</td>
<td>72%</td>
<td>22%</td>
<td>6%</td>
</tr>
<tr>
<td>Frequent demands</td>
<td>79%</td>
<td>21%</td>
<td>nill</td>
</tr>
<tr>
<td>Moderate demands</td>
<td>32%</td>
<td>58%</td>
<td>10%</td>
</tr>
<tr>
<td>Infrequent demands</td>
<td>6%</td>
<td>38%</td>
<td>56%</td>
</tr>
<tr>
<td>Emotional disturbance</td>
<td>61%</td>
<td>32%</td>
<td>7%</td>
</tr>
</tbody>
</table>

From the above summary one can determine the clinical features most likely to be associated with each of the sensitivity groups.

**Hypersensitivity**
- Associated with Surgery attenders.
- Frequent demands for medical attention.
- Pain from non-demonstrable organic cause.
- Females.
- Emotional disturbance.

**Normosensitivity**
- Associated with Normal group.
- Moderate demands for medical attention.
- Pain from organic cause.
- Males.
- Less emotional disturbance.

**Hyposensitivity**
- Associated with Small group of individuals, fewer in surgery than in normal walk of life.
- Very infrequent medical demands.
- Pain from organic cause.
- Males.
- Least emotional disturbance.

Clinical characteristics which have been deduced statistically can only refer to a majority of cases. The others will not completely fit into the picture typical of the group. However, it will be seen in the cases that follow, that in many instances knowledge of the pain sensitivity makes a contribution towards the fuller understanding of the patient.
The cases now to be described represent a fair sample from each of the three sensitivity groups. As will be seen they are typical of many cases seen in general practice. In those cases referred to hospital, reports are freely quoted.

Cases from the Hypersensitive Group

Case 203, I.H. Age 31.
Occupation: Housewife
Readings: 1.0 1.0 0.3
Complaint: Pain in the chest.

This patient, who is a cheerful intelligent woman, complained frequently of pain in both mammary regions. Repeated examination revealed no abnormality. It was found that alkales and small amounts of sodium amytaul gave relief. Her symptoms persisted and she was referred to hospital for investigation.

Previous history. This patient had a similar attack eight years ago when she was pregnant. The onset of this episode dated from the sudden death of her mother a year previously from sub-arachnoid haemorrhage.

Hospital report.
"On examination I could find no abnormality apart from hypersensitivity to pain which you mention. X-ray of the chest shows the lungs to be clear. Heart normal in size and shape. Barium meal shows no abnormality in the oesophagus, stomach or duodenum. I think you are quite right in putting her into the group of hypersensitives. There is no detectable organic lesion."

Comment: Because of the relation of symptoms to emotional disturbance, this patient's pain might have a purely psychological basis. However, because of her hypersensitivity to pain, it may be that her symptoms arise from a non-detectable lesion or to dysfunction which would not cause pain in the normosensitive.

The patient was greatly reassured following her hospital investigation. Being informed that she was very sensitive to pain, and so pain she might feel was not necessarily significant, has been a great help to her. Her surgery attendances have decreased but she still requires occasional mild sedation and alkales.
This patient, although he lives across the road from the surgery, seldom seeks medical advice. He is an intelligent active man, is happily married and has two children. He came to an evening surgery complaining of severe abdominal pain.

History: The abdominal pain began after a snack lunch in the office. This consisted of spaghetti and meat-pie followed by a glass of beer. His pain began two hours after the meal. He vomited several times and this gave him some relief. He had a normal bowel motion that morning and had passed some flatus in the afternoon. He stated that he had occasional indigestion after meals.


Pressure readings as above (22.9, 55).

The patient was advised to return home to bed and he was given Mist., Mag., Trisil, Co. He was to send a message if the pain had not subsided within an hour. His wife arrived after this time to inform me that the pain was now more severe. A consultant surgeon was called for his opinion. He decided that the patient was suffering from an acute abdominal catastrophe, either a leaking perforation or an atypical appendicitis, and he advised an exploratory laparotomy. This was performed the same night and the following is the account:
"Right upper paramedian incision. No free fluid found in abdomen. First part of duodenum normal. Stomach normal. Lesser sac opened, no abnormality found. Gall bladder normal. Spleen normal. Appendix normal. The whole of the gut was brought to the surface, examined and found normal. The large gut was traced from caecum to the rectum and found to be normal.

Procedure: Hole in the lesser sac closed. Appendicectomy performed.

Closure: Wound closed in layers with sutures to the skin.

Post-operative progress. Apart from a slight rise of temperature on the fourth day this patient made an uneventful recovery.

During his stay in hospital this patient had a complete urinalysis, an intravenous pyelogram and an x-ray of the chest, all of which were completely normal. The patient was soon back at work and since then he has had no recurrences of his pain. 97°F, Pulse 100.

This patient has been ill once again in February, 1957. He then had slightly inflamed tonsils and a temperature of 100°F. He complained of severe pain when swallowing, had severe headache, occipital muscle tenderness, slight neck rigidity and was photophobic. The condition rapidly improved on routine treatment for his throat infection.

Comment: On the first occasion this patient probably had acute indigestion but this simulated an acute abdomen warranting laparotomy. On the second occasion, tonsillitis produced severe symptoms.

The severity of the pain, in both these instances due to minor conditions, could be attributed to the hypersensitivity shown by his low algometer readings.

Subsequent history: This patient developed a recurrence of acute abdominal pain on 29.10.55. It had a sudden onset and in many ways appeared similar to the previous attack. As before the only positive finding was some tenderness in the lower abdomen.

Pressure readings were taken and were found to be low. Some hours previously she had had a large meal of fried food followed by a generous helping of bananas and cream.

She was giventabs. Norbental (Dicyclomine Hydrochloride)
Case 78. G.G.  
Age 24.  
Occupation: Housewife.  
Readings: 1.0 0.5 0.3  
Complaint: Abdominal pain.  
Organic cause for pain not demonstrated.  
Moderate medical demands.  
Emotional disturbance absent.  

History: This patient is a young healthy housewife, happily married and has one small child.  

On the first occasion (15.8.55) she was seen by my partner late at night complaining of acute abdominal pain.  
The pain was colicky and severe. At first it was present in the centre of the abdomen and then moved to the lower abdomen.  
She had vomited once, and had had a normal bowel motion some hours previously. There were no urinary symptoms.  

Examination: Temperature 97 F. Pulse 100.  
Tongue coated. Nothing abnormal detected in the chest, cardio-vascular system, or genito-urinary system. Recently had been confined at home. First baby. Pregnancy and confinement normal. Periods now normal and regular. Last monthly period one week ago.  
The abdomen was soft. Bowel sounds were heard.  
Tenderness in the right iliac fossa. No rigidity. No mass palpable. Nothing abnormal detected per rectum.  
The patient was admitted to hospital as a possible case of acute appendicitis.  

Hospital report:  
"..... your patient was admitted overnight on 15.8.55 suffering from abdominal pain which subsided immediately after admission. No abnormality was found on examination and x-ray of the chest and abdomen were normal."  

Subsequent history: This patient developed a recurrence of acute abdominal pain on 20.10.55. It had a sudden onset and in many ways appeared similar to the previous attack. As before the only positive finding was some tenderness in the lower abdomen.  
Pressure readings were taken and were found to be low. Some hours previously she had had a large meal of fried food followed by a generous helping of bananas and cream.  
She was given tabs. Merbentyl (Dicyclomine Hydrochloride)
10 mgms. every two hours by mouth until the pain subsided. The pain quickly subsided and next morning the patient was carrying on with her household duties as normal.

Comment: There is some similarity between this case and the previous one. The cause of the pain was probably due to dietary indiscretion. There have been no further incidents reported since the above attack. This might be due to greater dietary care or, since the patient has been informed about her hypersensitivity, to a simple acceptance of the pain when it occurs

and considers herself a martyr to her illness which she bears cheerfully. She is co-operative but has little insight into her condition. She is happily married but has worries due to overcrowding at home. Her married son and his family live with her and relations with them are strained.

1949. She then complained of left mammary pain and palpitation. She was fully investigated as an out-patient.

Summary of the report: "No abnormality of the cardio-vascular system. X-ray of the chest showed no abnormality of the lungs. The cardiac shadow is normal. The only positive finding was a slight opacity of the axillary antrum."

