method has great advantage over ether. I am also convinced that no operating surgeon will come to the same conclusions until he has faithfully given this method a fair trial over a considerable period of time."

To summarize, what can we offer our handicapped gynecological patient demanding surgery? An improved process carrying with it less fear, a more safe and pleasant anesthetic, absence of prolonged unconsciousness and vomiting in practically all cases. Freedom of sequelae as related to the kidney, lungs, blood and nervous system, meaning less morbidity and less mortality.

A REPORT ON EHRlich'S ALDEHYDE TEST FOR UROBILINOGEN.

(From the West Medical Service, Massachusetts General Hospital, Dr. Richard C. Cabot, Chief of Service.)

By OSEWALD H. ROBERTSON, M. S., Boston, Mass.

From recent communications on the subject it is apparent that there is still a great deal of uncertainty over the exact significance of urobilinogen in the urine. Some clinicians consider a positive test strong evidence in favor of a pathological condition of the liver; many others find very little value in it as an aid to diagnosis. This same divergence of opinion exists at the Massachusetts General Hospital where the test has been done during the past year on all Medical cases at admission. Something over one thousand single tests have been made. In order to determine if possible what the test really meant, all cases showing a positive test were collected and classified according to disease process, noting its relation, if any, to possible liver involvement.

As the theories of urobilinogen physiology with their accompanying experimental data have been so thoroughly reviewed by several writers in this country (e. g. by Wilbur and Addis, Comer and Roper, and Berghausen), they will not be mentioned here. While much work has been done to determine the origin of urobilinogen, there is very little in the literature on the practical value of determining its presence in the urine in routine clinical work. Some men, as for instance Munzer, take the extreme view and assert that urobilinogen in the urine indicates actual disease of the liver cells. Others, and they form the great majority, believe that it simply means a diminished functional activity of the liver, which may be caused in many ways. And again, there are a few, as Wilbur and Addis, who consider that in the presence of severe anemias and large hemorrhagic exudates, the liver may have very little to do with the appearance of urobilinogen, i. e. that it may come directly from the breaking down of blood pigments. But just how much weight can be placed on a positive or a negative test in any given case seems very uncertain. Hildebrandt, in his last report, states that the test is of little practical value. He does not, however, give any figures.

The following table contains only the cases showing a positive test. Negative tests will be discussed later. The technic employed in doing the tests is practically the same as that described by all who are using it and is given here in detail simply as a control on the accuracy of the conclusions to be drawn from the following series of cases: To 3 or 4 c. c. of fresh urine in a small calibre test-tube, 3 drops of Ehrlich's reagent-dimethylaminobenzaldehyde are added. A positive test consists of a cherry-red color appearing as a band at the upper part, or diffusely through the urine. The color may appear immediately or in from five to fifteen minutes, depending on the concentration of the urobilinogen present. Stress is laid on the definite cherry-red color; there are shades of yellowish brown, due to pigments in the urine, which may lead to misinterpretation. Again the test must be read by transmitted and not reflected light.

<table>
<thead>
<tr>
<th>Table.</th>
<th>Acute Infectious Processes.</th>
<th>No. of cases.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pneumonia</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Tonsillitis</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Arthritis</td>
<td>3</td>
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<tr>
<td></td>
<td>Influenza</td>
<td>1</td>
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<tr>
<td></td>
<td>Pharyngitis</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unknown Cause</td>
<td>-26</td>
</tr>
<tr>
<td></td>
<td>Cardiac Disease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>With Decomposition and Passive Congestion of Liver</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Syphilis</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Malignant</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Gall Stones</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Carotid Jaudice.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Cirrhosis</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Myeloid Disease</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Enlarged? cause</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Blood Diseases and Conditions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary Anaemia</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Secondary Anaemia</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Malignant of abdomen (probably with liver involvement)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Typhoid Fever</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Alcoholism ( bile in urine)</td>
<td>1</td>
</tr>
</tbody>
</table>

Tuberculosis Peritonitis 2
Tertiary Syphilis 2
Duodenal Ulcer 2
Tuberculous Pleuritis 2
Cardiac Disease (without decompensation) 18
Mediastinal Tumor 1
Pulmonary and Renal Tuberculosis 1
Empyema (residual) 1
Ovarian Cyst 1
Gout and Obesity 1
Pellagra 1
Traumatic Neurosis 1
Addison's Disease 1
Plumbism 1

