Observations on Malarial Fever. By Joseph Jones, A.M., M.D., Professor of Physics and Natural Theology in the University of Georgia, Athens; Professor of Chemistry and Pharmacy in the Medical College of Georgia, Augusta; formerly Professor of Medical Chemistry in the Medical College of Savannah.

[Continued from page 538 of August No. 1858.]

SECTION II.—REMITTENT FEVER.

In the preceding articles upon Intermittent fever, but few comparisons were made—but few conclusions drawn. A simple statement of the phenomena was made, and they were placed in a situation for future analysis and comparison.

A similar course will be pursued, with Remittent and Congestive fevers.

When we have examined the phenomena of the varieties of Malarial fever, then analysis and comparison will be instituted: then the similar will be combined, and the dissimilar separated; and thus we will endeavor to establish the relations, or laws, of the phenomena of Malarial fever.

Our knowledge of Malarial fever, and in fact, of all fevers, is imperfect. Many phenomena have never been analyzed, and it is probable that there are many which have escaped observation entirely. It is necessary, therefore, that we should proceed upon the strict principles of induction.

We must establish a true knowledge of Malarial fever, in the
same manner that all sciences have been constructed. By ob-
servation, experiment and reason, facts must be observed, re-
corded, accumulated, compared: complex phenomena observed,
recorded, analyzed, decomposed, and their component elements,
arranged and compared: the errors of the senses corrected,
and thus fundamental laws or relations established.

By analyzing phenomena, and connecting them by the natural
relations of succession and resemblance, fixed laws or relations
are discovered.

The end of knowledge is fore-sight, fore-knowledge; and
when perfected, it will enable us to predict with absolute cer-
tainty the future course of events.

Thus the great object of the Astronomer is to determine the
fixed relations or laws of the universe, so that the precise condi-
tion of the heavenly bodies, at any future time, may be deter-
mined with absolute certainty.

The great object of the Physician, should be to determine the
fixed relations or laws of the animal economy, and the definite
action, constitution, and relations of morbidic and remedial
agents, so that he may be able to predict the results of the ac-
tions of these agents, and also to control and direct their action.

This is our object and this our method. But our instruments
and means of investigation have been imperfect. The pheno-
mena themselves were obscure, and it is probable that many, of
great importance, entirely escaped our observation.

Imperfections of the senses, imperfections of the mental facul-
ties, imperfections in our materials and instruments, of experi-
mant and analysis, will necessarily render the results imperfect.

My object is to assist in the establishment of the truth, and it
is my fervent hope, that whatever results, relations, or laws, I
may deduce from these observations, will be tested, and weighed
by careful, conscientious observers. Thus, we hope, that in
time, the errors will be eliminated, the imperfections removed,
the results enlarged, and the truth established.

Case XXIII.—English seaman: age 25, weight 140, height
5 feet 6 inches; black hair; florid complexion. Sailed from New
York to Darien, Georgia. Remained in Darien five days; dur-
ing which time, he slept on board the vessel, lying in the Altmaha
river. Sailed from Darien, and arrived in Savannah
twelve days ago. During the day has been running on a steam tug, up and down the Savannah river, from its mouth to the city, and has slept, during the night, on the bay. Was taken with a chill, September 6th, 10 o'clock A. M.

September 10th, 7 o'clock P. M. Took salts and senna, this morning. This operated five times. Has taken no other medicine. Pulse 90, full; respiration 48, panting, thoracic. Temperature of atmosphere, 80° F.; Temp. of hand, 103°; Temp. under tongue, 105°. Tongue pointed and red at tip and edges, superior portion coated with black fur; skin dry. Complains of great thirst and pain in his head. Face flushed.