1949. Referred to hospital for an E.S.T. opinion in 1949 and treated with ephedrine nasal drops. Of her present symptoms the specialist wrote: "These are due to dryness of pharynx secondary to mild dry rhinitis, the whole condition being aggravated by menopausal symptoms."

1950. Admitted to hospital suffering "from a small anal fissure associated with extreme spasm of her sphincters. The sphincter was dilated under a general anaesthetic. Discharged with the condition much improved."

1951. This patient continued to have symptoms of soreness in her throat. Repeated examinations revealed no abnormality. She was referred to the psychiatrist who diagnosed depression and hypochondriasis.

1952. She reported as follows: "The light has lifted."

Hypersensitivity can occur in patients who appear

Hypersensitivity can occur in patients who appear
Hypersensitivity can occur in patients who appear at the surgery on many occasions for a variety of complaints extending over a long period of time. This type of patient is very well known to all who work in general practice.

Case 6. G.C. Age 50
Occupation: Housewife.
Readings: 0.5 0.5 0.5 (16.9.55)
1.0 0.5 0.5 (22.12.55).
Frequent demands for medical attention. Emotional disturbance present.

History: This patient has been a frequent surgery attender for years and considers herself a martyr to her ills which she bears cheerfully. She is co-operative but has little insight into her condition. She is happily married but has worries due to overcrowding at home. Her married son and his family live with her and relations with them are strained.

1948. She then complained of left mammary pain and palpitation. She was fully investigated as an out-patient.
Summary of the report: "No abnormality of the cardio-vascular system. X-ray of the chest showed no abnormality of the lung. The cardiac shadow is normal. The only positive finding was a slight opacity of the maxillary antra."

1949. Referred to hospital for an E.N.T. opinion in 1948 and admitted to hospital. Her main complaint is treated with ephedrine nasal drops. Of her present symptoms of pain in both rib margins on movement or exertion. She the specialist wrote: "These are due to dryness of pharynx is acutely tender on both sides where the oesophageal muscles secondary to mild dry rhinitis, the whole condition being aggravated by menopausal symptoms."

1950. Admitted to hospital suffering "from a small anal fissure associated with extreme spasm of her sphincters. The sphincter was dilated under a general anaesthetic. Discharged in spite of all treatment the patient still had pain with the condition much improved."

1951. This patient continued to have symptoms of soreness in her throat. Repeated examinations revealed no abnormality. She was referred to the psychiatrist who diagnosed depression.
and hypochondria. She was admitted to a mental hospital as a voluntary patient for psychotherapy. There was no response to this and she was discharged with the condition unchanged.

1954. Her present complaint was of severe pain in her foot. She was again referred to hospital and saw the chiropodist. He could find no abnormality to treat and he considered that the pain was due to ill-fitting shoes, and he prescribed a temporary single-winged metatarsal pad.

1955. She was now complaining of abdominal pain. A letter from the consultant surgeon reads as follows: "Your patient was admitted for investigation of her abdominal pain which was suggestive of diverticulitis. An x-ray of the abdomen shows calcification, which is almost certainly present in the pancreas. Occult blood tests of faeces were negative, and the urine was sterile. A barium enema showed no convincing evidence of diverticulitis. We have been unable to find the cause of her pain and we shall be seeing her from time to time in the out-patient clinic."

The patient nevertheless continued to complain of abdominal pain but it was of a different character, and when seen in the hospital two weeks after her discharge, the following comments were now made: "... the main complaint is of pain in both rib margins on movement or exertion. She is acutely tender on both sides where the oblique muscles arise from the region of the 10th costal cartilage. This would certainly be more painful when her cough is worse..."

In spite of all treatment the patient still had pain of ill-defined and little organic character in the abdomen. The rib margin pain gradually subsided without injections. Some months later still complaining of pain she had some vaginal bleeding and was referred to the gynaecologist.

1956. He reported as follows: "I can find no obvious
cause for her abdominal pain. Her uterus appears to be enlarged and she has had several attacks of bleeding lately. I have therefore arranged for her admission for further investigation and treatment."

She was admitted and the report was as follows:

"Admitted for post-menopausal bleeding and abdominal pain. Her pelvic organs were found to be normal on examination under anaesthesia but no curettage was obtained. The report of the vaginal swab showed a few coliform bacilli. She will be seen again at the follow through clinic".

In view of the persistence of her pain she was admitted three months later and had an abdominal total hysterectomy with bilateral salpingo-oophorectomy. No abnormality of these organs was noted except for the normal involutional changes expected in a woman of her age of recurrent bouts of 1957. She was last seen at the hospital early in the year and was still complaining of abdominal pain. The report reads: "She now appears to be relieved of her gynaecological symptoms but she still complains of abdominal pain particularly when she coughs."

Comment: This type of patient is not uncommon in general practice. From the available records she has been complaining of pain of one variety or another for at least ten years, and finally having had a major operation she is little better, and the cause of her pain is as uncertain as ever.

In view of the low algometer readings, indicating her hypersensitivity to pain, this factor may be significant and could account for the background of pain to this long story of ill-health and little organic disease.

1958. Eventually he was referred to the Medical Out-patients again for an opinion. The findings were very indefinite and the physician suggested that he had fibrocitis and recommended physiotherapy. Further x-ray and blood
Case 77. W.L. Age: 43.
Occupation: Film technician.
Readings: 0.5 0.5 0.5
Complaints: Joint and abdominal pain.
Organic cause for pain not demonstrated.
Frequent demands for medical attention.
Emotional disturbance present.

This patient is married without children. He worries about his wife who suffers from migraines. He is uncertain about his future employment because of the slump in the film industry.

1952. Complaint of vague abdominal pain investigated in hospital and reported on as follows: "... Mr. L's opaque meal revealed a normal oesophagus, stomach and duodenum. Blood pressure was 140/90 and he is about 20 lbs. overweight. Symptoms were very much less when I saw him a second time and he should benefit from weight reduction."

1955. In addition to his bouts of abdominal pain he was complaining of pains in the right knee and hip. He obtained no relief from salicylates and he was referred to the hospital x-ray department where the x-rays of the lumbar spine, lumbo-sacral joint, right sacro-iliac, right hip and knee were all reported on as normal.

He fell off the roof of his garage which he was repairing. He was taken to hospital where he was seen in the Casualty department and treated for multiple bruises. He remained off work for seven days complaining of headache where he had struck his head in the fall.

In the following months he appeared in the surgery on many occasions complaining of abdominal pain, headache, and pains in his joints.

1956. Eventually he was referred to the Medical Out-patients again for an opinion. The findings then were very indefinite and the physician suggested that he had fibrositis and recommended physiotherapy. Further x-ray and blood
examination revealed no abnormalities. He found some
relief from massage and heat but this was only short-lived,
and since then he has attended on many occasions at the
surgery always complaining of pain.

*Comment:* Again it is felt that his low pain threshold is
an important factor and accounts for much of his apparent
inability to suffer ills which have little or no organic basis,
examination and apart from tenderness over the cervical
spines there was no abnormality. There was no history of
rheumatism or of trauma. Treatment with local massage and
analgesics had no effect and she was referred to the local
hospital for investigation.

The orthopaedic surgeon reported as follows:

"... I agree entirely with your physical findings and
I think her symptoms are due to fibrositis which is a
fatigue phenomenon. I do not think there is much one
can do about it. ... X-rays of the cervical spines
are quite normal. I have not asked her to attend again."

This patient continued to attend the surgery during
the following weeks complaining of pain. She obtained some
relief from salicylates. On one occasion she was seen by
my partner who thought the condition might have been caused
by a derangement of a cervical disc, and the patient was
referred back to hospital for a review of her condition.
She was seen by the same consultant who re-examined her
but was again unable to find any organic cause for her pain.

He infiltrated the area with novocaine. This produced
temporary relief and soon afterwards the girl and her
mother called at the surgery dissatisfied with progress.
I referred the patient to the Royal National Orthopaedic
Hospital in London and was duly sent this report:

"... I fear I could find no cause for her peculiar
pain. I have reassured her and suggest that you
arrange for her to have a course of heat and deep
massage. I suppose her trouble might go under the
name of fibrositis, for want of a better word. I
am sorry not to have been of more help."
Case 111. P.M.K.  Age: 21.
Occupation: Typist.
Readings: 1.0 1.2 1.2
Complaint: Cervical pain.