The large bracket includes all those cases, eighty-two out of the one hundred, in which there is considered to be a diminished liver function, brought about either directly or indirectly by the disease process present. Under "direct causes" of hepatic insufficiency may be classed the actual liver diseases, the cases of malignant disease of the abdomen, all of which showed probable liver involvement either by an enlarged liver or bile in the urine, and possibly the case of alcoholism, as it showed bile in the urine; twenty-four in all. Under "indirect causes" come conditions not primarily in the liver, i. e., the infectious processes, passively congested livers, the anemias and malaria. In the acute infections comprising the largest single group, a positive reaction can be explained by supposing an injury to liver cells, due to the accompanying toxemia. This is comparable to the judgment that the appearance of casts and blood in the urine in acute febrile conditions is evidence of temporary kidney damage. The three cases of typhoid which cannot be
classed as acute infections are, however, bracketed with those already mentioned, because they represent conditions accompanied by toxemia. Blood diseases and malaria (in which there is considerable breaking down of red cells) are assumed to be related to hepatic insufficiency because we may presume that there is an overloading of the liver with blood pigments. However, these diseases might also be put in a group by themselves as direct causes of a urobilinogenuria in which the liver plays no part. The cardiac cases with passive congestion of the liver are self-explanatory. This second group, positive reactions without organic liver disease, includes fifty-eight cases.

The small bracket contains eighteen cases in which no possible relation to liver involvement could be found. There was no liver enlargement, jaundice, or bile in the urine, nor was there any condition apparent which could produce an increase of circulating urobilinogen. The liver edge was felt in the Addison's disease, but could be accounted for by the extreme emaciation present. In the case of lead poisoning which showed no anemia, there was, however, marked constipation. It is reasonable to suppose that a larger amount of urobilinogen than normal is absorbed from the intestine in cases of marked constipation and certain writers assert that it may appear in the urine in this condition. But the fact that this was the only positive test out of a very large number of cases of marked constipation, makes constipation improbable as a cause for urobilinogen in the urine. The toxic action of lead on the liver cells might explain the urobilinogen here, yet the evidence is not strong enough to take the case out of this unexplained group.

We may fairly conclude, I believe, from the table, that eighty-two per cent. of the positive tests were associated with decreased liver function from some cause. But despite these results, certain things must be taken into consideration before any conclusions about the liver can be drawn from a positive test in any given case.

First, general conditions, such as acute infection, blood diseases, and passive congestion of the liver, must be excluded. This comprises fifty-eight per cent. There remain forty-two per cent. of positives, twenty-four of which, or fifty-seven per cent., can be tabulated as indicating actual liver disease, while the remaining eighteen, or forty-three per cent., appear to have no connection whatever with the liver. Where an attempt is being made to differentiate between disease of the liver and disease of some other organ, a positive test indicates liver disease only about sixty per cent. of the time, and therefore, cannot be of much value.

It is impossible to analyze in this way, the two series of cases given by Eustis and Berghersen because only the diagnoses are given, and in those cases which apparently have no relation to liver function, it is not stated whether there are any signs of liver involvement or not. But grouping them as they are given, the ratio of positive tests in cases of actual liver disease to positive tests in cases having no apparent relation to liver function (pulmonary tuberculosis, chronic nephritis, etc.) is under forty per cent. instead of sixty per cent. in the table above. In this, showing the test is of even less value than in my figures.

In the literature striking differential diagnoses (e.g., a question between gall bladder disease and appendicitis, or gall bladder disease and duodenal ulcer) have been made on a positive urobilinogen test which was borne out by operation or autopsy. But these diagnoses seem to be largely a matter of chance. Even in cases of common duct obstruction, the persistence of a positive test cannot be taken to prove conclusively that the obstruction is incomplete, for in certain liver conditions, demonstrated so well by Fishler in his experiments on dogs with biliary fistulae, urobilin and urobilinogen may be formed in the liver itself. Simon thinks that a positive test is of value in differentiating abdominal symptoms due to an organic cause from those of purely nervous origin, as the latter never gives a positive test.

Of course, we cannot say, of the eighteen cases included in the small bracket, that there was no disturbance of liver function, merely because none of them showed the grosser manifestations of hepatic injury such as jaundice, enlarged liver, etc. But granted that there was disturbed liver function here, would not the great diversity of conditions in this group show that the test was too sensitive for practical purposes?

What is the value of a negative test in helping to exclude liver disease? One way of getting at this answer to this question is to ascertain whether the test is constantly present in a series of cases with a definite organic liver lesion. To this end, fifteen cases of cirrhosis were collected. Out of this number eleven, or seventy-three per cent., showed a positive test. Some of these cases showed at one admission to the wards a positive test, and at the next a negative. In a few, tests were done several days in succession; one day the test would be positive and the next negative without any apparent change in condition of the patient.

This brings in a complicating factor, namely, that one negative test is not conclusive. Apparently the conditions resemble very much certain cases of chronic nephritis in which it is necessary to test the urine repeatedly before evidence of kidney pathology is found. This point, it seems to the writer of considerable importance, has been very little emphasized in the literature. In view of this, it is not unlikely that all the fifteen cases would have shown a positive test at one time or another, had several tests on successive days been done on each.

Fishler says that in his long series of cirrhosis cases he always obtained a positive test. On the contrary various other writers state that the test is not constant in liver conditions such as cirrhosis where one would most expect it. But no one says how many tests were done on each.