September 11th, 11 o'clock A. M. Pulse 88; respiration labored, thoracic, panting, irregular, varying from 34 to 40. Temperature of atmosphere, 82° F.; Temp. of hand, 103°25'; Temp. under tongue, 105°. Says that he did not rest well last night, and complains of great pain in his head. Intellect clear. Has been vomiting yellow and green matters. Bowels have not been moved during the night. Skin dry and harsh to the feeling. Tongue red, dry and glazed. To the finger the tongue feels as dry as the skin. The state of the tongue would lead us to suspect tenderness of the epigastrium, but there is none. Complains of great thirst; says that he felt very cold and weak this morning at 5 o'clock. The nurse states that at this time his pulse was 65, and his skin cool. B. Sulphate of quinia, grs. v. every three hours, up to grs. xxxv.

If the stomach rejects the sulphate of quinia, administer the following injection:—B. Sulphate of quinia, grs. xx.; Starch, f 3 ij.; Tincture of opium, m x. Mix. Repeat in three hours. B. 5 cut cups to epigastrium. B. Soda powders. Diet, gruel and flax seed tea.

Amount of Urine passed during the last 16 hours, grains, 8160
" " " calculated for 24 " " 12240
" " " excreted hourly, - - " 510

Urine clear, high colored, like new Madeira wine. Specific gravity 1020. Reaction decidedly acid. After standing 40 hours, threw down a small deposit of regular prismatic crystals of triple phosphate and vegetable cells.

<table>
<thead>
<tr>
<th>ANALYSIS XXXVII.</th>
<th>Urine excreted in 16 hrs., grs. 8160, contained grains</th>
<th>Calculated am't of Urine for 24 hours, grs. 12240, contained grains</th>
<th>1000 pts. contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water,</td>
<td>7618.696</td>
<td>11428.044</td>
<td>933.664</td>
</tr>
<tr>
<td>Solid matters,</td>
<td>541.364</td>
<td>811.956</td>
<td>66.336</td>
</tr>
<tr>
<td>Urea,</td>
<td>349.200</td>
<td>523.800</td>
<td>42.593</td>
</tr>
<tr>
<td>Uric Acid,</td>
<td>3.200</td>
<td>4.800</td>
<td>0.393</td>
</tr>
<tr>
<td>Extractive &amp; coloring matters,</td>
<td>168.533</td>
<td>252.805</td>
<td>20.673</td>
</tr>
<tr>
<td>Fixed saline constituents,</td>
<td>20.160</td>
<td>30.240</td>
<td>2.475</td>
</tr>
</tbody>
</table>
Sept. 11th, 7 o'clock P. M. Patient is not so restless—has an inclination to sleep, and his intellect acts more slowly than normal. Tongue moister than this morning, but still much dryer than normal; free extremity of the tongue clean for one inch from the tip; this portion is as red as scarlet; the remainder of the tongue is coated with dark fur. The nurse states that, "after the application of the cut cups, his skin began to moisten—he became much more quiet, and went to sleep." Skin moist, but hot; slight tenderness upon pressure of epigastrium; lips dry, and coated at the edges with yellow matter. Pulse 90; respiration 40 to 44, panting, thoracic, irregular—every 15 or 20 respirations, he draws a long sigh, inflating his chest to its utmost capacity. Temperature of atmosphere, 81° F.; Temp. of hand, 104°; Temp. under tongue, 104° 8'.

Bowels have not been moved. Has taken 20 grains of the sulphate of quinia.

**R.** Stop sulphate of quinia, and give soda powders. As soon as fever remits, commence with sulph. of quinia, grs. v. every three hours, up to grs. xv.

Urine high colored, clear; reaction decidedly acid. Specific gravity 1019.6. After standing 30 hours, let fall a small deposit of vegetable cells, and prismatic crystals of triple phosphate and globulo-acicular crystals of urate of soda.

| Amount of Urine excreted in 8 hours, | - | grains, 5098. |
| Amount | “ hourly, | - | “ 637.2 |
| | | | | “ “ | “ 552.4 |