This young woman complained of pain in her neck over the cervical spines. The pain radiated along the right trapezius to the shoulder. The neck moved freely on examination and apart from tenderness over the cervical spines there was no abnormality. There was no history of rheumatism or of trauma. Treatment with local massage and analgesics had no effect and she was referred to the local hospital for investigation.

The orthopaedic surgeon reported as follows:

".... I agree entirely with your physical findings and I think her symptoms are due to fibrositis which is a fatigue phenomenon. I do not think there is much one can do about it. ....... x-rays of the cervical spine are quite normal. I have not asked her to attend again."

This patient continued to attend the surgery during the following weeks complaining of pain. She obtained some relief from salicylates. On one occasion she was seen by my partner who thought the condition might have been caused by a derangement of a cervical disc, and the patient was referred back to hospital for a review of her condition. She was seen by the same consultant who re-examined her but was again unable to find any organic cause for her pain. He infiltrated the area with novocaine. This produced temporary relief and soon afterwards the girl and her mother called at the surgery dissatisfied with progress. I referred the patient to the Royal National Orthopaedic Hospital in London and was duly sent this report:-

".... I fear I could find no cause for her peculiar pain. I have reassured her and suggest that you arrange for her to have a course of heat and deep massage. I suppose her trouble might go under the name of fibrositis, for want of a better word. I am sorry not to have been of more help."
Case: She had a course of physiotherapy which failed to cure the condition and she was still complaining of pain when last seen.

Comment: This patient is an intelligent stable young woman. There appears to be no evidence of emotional disturbance. At no time has it been suggested that the pain might have a psychogenic basis. In the past she has never shown hypochondriacal tendencies and made only moderate demands for medical attention. Her pain has certain features of being associated with an organic lesion of the cervical structures which, so far, has not been demonstrable, nor lymph nodes, and there was no constitutional disturbance. Because of the hypersensitivity of the patient it is possible that a minor derangement of the neck would cause her more pain than one normally expects, days later.

The patient was lying in bed on his side with his back to the light. He was complaining of severe throbbing occipital headache. He described the pain as radiating into the neck and back. He had a dry cough and a sore throat. His eyes felt sore particularly when he looked at the light.

Examination: Temperature 99.4°F. in the mouth. Pulse 90 per min. There was slight conjunctival injection. There was some reddening of the fuscous. Respiration was normal and the chest completely clear of abnormal sounds. Central Nervous System: No neck retraction or rigidity. but the trapezius were tender and were painful when stretched on flexing the neck. Kernig's sign was positive. The tendon reflexes were exaggerated. The plantar responses were normal.

A diagnosis was made of an early acute upper respiratory or tonsillar infection, with an associated meningitis. He
Case 214. R.H. Age: 15.
Occupation: Schoolboy.
Readings: 1.5 1.9 1.2
Complaints: Pain in breast.
Organic cause for pain demonstrated.
Moderate demands for medical attention.
Emotional disturbance absent.

History: The patient is an active healthy boy of average intelligence. He attends a local secondary modern school, enjoys sport and has many friends of his own age.

He attended the surgery complaining of severe pain in the right breast. There was a small cystic enlargement in the breast tissue. It was very tender when palpated.

There were no signs of localised inflammation or enlargement of the regional lymph nodes, and there was no constitutional disturbance. A diagnosis was made of gynaecomastia and the patient reassured that the condition would subside. Pressure testing showed him to be hypersensitive. Two days later he was seen at home because of severe headache and general malaise.

The patient was lying in bed on his side with his back to the light. He was complaining of severe throbbing occipital headache. He described the pain as radiating into the neck and back. He had a dry cough and a sore throat. His eyes felt sore particularly when he looked at the light.

Examination: Temperature 98.4°F. in the mouth.
Pulse 90 per min. There was slight conjunctival injection.

There was some reddening of the fauces. Respiration was normal and the chest completely clear of abnormal sounds.

Central Nervous System. No neck retraction or rigidity but the trapezius were tender and were painful when stretched on flexing the neck. Kernig's sign was positive. The tendon reflexes were exaggerated. The plantar responses were normal.

A diagnosis was made of an early acute upper respiratory or tonsillar infection, with an associated meningism. He
had been in close contact with his younger sister who had been treated some days previously for acute tonsillitis.

**Treatment:** 500,000 units of crystalline penicillin were given intramuscularly, followed by 300,000 units of benzathine penicillin orally every six hours. He was given aspirin for his headache.

**Progress:** Second day of illness. Temperature 101 F. Yellow exudate on the right tonsil. Neck pains less but still has headache. She complained of pain, there were no

Third day. Temperature 98 F. Throat clean. Headache gone. Tender still on pressure over the neck muscles.


**Previous History:** A year ago he had been seen by a colleague for severe headache and pyrexia. He was admitted to hospital as a possible case of meningitis. Hospital report reads as follows:

"On admission this boy had a temperature of 103 and a pulse of 130, and was complaining of frontal headache. He was very tender over his frontal sinuses and a diagnosis was made of acute frontal sinusitis. He was treated with penicillin and he made a rapid recovery."

**Comment:** Pain in his breast appeared excessive, as did the symptoms on the two occasions when he had acute infection. His hypersensitivity to pain could account for this.

**History:** She had developed a head cold after a setting three days previously. Her cough had now become very troublesome and was associated with pains in the chest, back and legs.

**Examination:** Temperature 98 F. Pulse 80.

Looks fit and well. Feces injected, and some nasal discharge present. The lungs were free from any abnormal sounds. Respiration were normal.

**Diagnosis:** Mild upper respiratory infection associated with a cough. The cough caused muscle pain in the chest, back and legs. The condition cleared in a few days with a sedative cough mixture and aspirin.
Case 19. J.N.

Age: 25.

Occupation: Housewife and factory worker.

Readings: 0.5 0.5 0.5

Complaint: Pains in legs.

Organic basis for pain.

Infrequent demands for medical attention.

Emotional upset absent.

The patient came to the surgery in a good deal of discomfort, limping as she walked. She complained of severe aching pains in both thighs, behind her knees and in her shoulders.

Examination: Apart from tenderness of the muscles, in the regions where she complained of pain, there were no physical findings.

History: This patient is tall and thin, intelligent and cheerful. She has no children. She began work in a mattress factory recently. The work was not physically exacting. Two days previously, due to illness of several male members of the staff, she had to stack mattresses. This heavy job continued all day. Her pains began on the following day. The pains were so severe that she had had little sleep during the night and she decided to see her doctor on the following morning.

Treatment: Several days rest and aspirin 10 grs. t.i.d. cured the condition completely.

Six months later this patient was seen again complaining of a cough and pains in her chest.

History: She had developed a head cold after a wetting three days previously. Her cough had now become very troublesome and was associated with pains in the chest, back and legs.

Examination: Temperature 98 F. Pulse 80.

Looks fit and well. Fauces injected, and some nasal discharge present. The lungs were free from any abnormal sounds. Respiration were normal.

Diagnosis: Mild upper respiratory infection associated with a cough. The cough caused muscle pain in the chest, back and legs. The condition cleared in a few days with a sedative cough mixture and aspirin.
The same patient was seen again recently complaining of pain in her left foot. Examination revealed no abnormality. The pain was situated on the dorsum and along the lateral side of the foot. She stated that the pain began after she had begun wearing shoes with rather high heels, and untidy toes. A diagnosis was made of mild foot strain. Reverting to her usual type of footwear, the condition was cured in one week, as he sent an urgent request for the doctor to call. Comment: This patient is emotionally stable. She had visited her doctor three times in eighteen months. However, her attendances were because of trivial complaints. The outstanding feature of these complaints was pain. On each occasion the amount of pain she experienced was in now excess of what one would have normally expected, so intense. The pain was continuous and worse on movement. He had visited his evening meals of bread, butter, jam and tea.

Examination: Patient appeared very apprehensive and pale. Pulse was of good volume and 94. Blood pressure was 160/85.