From the comparative infrequency with which bile appears in the urine in such a marked lesion as cirrhosis—only in twenty per cent. of the above series—it is possible that the appearance of urobilinogen, although a much more sensitive test of
liver* disorder, still may be subject to the same
fluctuations as those governing the appearance of
bile in the urine. Again there were in my series a
number of cardiac cases with marked passive con-
gestion of the liver which gave negative tests. A
good deal of light has been thrown on this subject
by the recent work of Wilbur and Addis on the
quantitative estimation of urobilin in the urine in
certain pathological liver conditions. They found
that the output of urobilin varied largely from
day to day and even from hour to hour in the
same case.

Therefore, from the data given above and from
the results of other investigators, a negative test
cannot be said to rule out liver disease. The only
way to determine this accurately is by doing
repeated tests in a large number of cases of actual
liver pathology, not only cirrhosis but also malig-
nant disease of the liver, syphilis of the liver,
etc., in order to find what proportion give a positive
test at some time during their course, and how
many negative tests are necessary on the average
to exclude the possibility of a positive.

On the strength of the above findings, the test
has been discontinued in the routine examination
of admission urines on the West Medical Service
at the Massachusetts General Hospital.

RESULTS.

It seems fair to draw the following conclusions:

1. A positive test is of very little value on
account of the fact that it appears in such a
relatively large number of conditions having no
apparent relation to liver function.

2. One negative test does not rule out
the possibility of a positive test appearing later on.

3. A persistently negative test is of more value
than a positive but in view of the lack of clinical
data, it cannot be said to exclude a pathological
liver condition.

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CONCERNING THE ETIOLOGY AND
TREATMENT OF SUPERFLUOUS
HAIR.

By GEORGE D. CULVER, M.D., San Francisco.

The question of superfluous hair is important,
and there is more to it than eradication alone.
Prevention should also be considered, and it is
here that the physician with his knowledge of
physiology and with the conditions under which
hair is stimulated to grow, may give valuable
advice that lifts him above being a mere technician.
Definite directions may be given in that large
class of cases in which constitutional distur-
bances tend to stimulate the growth of hair.
The laity often imagine that the facial creams and
ointments used in seborrhea and acne stimulate
the growth of hair, when it is really the condition
of the skin itself that is responsible for the
hypertrichosis. In fact several factors may con-
join to this end. For instance, many of the pa-
tients applying for treatment of overgrowth of
hair on the face are in early adult life, and there-
fore at an age when the pilosebaceous system,
whether in the male or in the female, is especially
active, and then, as before indicated, seborrhea,
a condition in which the pilo-sebaceous system is still
further stimulated, may also supervene. The
etiology of the latter is most intricate. Seborrhea
is a condition of the skin dependent for the most
part on the action of toxines developed in the
alimentary canal. Almost all these toxines are
vaso-dilators, and they dilate the blood vessels
and stimulate the glandular system of the face,
probably in the same way that alcohol does. Cer-
tain classes of food also tend to produce seborrhea.
For instance, milk fat is a sebeogogue, but sugar
is a much stronger one, and alcohol is still more
active in this direction. Furthermore, if milk
and sugar are taken only in normal quantity
and the oxygen intake is low, as in sedentary life
or in anemia, the fat and sugar are not burnt,
but are shunted as fat into the fat repositories, of
which one of the greatest is the skin, and there
they may give rise to seborrhea. Therefore,
adolescence, anemia, gastro-intestinal intoxica-
tion, and the ingestion of sebeogogic foods may all
conjoin to produce a greasy skin in which the
growth of hair is highly stimulated. Sometimes
this stimulation is remarkable, and results in a
thick, rapidly growing coat of hair. On the
scalp this overproduction is regularly followed by
a correspondingly rapid fall. On the face the fall
is not so apt to occur. It is not, therefore, the
facial creams that the patient uses, but the facial
oil and its concomitants that the patient herself
elaborates, that often conduce to an overgrowth
of hair.

One other observation worth recording is that
almost all the seborheics who have an increased
growth of hair on the face have congested skins,
and frequently hyperhidrosis of the palms and soles.
The peripheral arterioles are so full that pressure
will produce blanching distinctly outlined with
reddeners borders, the color returning slowly. This
congestion is often well marked in the face, and
seems to be intimately associated with the sebor-
rhea, and with the stimulation of the growth of
hair. This congested skin is a symptom resulting
from the action of toxines, probably developed in
the alimentary canal, which, as before mentioned,
are almost all vasodilators.

Among etiological factors in the production of
superfluous hair as given by Baum, are uterine dis-
placement with dysmenorrhea, diabetes, toxemias
and seborrhea. He states that associated with
hypertrichosis, indican is almost constantly present
in the urine. He cites an instance occurring after
acute flexion of the uterus, and disappearing after
correction, with return of normal menstruation,
and another instance of the disappearance of super-
fluous hair from the upper lip and chin of a
woman two years after marriage, and after the