**Analysis XXXVIII.**

<table>
<thead>
<tr>
<th></th>
<th>Urine excreted in 8 hours, grs. 5098 contained, grains</th>
<th>Calculated amount, grains</th>
<th>1000 parts of Urine contained</th>
<th>Urine excreted in the last 24 hours, grs. 13258 contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>4764.865</td>
<td>14294.595</td>
<td>934.652</td>
<td>12883.561</td>
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<tr>
<td>Solid Matters</td>
<td>333.135</td>
<td>999.405</td>
<td>65.284</td>
<td>874.439</td>
</tr>
<tr>
<td>Urea</td>
<td>228.000</td>
<td>669.000</td>
<td>43.722</td>
<td>572.300</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>1.450</td>
<td>4.350</td>
<td>0.284</td>
<td>4.650</td>
</tr>
<tr>
<td>Ext. and Col'ng Matters</td>
<td>90.210</td>
<td>270.650</td>
<td>17.707</td>
<td>255.748</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>18.325</td>
<td>54.975</td>
<td>3.595</td>
<td>38.485</td>
</tr>
</tbody>
</table>

A comparison of this analysis with the preceding one, shows that the uric acid was below the standard of health, when the patient was entirely free from medicine, and that under the action of the sulphate of quinia (grs. xxv.), the uric acid was very slightly diminished in amount, only \(\frac{3}{10}\) of a grain during 24 hours.

If we compare these analyses (xxxvii. and xxxviii.) with the analyses of the urine in intermittent fever, (see pages 386–391
and 438-450 of this journal,) it is evident that the urea has greatly increased in amount. The increase has been proportional to the increase of the severity of the disease. When we consider the state of rest, and the almost complete starvation of the patient, it is evident that the urea has increased to more than double the normal quantity. These facts will be noticed more fully hereafter.

September 12th, 12 o'clock M. Complains of weakness and headache. Was not so restless last night as on the previous nights. Fever commenced to remit at 10 A.M., this morning. Bowels have not been moved since his entrance into the hospital. Some tenderness upon pressure of epigastrium. Tongue not so red, cleaner and moister—the dark fur about the root has, in a great measure, cleaned off—tip and edges still much redder than normal. Pulse 70; respiration 26-36, thoracic, irregular, varying with each quarter—every 12 or 15 respirations, draws a long sigh, inflating his thorax to its utmost capacity. After this, his respiration ceases for a few moments. The respiration is indicative of oppression. Temperature of atmosphere, 83° F.; Temp. of hand, 100° 75°; Temp. under tongue, 102° 50°. Has taken 10 grs. sulphate of quinia during the night.

B. Continue sulphate of quinia, grs. v. every three hours, up to grs. xl. Complains of uneasiness in his bowels. Has a disposition to visit the stool, frequently, without the ability to evacuate the bowels. B. Calomel, grs. xii., followed by castor oil in four hours. Continue the sulphate of quinia, regardless of the action of the medicine. Urine, high colored, brownish-red, limpid, without deposit. Sp. gr. 1019; reaction decidedly acid. After 40 hours, a small deposit of vegetable cells, urate of soda and triple phosphate.

<table>
<thead>
<tr>
<th>Analysis XXXIX.</th>
<th>Urine excreted in 17 hours</th>
<th>Calculated amount of Urine for 24 hrs., grains</th>
<th>1000 parts Urine contained</th>
<th>Urine excreted during the last 24 hours, grs. 20383 contained grains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>14475.810</td>
<td>20435.283</td>
<td>947.059</td>
<td>19240.675</td>
</tr>
<tr>
<td>Solid Matters</td>
<td>809.190</td>
<td>1131.767</td>
<td>52.941</td>
<td>1142.325</td>
</tr>
<tr>
<td>Urea</td>
<td>567.450</td>
<td>800.671</td>
<td>37.124</td>
<td>790.450</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>8.000</td>
<td>8.466</td>
<td>0.392</td>
<td>7.450</td>
</tr>
<tr>
<td>Ext. and Col'ing Matters</td>
<td>95.050</td>
<td>134.115</td>
<td>5.182</td>
<td>185.260</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>140.280</td>
<td>197.935</td>
<td>9.243</td>
<td>158.605</td>
</tr>
</tbody>
</table>