Abdomen: There was marked tenderness and rigidity in the upper abdomen. Bowel sounds were present and the abdomen moved with respirations. Skull: There were no abnormal signs in the chest. Heart sounds were normal and the apex beat was not displaced.

A tentative diagnosis was made of a perforated duodenal ulcer, and he was admitted to the local hospital. Subsequently the following report was received from the hospital:

"This patient was admitted as a possible case of perforated peptic ulcer. The whole condition settled down very rapidly after admission. The following day L., who throughout his short stay in hospital had been most under-operative, decided to discharge himself against medical advice."

The patient was very shortly seen up and about and in a few days reported at the surgery to be "signed off" for work.
Occupation: Labourer.
Readings: 0.2 0.5 0.5
Complaint: Pain in abdomen.
Organic basis not demonstrated.
Emotional disturbance present.

History: This patient is thin, undersized and untidy looking. He is a man of low intelligence. His domestic affairs are in a poor state and home conditions are bad. One evening he sent an urgent request for the doctor to call. The patient was lying in bed, apparently in great pain. He clutched the upper part of his abdomen and groaned repeatedly. He described the pain as "terrific" and that he had "never known the like of it". The pain was of sudden onset about an hour following his evening meal. It had now been present about one hour and had rapidly become intense. The pain was continuous and worse on movement. He had vomited his evening meal of bread, butter, jam and tea.

Examination: Patient appeared very apprehensive and pale. Pulse was of good volume and 94. Blood pressure was 140/85.
Abdomen - There was marked tenderness and rigidity in the upper abdomen. Bowel sounds were present and the abdomen moved with respirations. Chest - There were no abnormal signs in the chest. Heart sounds were normal and the apex beat was not displaced.

A tentative diagnosis was made of a perforated duodenal ulcer, and he was admitted to the local hospital. Subsequently the following report was received from the hospital:

"This patient was admitted as a possible case of perforated peptic ulcer. The whole condition settled down very rapidly after admission. The following day L, who throughout his short stay in hospital had been most unco-operative, decided to discharge himself against medical advice."

The patient was very shortly seen up and about and in a few days reported at the surgery to be "signed off" for work.
This patient has visited the surgery at intervals since then complaining of vague abdominal pains. He has refused to have these pains investigated at hospital. The pains respond quickly to placebos. There has been no recurrence of severe pain. His general condition has remained unchanged.

**Comment:** The severe bout of pain resulting in his admission to hospital was probably due to some transient intra-abdominal condition. Because of his hypersensitivity to pain it tight created the picture of intra-abdominal catastrophe. The pain was so bad I thought I was going to pass out. After a while I managed to drive myself home in my car. The patient is a tense individual with business worries. He frequently visits the surgery or telephones regarding trivial matters.

**Examination:** Not shocked or collapsed.

Cardio-vascular system - The pulse was regular at 90 per minute. The apex beat was not displaced, and there were no signs of clinical enlargement of the heart. Jugular venous pressure was not raised. Blood pressure was 130/100.

There were minimal basal crepitations at both bases of the chest.

Because of the sudden onset and the description of the pain, this patient was admitted to hospital for investigation. The fact that he was a hyperotensive was noted before his admission. He was detained in hospital for two weeks and the following investigations carried out:

- **Electrocardiograph:** No evidence of cardiac infarction.
- **Barium meal:** Normal oesophagus, stomach and duodenum.
- **Gastro-x-ray:** Normal.
- **Blood sedimentation rate:** Within normal limits.

These investigations were commented on as follows:
Case 296. E.L. and Age: 47.

History: This patient sent an urgent request for a visit. He was complaining of a severe pain in his chest. It had begun an hour previously when supervising work at his factory. The pain had begun behind the sternum and radiated on both sides around his chest. He described it as a "tight band around my chest which made me stop and sit down. The pain was so bad I thought I was going to pass out. After a while I managed to drive myself home in my car".

The patient is a tensed individual with business worries. He frequently visits the surgery or telephones regarding trivial matters.

Examination: Not shocked or collapsed.

Cardio-vascular system - The pulse was regular at 90 per minute.
The apex beat was not displaced, and there were no signs of clinical enlargement of the heart. Jugular venous pressure was not raised. Blood pressure was 180/100.

There were minimal basal crepitations at both bases of the chest.

Because of the sudden onset and the description of the pain, this patient was admitted to hospital for investigation. The fact that he was a hypersensitive was noted before his admission. He was detained in hospital for two weeks and the following investigations carried out:

Electro-cardiograph - No evidence of cardiac infarction.
Barium meal - Normal oesophagus, stomach and duodenum.
Chest x-ray - Normal.
Blood sedimentation rate - Within normal limits.

These investigations were commented on as follows:
"In the absence of any changes in the electrocardiograph and with the rapid improvement in his symptoms, this patient was treated with phenobarbitone grs. 1 t.d.s., and following some days rest in bed whilst the various investigations were being carried out, this patient was reassured and discharged from hospital to be followed up in the out-patient's department in six weeks time."

Since his discharge from hospital this patient has remained perfectly fit and has returned to his usual routine of work. He is a keen sportsman, having played rugby and

Comment: It is very difficult to account for this patient's sudden pain. Careful investigation and observation in hospital, and subsequent follow-up, have failed to reveal any organic disease.

It might not be possible to demonstrate a minor lesion or transient dysfunction in the cardio-vascular or alimentary systems, but in the hypersensitive patient the low pain threshold might be exceeded by a stimulus arising from such a source, and pain then felt.

This treatment gave the patient some temporary relief. He was over exercised he had a recurrence of symptoms. Very nice to him he takes aspirin which gives him relief, however. This patient did not seek medical advice until his knees were in an advanced state of arthritic change. He did not appear to be much worried by the discomfort in his knees and since his hospital treatment he has not attended for surgery again. Recently seen in the village on his way to play cricket, he stated that his knees were still swelling him on and off but that he was far too busy to attend the surgery. His house is situated about one hundred yards from the consulting room.
Case 40, F.W.
Age: 47.
Occupation: Commercial Traveller.
Readings: 2.0 2.0 2.0
Complaint: Pains in knee joints.
Organic basis for pain.
Mild demand for medical attention.
Emotional disturbances not present.

History: This large built man is a retired Army officer. He is a keen sportsman, having played rugby and hockey for the Army. He leads a very active life and travels long distances as part of his work. A cheerful person who considers that seeing the doctor is "rather a waste of his time".

Examination: His knees were swollen and crepitus was present in both. He was referred to hospital for an orthopaedic opinion. This was as follows:

"I saw this man on 26.6.56 and again on 3.7.56. He appears to have had a number of injuries to his right knee since 1947 and now he complains of intermittent pain in both knees with occasional swelling. He has full range of movement in both with a good deal of crepitus, especially on the right side, and the tone of the thigh muscles is poor; but I could find no other abnormality.

X-rays of his knees show osteo-arthritis changes, more marked on the right than the left, and he has an old avulsion of the internal lateral ligament of the right knee. I have arranged a course of heat and exercises for him as an out-patient." This treatment gave the patient some temporary relief but when he over exercised he had a recurrence of symptoms.

Comment: This patient did not seek medical advice until his knees were in an advanced state of arthritic change. He did not appear to be unduly worried by the discomfort in his knees and since his hospital treatment he has not attended the surgery again. Recently seen in the village on his way to play cricket, he stated that his knees were still troubling him on and off but that he was far too busy to attend the surgery. His home is situated about one hundred yards from the consulting room.
Case 26, P.S.
Age: 46.
Occupation: Cinema projectionist.
Readings: 2.0 1.5 1.5
Complaint: Abdominal pain.
Organic cause for pain.
Moderate demands for attention.
Emotional upset not present.

This patient had a long history of upper abdominal pain related to meals. He was first referred to hospital for investigation in 1951. The hospital reported on him then as follows:

"This patient has been complaining of pain in the epigastrium for the past four months. On physical examination no notable abnormalities were detected apart from the presence of epigastric tenderness. As an opaque meal shows a lesser curve peptic ulcer, this patient has been referred to the medical department."

The patient was then admitted under a physician who wrote that:

"At the end of a period of medical treatment the radiologist reported that the previously seen gastric ulcer had healed. There is however a scarred and deformed duodenal ampulla. There are also two diverticula in the third and fourth parts of the duodenum which are certainly congenital in origin. The haemoglobin was 97% and the erythrocyte sedimentation rate 3 mm. in one hour. The patient is without symptoms and has gone home to await a period of convalescence."

There then followed a period when the patient apparently improved. However, during the next four years this patient had recurrences of dyspepsia. He benefited from alkalies and from small doses of phenobarbitone. Each year, usually in the spring, he had his most severe bouts. These necessitated about three weeks absence from work. For the remainder of the year he carried on with his usual activities and often did not require treatment for three or four months.

In 1956 he had more discomfort than usual and was sent again to hospital.

The physician reported that "there is a small gastric ulcer on the lesser curve and a duodenal diverticulum. It is recommended that this patient be referred back to the surgeon for gastrectomy."
Partial gastrectomy was performed and ulcers were found on the lesser curve and in the duodenum. He made an uneventful recovery and was soon back at work. Since then nearly a year has elapsed and he has not returned to the surgery with any complaints. When met recently in the street, he looked very well, having put on weight, and happy to be free of pain.

Comment: Pressure readings show that this patient is normosensitive to pain. The whole picture of this case is one of an individual suffering from a painful disability for many years and trying his best to endure the discomfort. He visited the surgery only when his ulcer was active. In hospital he was co-operative and responded well to treatment.

History: He had had chest trouble at intervals since his youth. At the age of 19 he was admitted to a sanatorium and kept there under observation for six months. The patient stated that at that time tuberculosis was suspected. During his Army service he developed pleurisy and he was off sick for some weeks.

He had an X-ray of the chest in 1950 which was reported as follows:

"There are calcified nodules in the region of the left root, and there is slight irregularity of the left side of the diaphragm. There is, however, no evidence of recent disease."

In 1952 he developed a pain in his chest and a cough. He was referred to hospital and the following report was received:

"I examined this patient this afternoon. His recent cough has disappeared and he now feels quite well. There were no abnormal physical signs to be heard in his chest and his blood sedimentation rate was 8 mm. per hour. His chest X-ray shows a calcified primary complex in the left mid-zone, but no other lesion was
Case 39. R.W.M.  Age: 45.

Occupation: Cafe proprietor.

Readings: 3.0, 3.0, 3.0

Complaints: Pain in chest.

Organic basis for pain:

Infrequent demands for medical attention

Emotional disturbance absent.

This patient had been registered for four years and this was the first occasion he had consulted his doctor.

He was complaining of cough and pain in the right side of his chest. It had been present several days during which time he had been carrying on with his usual duties in his cafe.

Examination: The patient looked ill. Temperature 100 F.

Pulse 100. Chest - this was dull on percussion at the right base where there were diminished breath sounds. There were crepitations at the right base, and there was a friction rub heard in the mid-axillary line.

Much against his will this patient agreed to return home to bed. He was given 1,000,000 units crystalline penicillin intramuscularly, and then 500,000 units twice daily.

History: He had had chest trouble at intervals since his youth. At the age of 19 he was admitted to a sanatorium and kept there under observation for six months. The patient stated that at that time tuberculosis was suspected. During his Army service he developed pleurisy and he was off sick for some weeks.

He had an x-ray of the chest in 1950 which was reported as follows:

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In 1952 he developed a pain in his chest and a cough. He was referred to hospital and the following report was received:

"I examined this patient this afternoon. His recent cough has disappeared and he now feels quite well. There were no abnormal physical signs to be heard in his chest and his blood sedimentation rate was 8 mm. in one hour. His chest x-ray shows a calcified primary complex in the left mid-zone, but no other lesion was his first visit to the surgery for four years."
The attitude of this patient to illness is to minimise symptoms and to allow them to interfere as little as possible with his daily routine. This is borne out by this being his first visit to the surgery for four years.
Case 36. M.A.I. Age: 53.

Occupation: Housewife.

Readings: Pulse: 80, R. 2,5, L. 2,0.

Complaint: Abdominal pain after meals.

Organic basis for pain.

Moderate demands for medical attention.

Emotional disturbance absent.

History: This patient has complained of abdominal pain on and off for several years. In 1953 she was referred to hospital. The report reads as follows:

"This patient gives a history of recurrent attacks of right upper abdominal pain during the past four months. The pain is severe and throbbing, and lasts five to six hours. Associated with the pain she occasionally has had nausea and, at times, vomiting. She has had some nocturnal frequency of micturition but no other abnormality.

On examination she had a mild hypertension (blood pressure 160/105). She was tender in the right hypochondrium where the right kidney, which was palpable, felt to me somewhat enlarged. A catheter specimen of urine showed a moderate number of pus cells. An intravenous pyelogram showed her to have impaired concentration of the dye in the right kidney, with marked hydronephrosis of the upper calyces. No calculus was seen to account for this."

She was referred to a surgeon who reported:

"On examination this patient was found to have an enlarged right kidney. The left kidney had a normal appearance. A right nephrectomy was performed and the post-operative and convalescent periods were uneventful."

Unfortunately for the patient, however, she developed a recurrence of her pain within a short time of her return home. She endured her discomfort for two years during which time she did not seek any medical advice.

After this two year interval she attended this surgery for the first time complaining of upper abdominal pain related to food. On examination she was tender in the right hypochondrium. She was put on an ulcer diet and antacids. She failed to get relief and was referred to hospital again and admitted for investigation.

Subsequently the hospital reported that:-
"This patient has just completed a month's course of treatment for duodenal ulcer. As you know she had a nephrectomy for right hydronephrosis. This failed to relieve the pain which in part was probably due to her duodenal ulcer. Examination showed a succussion splash. Barium meal revealed chronic deformity of the duodenum. Fractional test meal showed hyperchlorhydria. Cholecystogram was normal. Blood count: Haemoglobin 102%. White cell count 5,200. Sedimentation rate 3 mm. per hour.

A repeat of the Barium Meal at the end of the period of medical treatment showed the duodenal cap to be unchanged in shape, but there was no evidence of active ulceration. Occult bloods have been negative, and the patient has been symptom free. She has responded well to medical treatment and has been discharged for convalescence. I am, however, not very happy about her future outlook and we would like to keep her under observation. I feel that she will need surgical treatment in the not too distant future."

Following this the patient had a recurrence of pain which alkalies only partially relieved. However, when she was seen at hospital out-patients for review she minimised her symptoms:

"This patient seems to have made a surprisingly good recovery and is now virtually symptom free. X-ray appearances were much the same, and I expect she will be getting symptoms again some time in the future. I have discharged her with the instructions that she can relax her diet a little provided she eats regularly."

In recent months this patient has had more pain and she is gradually becoming resigned to the prospect of a further operation.

Comment: This patient is normosensitive and has an organic cause for her pain. She has endured this pain for several years. She tends to minimise her symptoms as shown by the follow-up report from the hospital. Following her operation she continued to have pain and she chose to endure this for two years before she reported for further medical advice. In spite of having advanced disease of her duodenum causing much pain and discomfort, she makes only moderate demands on her doctor, in swallowing, and he continues to travel to work each day and carry on with his usual job.
Case 112, A.B.

Age: 47.

Occupation: Aircraft fitter.

Readings: 2.5 2.5 2.0

Complaint: Painful tongue.

Organic basis for pain.

Moderate demands for medical attention.

Emotional disturbance absent.

History: This patient's lower denture had been ill-fitting for years. Some weeks previously it began to chafe the side of his tongue. He decided to report to his doctor when he noticed a sore patch on the side of his tongue which caused discomfort when he ate food.

Examination revealed a large ulcer on the side of tongue.

The patient was surprised when it was suggested that he saw the surgeon at hospital.

The surgeon's preliminary report was:

"I am very suspicious that this ulcer is neoplastic. Investigations will be carried out to reveal its nature."

This was soon followed by:

"A biopsy has shown that the tongue ulcer is a squamous cell carcinoma. He has therefore been referred to the radiotherapist."

This specialist reported:

"There was a craggy ulcer on the right side of the anterior two-thirds of the tongue. The base was indurated and extended to the floor of the mouth.