Amount of Urine excreted during the last 17 hours, grains, 15285

Calculated amount of Urine for 24 hours, 21567

Actual amount of Urine excreted during last 24 hrs., 20383

9 o'clock, P. M. Complains of some pain in his head, and
in the region of the liver; intellect is clear and he is not so restless; tongue moist, still redder than normal; skin moist and relaxed. Pulse 70, regular and soft; respiration 58, irregular and thoracic. Temp. of atmosphere, 83°F.; Temp. of hand, 99°16; Temp. under tongue, 101°5. Urine high colored, reaction decidedly acid. Sp. gr. 1020. Medicine has operated several times, and much urine was passed during the operations. B. Sulphate of Quinia, grs. xv.; Snake-root tea, f 3 viii. Tablespoonful every four hours.

Sept. 13th, 11 o'clock A. M. Rested well during the night, feels better, but very weak; bowels moved three times during the night; tongue moist, rather pointed, red at tip and edges; tip clean, base coated with light yellow fur, slight tenderness upon pressure of epigastrium. Pulse 52 regular, respiration 48, more regular and gentle than on the previous day. Temp. of atmosphere, 85°F.; Temp. of hand, 97°; Temp. under tongue, 100°. The calomel has evidently been productive of good. The patient however appears to be very weak. The urine has changed greatly in color since yesterday. It is now orange colored and turbid. Sp. gr. 1024; reaction after 15 hours alkaline. B. Sulphate of Quinia, grs. xv.; Snake-root tea, f 3 viij.; brandy, f 3 viij. Mix. Dose, a tablespoonful every two hours. If the pulse rises and the heat increases, discontinue the brandy.

6 o'clock P. M. Tongue moist, not so red at tip and edges, slightly coated with white fur. Pulse 60, respiration 26 to 32, more regular, and not so thoracic as formerly, but still irregular, varying with each quarter of a minute; at one quarter indicating 45 to the minute, and perhaps at the next quarter it will indicate only 20. B. Continue Sulphate of Quinia, Brandy, and Snake-root tea; tablespoonful every three hours; urine orange colored. Sp. gr. 1022; reaction alkaline after standing 15 hours.

Sept. 14th, 1 o'clock, P. M. Much better. Bowels were moved three times during the night. Pulse 58, respiration 28; no tenderness upon pressure of epigastrium; tongue normal, no tenderness upon pressure of the epigastrium. Temp. of atmosphere, 87°F.; Temp. of hand, 99°; Temp. under tongue, 102°; urine orange colored; reaction alkaline in 12 hours; in 24 hours had thrown down a copious deposit of crystals of triple phosphate, and urate of soda. The deposit of urate of soda, greatly exceeded in amount that of the triple phosphate. Sp. gr. 1025.

Amount of Urine excreted during the last 19 hours, grains, 15875
" " " " hourly, " " " " 809
Calculated amount of Urine for 24 hours, - " 19418
ANALYSIS XL

<table>
<thead>
<tr>
<th></th>
<th>Grs. 15375 Urine excreted during 19 hrs. contained grains</th>
<th>Grs. 19418 calculated for 24 hours contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>538·330</td>
<td>679·926</td>
<td>35·054</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>8·550</td>
<td>10·798</td>
<td>0·556</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>35·840</td>
<td>45·288</td>
<td>2·390</td>
</tr>
</tbody>
</table>

September 15th, 10 o'clock A. M. Continues to improve; tongue moist, and normal in appearance; skin cool, relaxed and moist. Pulse 50, full and regular; respiration 24, regular and gentle. Temperature of atmosphere, 84° F.; Temp. of hand, 94° 5'; Temp. under tongue, 99°. B. Quassia and soda. Continue snake-root tea and sulph. of quinia, table-spoonful every four hours. Urine, deep orange color—after standing 20 hours, let fall a deposit of urate of soda and triple phosphate. Specific gravity 1016·5.

Amount of Urine passed during the last 20 hours, grains, 6607
" " " " hourly, - - - " 330
Calculated amount of Urine for 24 hours, - - - " 8038

When this analysis is compared with the former analyses, it is evident that the reduction of the force and frequency of the circulation and respiration, the reduction of the temperature, and the relaxation of the skin, was attended by a diminution of the urea.