The induration extended back to involve the posterior third of the tongue as well as the floor of the mouth. There were palpable sub-mandibular glands. He responded well to treatment. He had a radium needle implant for two days following the Telecobalt. He is to attend for follow up."

Progress: In the year that followed this very extensive treatment to this advanced lesion in his mouth, this patient has been at work for nine months. Because of spread to the glands in the neck this patient had a block dissection followed by further irradiation.

There is now evidence of further spread as shown by some difficulty in swallowing, and hoarseness. Although this patient is approaching the terminal stage, he continues to travel to work each day and carry on with his usual job.
Comment: This patient wore his badly fitting denture for a long time and consulted his doctor only when a large ulcer developed on his tongue. In spite of the extent and distressing nature of the lesion, pain has not been an outstanding feature. He has tolerated his treatment procedures without complaint and in spite of increasing disability, continues with his normal daily routine.

When seen the patient complained of aching pains in the neck and shoulders. He stated that he had moved some heavy furniture on the previous day and afterwards played a strenuous game of table tennis. He thought that before he went to bed he was developing a bout of 'flu.

On examination he was unable to abduct his right arm and there was some loss of abduction of the left arm. There were no other abnormalities noted.

Because this patient was so excessively nervous it was considered that the condition might be a simple fibrositis and the paralysis due to hysteria. He was given aspirin and reassured.

His condition was unchanged when seen some hours later. It was noted that he was normosensitive to pain.

He was seen by a neurologist who reported that:

"Examination reveals that he was suffering from bilateral shoulder girdle neuritis. This is a virus infection localised in the nerve roots of the cervical plexus which supply the deltoid and spinati muscles."

Two months later the hospital reported:

"Following a course of parasymp and exercises this patient is making progress. There is complete recovery of function of the left shoulder girdle. There is still a complete paralysis of the right deltoid, and an almost complete paralysis of the spinati."
Case 230. W.S. Age: 35.

Occupation: Accountant.

Readings: 2.0 2.0 2.0

Complaint: Pain and loss of power in shoulders.


This patient is a nervous man and avoids visiting his doctor if he can. He was awakened in the early hours of the morning by pain in his shoulders and inability to move his arms. He became very agitated, woke his landlady who called the doctor.

When seen the patient complained of aching pains in the neck and shoulders. He stated that he had moved some heavy furniture on the previous day and afterwards played a strenuous game of table tennis. He thought that before he went to bed he was developing a bout of 'flu.

On examination he was unable to abduct his right arm and there was some loss of abduction of the left arm. There were no other abnormalities noted.

Because this patient was so excessively nervous it was considered that the condition might be a simple fibrositis and the paralysis due to hysteria. He was given aspirin and reassured.

His condition was unchanged when seen some hours later. It was noted that he was normosensitive to pain.

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Two months later the hospital reported:

"Following a course of faradism and exercises this patient is making progress. There is a complete recovery of function of the left shoulder girdle. There is still a complete paralysis of the right deltoid, and an almost complete paralysis of the spinati."
Case 267. Age: 37.

This patient continued with exercises at home and in the course of the next six months he continued to make slow progress. He returned to work and can now drive his car with complete control. The right deltoid remains paralysed.

Comment: An unusual case which presented difficulty in diagnosis when first seen. Careful neurological investigation revealed an underlying organic cause which was consistent with the patient's normosensitivity.

There were no other abnormal physical signs. The patient was told that she probably had influenza and was told to remain in bed for two days, and to continue taking aspirin. She was normosensitive to pain.

The condition failed to subside and two days later a message was sent that although the patient was feeling better she had an aching pain in her right side. When revisited, the following was noted:

- Pulse 100.
- Temperature 99.5°F.
- Respirations 16.

Chest: Apex bent displaced to the left of the mid-clavicular line. Chest moving less on the right side than on the left.

Dull on percussion on the right side to the level of the third rib in the front of the chest, and dull to a corresponding level in the mid-axillary line and in the back.

Breath sounds were greatly diminished over this area. There was an area of crepitations to be heard in the axilla where she complained of an aching pain.

A diagnosis of pleural effusion was made and the patient was admitted to hospital.

The following report was received:

"I find that this patient has an uncomplicated pleural effusion which I feel must have a tuberculous basis. We have therefore had her on streptomycin (1 gramme daily) with INH (200 milligrams daily). The fluid is absorbing quite happily, so I am allowing her to continue her rest and therapy at home. Mantoux test was positive."
Case 247. A.W.  
Age: 37.  
Occupation: Housewife.  
Readings: 2.0 2.0 2.0  
Complaint: Pain in chest.  
Organic basis for pain.  
Moderate demands for medical attention.  
Emotional disturbance absent.  

This patient asked the doctor to call because of generalised aches and pains and a temperature which had persisted for two days. The patient had taken aspirins without much relief.  

Examination: She had a temperature of 101 F. and a pulse rate of 110. There was some reddening of the fauces. There were no other abnormal physical signs. The patient was told that she probably had influenza and was told to remain in bed for two days, and to continue taking aspirin. She was normosensitive to pain.  

The condition failed to subside and two days later a message was sent that although the patient was feeling better she had an aching pain in her right side. When revisited, the following was noted:  

Pulse 100. Temperature 99.5 F. Respirations 16.  
Chest: Apex beat displaced to the left of the mid-clavicular line. Chest moving less on the right side than on the left. Dull on percussion on the right side to the level of the third rib in the front of the chest, and dull to a corresponding level in the mid-axillary line and in the back. Breath sounds were greatly diminished over this area. There was an area of crepitations to be heard in the axilla where she complained of an aching pain.  

A diagnosis of pleural effusion was made and the patient was admitted to hospital.  

The following report was received:  

"I find that this patient has an uncomplicated pleural effusion which I feel must have a tuberculous basis. We have therefore had her on streptomycin (1 gramme daily) with INAH (200 milligrammes daily). The fluid is absorbing quite happily, so I am allowing her to continue her rest and therapy at home. Mantoux test was positive."
Since her return home this patient has improved rapidly as shown by improvement in her general appearance with increase in weight, complete absence of symptoms, and clearing of the effusion.

Comment: This patient does not make unnecessary demands on her doctor. She is co-operative and was considered to be a "good" patient whilst in hospital. She has continued to carry out all the instructions given to her when she left hospital to carry on with her treatment at home. She is normosensitive to pain and her pain symptom had an organic basis.

On examination this patient had a severe degree of varicose veins in both legs. There was an area of redness along several inches of short saphenous vein in the left leg indicating an active phlebitis. The area was tender and the lower leg swollen. The patient had walked over a mile to the surgery. Her main concern was not the pain but the problems arising from the possibility of having to be admitted to hospital.

The condition subsided within a few days with rest and local heat. In due course the patient was persuaded to enter hospital where she had the varicose veins ligated. Since then she has been free from further trouble in her legs.

Previous history. A year ago this patient developed severe aching pain below the left knee. She walked to the surgery and when examined she was obviously ill. She had had a rigor and had a temperature of 101. Examination of the leg showed that there was a slight swelling below the knee with slight reddening of the overlying skin. There was no history of injury. It was noted that she had varicose veins but there was no sign of phlebitis. A diagnosis of osteomyelitis was made and the patient admitted to hospital.
Case 76. R.H.

Age: 45.

Occupation: Housewife.

Readings: 2.2 1.8 2.5

Complaint: Pain in leg.

Organic basis present.

Moderate demands for medical attention.

Emotional disturbance present.

This patient was very agitated by the occurrence of pain in her leg. She was worried because she thought it might be due to a recurrence of osteomyelitis she had had in the same leg a year previously. She was also very unhappy because of the poor relations existing between her husband and herself. She viewed the prospect of admission to hospital with great apprehension because it would mean having to leave her young daughter in the care of her husband who drank heavily.

On examination this patient had a severe degree of varicose veins in both legs. There was an area of redness along several inches of short saphenous vein in the left leg indicating an active phlebitis. The area was tender and the lower leg swollen. The patient had walked over a mile to the surgery. Her main concern was not the pain but the problems arising from the possibility of having to be admitted to hospital.

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The report from the hospital confirmed the diagnosis:

"This patient was admitted to hospital for rest in bed and for treatment of an osteomyelitis of the upper end of the left tibia. The condition subsided with injections of penicillin. It was probably due to a flare-up of chronic osteomyelitis."

The patient was subsequently seen and the follow-up x-ray showed that the condition had settled satisfactorily.

Following the episode of phlebitis, this patient was free of pain for the following 18 months. She then attended the surgery complaining of pain in the left elbow region which radiated up and down the arm. The pain had been present some weeks and was becoming more severe. She now found it difficult to use her arm in her normal household duties.

Examination revealed that the most tender region was at the lateral side of the elbow joint over the extensor muscle origin. Tennis-elbow was diagnosed; the patient was given soluble aspirin and advised to support the arm in a sling.

When the condition failed to subside the area was infiltrated with one c.c. of di-hydrcortisone. This gave some relief and the injection repeated in three days time. However, the patient continued to have pain so she was referred to the local hospital. The orthopaedic surgeon wrote to confirm the diagnosis. He infiltrated the area with 2 c.c. of 2% lignocaine. This gave the patient immediate relief.

Treatment was continued with short-wave diathermy for two weeks and at the end of this the patient was symptom free.

Comment: When this patient was seen in the surgery she was apprehensive and nervous. This arose mainly from anxiety due to her unhappy domestic state which was aggravated by her mental indisposition. She was not particularly distressed by the amount of pain itself which had, on the three occasions mentioned, an organic basis. The demands she makes for attention are moderate and the picture she presents is consistent with normosensitivity.
Cases from the Hypersensitive Group.

Case 192. B.C.G.  
Age: 50.  
Occupation: Work's foreman.  
Readings: 4.0 4.0 5.0.  
Complaints: Pain in the side of the chest.  
Organic basis for pain.  
Infrequent demands for medical attention.  
Emotional disturbance absent.

This patient came to surgery stating that he had been struck on the side of the chest by a steel girder which was being moved by a crane. The accident had occurred two weeks previously. He stated that his side had felt uncomfortable for about 24 hours and that there was now a slight ache. He had carried on with his work which involved lifting heavy weights. He stated that at no time was the pain sufficiently severe to require taking aspirin. He had mentioned the incident to his wife two weeks after it had happened, and against his will she had taken him to see me. She believed that all accidents which occur at work should be seen by the doctor.

This patient had last attended surgery two years previously when a steel girder had fallen on his toe.

On examination an irregularity was felt over the sixth right rib in the mid-clavicular line. He was sent to hospital for x-ray. This showed a fracture of the sixth rib in the region of the irregularity. There was some degree of displacement of the two fragments.

Treatment: The patient was strapped with adhesive. He insisted on returning to work. The adhesive was removed after one week and the patient declared that he was now free from all discomfort.

Comment: Surgery attendance has only followed injury at work. A fracture of a rib is usually a very painful injury. This patient appeared to be able to bear the discomfort with unusual equanimity and would not have attended the surgery if his wife had not insisted. He refused to allow the injury to interfere with his work and appeared most anxious to be rid of the strapping after one week. In the past four years this patient has attended the surgery on two occasions.
Case 240, J.R.G.B.  
Age: 31.  
Occupation: Housewife.  
Readings: 4.0 4.0 4.0  
Complaint: Vaginal bleeding.  
Organic basis: No pain felt.  
Infrequent medical demands.  
Emotional disturbance absent.

This patient visited the surgery because she has missed three periods. Examination revealed a twelve week pregnancy and arrangements were made for her future confinement. She had had two previous normal pregnancies.

A week later she reported that she had begun to bleed per vaginam. There was no pain or discomfort. The external os was closed but there was some blood clot in the vagina. She was advised to return home to bed and rest, and to inform the doctor if bleeding did not cease within 24 hours.

Nothing was heard until four days later when the patient visited the surgery again to inform me that she had passed more blood and a round greyish object. Examination showed that she had miscarried. There was no further bleeding.

The patient expressed disappointment when informed that she was no longer pregnant. She was surprised because from accounts she had expected the experience of miscarriage to be more distressing, and so found it difficult to believe that a miscarriage had occurred. She stated that she had felt no pain during the whole procedure. The blood loss had not been excessive, and in the absence of pain she thought it unnecessary to call the doctor.

Comment: Although registered for four years this was the only occasion this patient had visited the surgery. She was quite composed when she began to bleed and remained so throughout.
Case 17. C.D.B.

Age: 45.
Occupation: Labourer.
Readings: 20.9.55, 10.0 4.0 4.0
30.10.55, 4.0 4.0 4.0
Complaint: Swollen wrist.
Organic basis. No pain felt.
Infrequent medical demands.
Emotional disturbance absent.

This patient works as a refuse collector and is employed lifting heavy bins of refuse. He visited the surgery because of a swollen wrist. There was no limitation of movement and no pain. He could not remember any injury. The condition was diagnosed as a sprain and strapped with adhesive. He refused to stay off work.

The strapping was removed a week later and it was noticed that he did not show, nor would admit to, any pain when the hairs around the wrist were pulled out by the roots in removing the adhesive.

Some weeks later this patient developed a paronychia. This caused him no pain. It was incised and drained without an anaesthetic. This procedure caused no pain. On another occasion an abscess of his forearm was incised and drained without an anaesthetic.

This patient has visited the surgery only on these three occasions in several years. He has a chronic bronchitis, and in spite of exposure to the weather and to the dust of refuse has carried on uninterrupted this heavy manual work for years.

He walked with a limp due to a stiff right ankle-joint. There was thickening around the joint and loss of movement. He stated that some years previously he jumped from a height of 20 feet and landed badly. He bound his ankle with bandages for some weeks but did not consult a doctor. The joint appeared to be grossly osteoarthritic due probably to severe damage at the time of the injury. He was quite unconcerned about it and in the course of his work walked
miles each day without discomfort. He refused to have his ankle x-rayed.

Comment: A hyposensitive unaffected by pain from trauma or inflammation, and in spite of bronchitis and arthritis, continues with his heavy manual work in able-bodied fashion.

Examination revealed an abscess inside the nostril with an associated cellulitis of the left cheek. The patient stated that the condition caused no pain but he thought he needed attention when he saw his eye closing. Examination of the nostril by palpation and by inserting a speculum appeared to cause the patient no discomfort.

The patient was given 1,000,000 units crystalline penicillin intramuscularly and half this dose twice daily for the next five days. The abscess burst and drained pus for two days. The swelling of the face subsided rapidly.

During this illness the patient continued to work. At no time did he complain of any pain and when questioned on this point stated that he had no discomfort whatever.

Some weeks previously he consulted my partner because he noticed that one of his teeth had "gone bad". Examination showed that there was a decayed upper left canine and a sinus discharging pus from the gum above this tooth. On being advised to consult a dentist, the patient said that this was an undue waste of time and prevailed on my partner to remove the tooth. This my partner did with Spencer Wells forceps without any anaesthetic.

Comment: This patient has not attended the surgery on any other occasions during a period of five years. The extraction of this tooth was difficult and several attempts were made before the tooth was drawn. Throughout this procedure the patient showed no pain. Similarly the abscess and cellulitis of his face caused no pain nor was it tender on examination. These observations are consistent with this patient's hyposensitivity as shown by the high pressure readings.
This patient called at the surgery complaining of a redness and swelling of the left side of his nose and face. It had started as a small swelling inside his left nostril some days previously.

Examination revealed an abscess inside the nostril with an associated cellulitis of the left cheek. The patient stated that the condition caused no pain but he thought he needed attention when he saw his eye closing. Examination of the nostril by palpation and by inserting a speculum appeared to cause the patient no discomfort.

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Comment: This patient has not attended the surgery on any other occasions during a period of five years. The extraction of this tooth was difficult and several attempts were made before the tooth was drawn. Throughout this procedure the patient showed no pain. Similarly the abscess and cellulitis of his face caused no pain nor was it tender on examination. These observations are consistent with this patient's hypo-sensitivity as shown by the high pressure readings.
Occupation: Truck Driver.
Readings:  11.12.56, 23.12.56  5.0  5.0  5.0
Complaint: Abdominal pain.
Organic basis for pain.
Infrequent demands for medical attention.
Emotional disturbance absent.
Case 215. A.W.L.  
Age: 61.  
Occupation: Gardener.  
Readings: 7.0 6.0 7.0  
Complaint: Haematuria.  
Organic basis: Pain not present.  
Infrequent medical demands.  
Emotional disturbance absent.