7 o'clock P. M. Pulse 47; respiration 27. Temperature of atmosphere, 87° F.; Temp. of hand, 96°; Temp. under tongue, 99°. Skin moist, relaxed, cool, perspiration. Urine, orange colored; sp. gr. 1018·2; after standing 15 hours, let fall a heavy light-yellow deposit of urate of soda and ammonia, and numerous well formed prismatic crystals of triple phosphate.

Amount of Urine passed during the last 9 hours, grains, 5121
" " " " hourly, - - - " 569
Calculated amount for 24 hours, - - - " 13652

ANALYSIS XLI

<table>
<thead>
<tr>
<th></th>
<th>Grs. 6607 Urine excreted during 20 hrs. contained grains</th>
<th>Grs. 8038 Urine calculated for 24 hours contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>6230·091</td>
<td>8585·710</td>
<td>942·953</td>
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<tr>
<td>Solid Matters</td>
<td>376·909</td>
<td>452·290</td>
<td>57·047</td>
</tr>
<tr>
<td>Urea</td>
<td>222·658</td>
<td>267·189</td>
<td>38·169</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>4·225</td>
<td>5·070</td>
<td>0·639</td>
</tr>
<tr>
<td>Ext. and Col'ing Matters</td>
<td>123·322</td>
<td>147·986</td>
<td>14·100</td>
</tr>
<tr>
<td>Fixed Saline Constituents,</td>
<td>26·304</td>
<td>31·805</td>
<td>4·027</td>
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</tbody>
</table>

ANALYSIS XLII

<table>
<thead>
<tr>
<th></th>
<th>Grs. 5121 Urine excreted during 9 hrs. contained grains</th>
<th>Grs. 13652 Urine calculated for 24 hours contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>4946·350</td>
<td>13186·384</td>
<td>965·854</td>
</tr>
<tr>
<td>Solid Matters</td>
<td>174·650</td>
<td>465·616</td>
<td>34·146</td>
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<tr>
<td>Urea</td>
<td>52·622</td>
<td>140·291</td>
<td>10·277</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>6·250</td>
<td>16·662</td>
<td>1·220</td>
</tr>
<tr>
<td>Ext. and Col'ing Matters</td>
<td>94·750</td>
<td>252·035</td>
<td>18·484</td>
</tr>
<tr>
<td>Fixed Saline Constituents,</td>
<td>20·815</td>
<td>55·492</td>
<td>4·065</td>
</tr>
</tbody>
</table>
September 16th, 12 o'clock M. Pulse 46; respiration 20 to 26, irregular. Urine, orange colored; specific gravity 1022.2. Temperature of atmosphere, 87° F.; Temp. of hand, 97°; Temp. under tongue, 99°. After standing 12 hours, let fall a light-yellow deposit of octohedral crystals of the oxalate of lime, globular crystals of the urate of soda, and a few prismatic crystals of triple phosphate.

Amount of Urine excreted during the last 17 hours, grains, 4599
  " " " hourly, " " " 270
Calculated amount of Urine for 24 hours, - - " 6490
Actual amount of Urine excreted during the last 24 hrs. 9720
  " " " hourly, " " " 405

<table>
<thead>
<tr>
<th>ANALYSIS XLIII</th>
<th>Grs. 4599 of Urine excreted during 17 hrs., contained grains</th>
<th>Grs. 6490 of Urine calculated for 24 hrs., contained grs.</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>4292·402</td>
<td>6057·391</td>
<td>933·334</td>
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<tr>
<td>Solid Matters</td>
<td>306·508</td>
<td>432·609</td>
<td>66·666</td>
</tr>
<tr>
<td>Urea</td>
<td>150·592</td>
<td>212·456</td>
<td>32·744</td>
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<tr>
<td>Uric Acid</td>
<td>2·700</td>
<td>3·798</td>
<td>0·537</td>
</tr>
<tr>
<td>Ext. and Col'ing Matters</td>
<td>120·000</td>
<td>169·200</td>
<td>26·075</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>32·994</td>
<td>46·554</td>
<td>7·160</td>
</tr>
</tbody>
</table>

Grs. 9720 of Urine excreted during last 24 hours contained grains 9238·752

8 o'clock P.M. Pulse 47; respiration 28. Temperature of atmosphere, 87° 5' F.; Temp. of hand, 95° 9'; Temp. under tongue, 99°.