This patient called the doctor because he had noticed blood in his urine. He had not seen a doctor for many years. He had passed blood on six occasions since the previous day.

On examination he looked pale; blood pressure was 190/135, pulse was regular. His abdomen was soft and rectally there was no abnormality. The prostate was not unduly enlarged. There was a harsh systolic murmur heard loudest in the aortic area but not conducted into the neck. There were rales at both lung bases. Examination of the fundi showed some papilloedema. There was some oedema of the ankles.

In view of these findings the patient was admitted to hospital where he was fully investigated, and the following report was sent on his discharge:

"Diagnosis: Haematuria due to essential hypertension, probably entering the malignant phase.  
Investigations: Chest x-ray - lung fields clear.  
Barium meal - Generalised backward displacement of the oesophagus by enlarged left ventricle. No lesion in stomach or duodenum.  
Intravenous urogram - No urinary calculi.  
Cholecystogram - normal.  
Urine - contained a little protein on one occasion but was subsequently clear.  
Blood urea - 53 mmmol on admission but was subsequently within normal limits.  
Blood count - within normal limits.  
Red cell fragility - normal. There was no cold agglutinins.  
Electro-cardiograph - left ventricular hypertrophy and strain.  
Treatment: He was given Rauwolfia 4 mmm nightly, and Ansolysin 80 mmm t.d.s., a.c.  
On these measures his blood pressure was quite well controlled.  
Remarks: It is perhaps fortunate that this patient had some haematuria as he seems to have little in the way of symptoms, and this has drawn attention to the underlying condition."

Progress of the case: On discharge from hospital this patient was very anxious to resume his work as a gardener. He was advised to wait and continue under observa-
tion. His blood pressure tended to fluctuate 220/140 - 150/100. Hospital note two months after discharge read:-

"The chest x-ray shows a further increase in the heart size, both to the right and left; hilar vessels are full, and there is a right basal effusion."

The following week it was reported:

"The signs in the chest are subsiding. Blood pressure 180/120. The liver is enlarged two finger breadths. There is pitting oedema of the ankles and venous congestion in the neck. Blood urea is 60 mgm. %

In addition to his hypotensive drugs, he should have 2 c.c. thioDorin by injection twice weekly."

One month later the report read:-

"Blood pressure 180/110. He is now getting many extrasystoles and there is a diastolic mitral murmur and an aortic diastolic murmur. His last electro-cardiograph showed, apart from the extrasystoles, also evidence of posterior infarction, which does not, however, look recent. I feel the prognosis is poor in his case. We shall take him in if it is too difficult for you to manage him at home, but I am afraid there is little more we can do for him."

In spite of all the evidence of serious cardiovascular disease, this patient was quite symptom free and thought he should be at work. He was most unhappy at home, so he was allowed to return to light work. He cycled to the surgery during all this period. He managed light work very well and gradually he returned to his normal duties. Five months later he was seen at the hospital and reported on as follows:-

"This man remains symptom free. He has been at work for the last six weeks. Blood pressure 190/115. There are now no signs of cardiac failure. The size of the heart is unchanged. The appearance of the fundus has also remained unchanged."

Some months following the hospital reported "His cardiovascular signs otherwise remain unchanged and he has no evidence of any cardiac failure."

When last seen in hospital he was reported on as follows:-

"This patient remains subjectively very well. He is back at work which he enjoys. I did not find any marked change in his physical signs. He was free of congestive cardiac failure. Blood pressure was 165/85. Urine was free of albumin, and blood urea was 60. He should continue on Rawuloid 2 mg. b.d."

Comments: A hyposensitive. The appearance of blood in his urine made him call his doctor whom he had never previously consulted. When seen he was in congestive cardiac failure but was in no way distressed by this. He returned to work as soon as possible and throughout this whole period has never felt ill.
Case 246. A.E.S.

Age: 54.
Occupation: Engineering fitter.
Readings: 7.0 6.0 5.0
Complaint: Tight feeling in chest.
Organic basis. No pain felt.
Infrequent medical demands.
Emotional disturbance absent.

This patient attended the surgery one morning complaining of a "tightness" in his chest which he thought was indigestion. He stated that it began on the previous evening, when he was relaxing seated on a chair after his evening meal. He went to bed at his usual time but found that the sensation in his chest kept him awake and he got some relief on drinking warm water and walking about his bedroom. He had his breakfast as usual and walked over half a mile to the nearest bus stop where he caught the bus to his place of work.

The "indigestion" persisted and he decided to take an hour off and call on his doctor. He had had no previous illnesses and did not suffer from indigestion in the past.

When seen in the surgery he appeared pale and cyanosed. He described his discomfort as a "bad chest due to indigestion". He was anxious to have some medicine to relieve him so that he could return to his work in the factory.

When questioned he admitted to some discomfort in his neck and down both arms.


Pressure readings suggested that he was a hyposensitive.

He was admitted to hospital as a case of coronary thrombosis, much to his great surprise.

There he remained for seven weeks in bed, and on his discharge the following report was sent:-
"Investigations:

Electrocardiograph showed evidence of anterior cardiac infarction.
Blood sedimentation rate - 30 mm. in the hour.
White cell count - 8,700 which subsequently rose to 24,200.
Chest x-ray - clear, moderate cardiac enlargement.

During his stay in hospital he was treated with rest and anti-coagulants. He improved, his electrocardiograph showing normal evolution of infarction. His blood sedimentation rate remained high (26) on discharge. White cell count 16,200. He will be seen again in the outpatient department."

After his discharge from hospital, the patient went to a convalescent home for two weeks and the subsequent report from the hospital read as follows:

"This patient has returned from convalescence and appears to be very well. I could find no abnormal physical signs except a presystolic triple rhythm which persists. He is extremely anxious to go back to work and assures me that his occupation is very light. I felt, however, that he is not quite fit to do so and will need at least another three weeks of rest at home."

Very reluctantly this patient agreed to remain at home for three weeks. He then returned to work and has remained fit since.

The final hospital report was as follows:

"Mr. S. seems to be keeping very well and is back at light work. He has no cardiac symptoms at all but as we know this is not very significant in him. On examination the triple rhythm had gone and there are no signs of cardiac failure. We shall be pleased to see him if you are worried about him at any time."

Previous history: This patient had been a professional pugilist in his youth. During the five years registered in this practice, this was the first occasion he had consulted his doctor.

Comment: This case illustrated the slight subjective disturbance caused by coronary thrombosis in a hyposensitive. Algometry in the surgery helped to evaluate the significance of his symptoms.
Conclusion.

In assessing the full significance of clinical pain, sensitivity should be considered. In the oversensitive, pain is pronounced and in the insensitive, the opposite is true. The classifying of patients into sensitivity groups can be conveniently carried out by means of a pressure algometer.

Certain combinations of clinical features have been shown to have a statistical relationship to sensitivity, and in the cases described some of these features have been demonstrated. The hypersensitive feels much with little to show for it, whilst the hyposensitive is indifferent to advanced organic lesions. The one deserves our sympathy because of his suffering, the other earns an unmerited admiration because of his apparent fortitude.

The hypersensitive is helped and the cause of his suffering made more evident when he realises that he is endowed with a facility for perceiving pain easily. The hyposensitive, on the few occasions he consults the practitioner, more easily accepts medical advice and is prepared to alter his usual routine, when he realises that he feels less pain than others in similar circumstances.

The overall problem of pain sensitivity continues to engage the attention of many workers in the field of medicine and experimental physiology. The present state of knowledge is summarised by Keele (25) who considers that the ascending reticular system and its arousal centre, determines the pain threshold. There is evidence (26) that future anatomical investigations with contributions from biochemistry, and possibly electro-encephalography will lead us closer to understanding the mechanism and significance of this important clinical phenomenon.
Bibliography.


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11c " Ibid., 10:263.

11d " Ibid., 14:390.

11e " Ibid., 12:337.

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