Amount of Urine passed during last 8 hours, - grains, 4080
  " " " hourly, " " " 510
Calculated amount of Urine for 24 hours, - " 12240

After standing 12 hours, the urine threw down a heavy light-yellow deposit of urate of soda and triple phosphate.


Amount of Urine excreted in the last 15 hours, grains, 8712
  " " " hourly, " " " 514
Calculated amount of Urine for 15 hours, - " 13940

<table>
<thead>
<tr>
<th>ANALYSIS XLIV</th>
<th>Grs. 8712 Urine excreted during 15 hrs., contained grains</th>
<th>Grs. 13940 Urine calculated for 24 hours, contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>8139·466</td>
<td>13023·945</td>
<td>934·286</td>
</tr>
<tr>
<td>Solid Matters</td>
<td>572·534</td>
<td>916·055</td>
<td>65·714</td>
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<tr>
<td>Urea</td>
<td>123·675</td>
<td>197·880</td>
<td>14·200</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>5·695</td>
<td>9·112</td>
<td>0·653</td>
</tr>
<tr>
<td>Ext. and Col'ing Matters</td>
<td>281·067</td>
<td>449·707</td>
<td>32·224</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>161·797</td>
<td>258·876</td>
<td>18·571</td>
</tr>
</tbody>
</table>
September 18th, 12 o'clock M. Pulse 44; respiration 24. Temperature of atmosphere, 86° F.; Temp. of hand, 96° 25'; Temp. under tongue, 99°.

Amount of Urine passed during the last 24 hours, grains, 15903
" " " " hourly, " " " " 662
Uric acid in grs. 15903 of Urine of 24 hours, grains, 35'650
Uric acid in 1000 parts of Urine, - - " 2'241

Urine, normal in color. After standing 8 hours, reaction alkaline, with a heavy deposit of urate of soda and triple phosphate. The increase of the uric acid has attended the convalescence. This fact proves that the action of the sulphate of quinia, in arresting intermittent fever, is not due to its power of diminishing the amount of uric acid.

September 19th, 12 o'clock M. Pulse 44; respiration 24. Urine, normal in color; deposit, after standing, triple phosphate. Temperature of atmosphere, 88° 5' F.; Temp. of hand, 97°; Temp. under tongue, 99°.

Amount of Urine excreted during the last 24 hours, grains, 24240
" " " " hourly, - - - " 1010

September 20th, 12 M. Specific gravity 1010.

Amount of Urine passed during the last 24 hours, grains, 32320
" " " " hourly " " " " 1346

September 22nd. Specific gravity 1008.

Amount of Urine passed during the last 24 hours, grains, 23300
" " " " hourly, " " " " 929
Pulse 44; Respiration 22. Temperature of atmosphere, 84° F.; Temp. of hand, 97° 8'; Temp. under tongue, 99° 12'.

This patient is now able to walk about the hospital yard, but is pale, anæmic, and very weak.


<table>
<thead>
<tr>
<th>Water,</th>
<th>Solid Matters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 1000 parts of Blood, 831'294</td>
<td>In 1000 parts of Blood, 168'706</td>
</tr>
<tr>
<td>&quot; Serum, 927'853</td>
<td>&quot; Serum, 72'147</td>
</tr>
<tr>
<td>(1) &quot; Liq. Sang. 924'664</td>
<td>(1) &quot; Liq. Sang. 75'336</td>
</tr>
<tr>
<td>(2) &quot; &quot; &quot; 887'265</td>
<td>(2) &quot; &quot; &quot; &quot; 112'735</td>
</tr>
<tr>
<td>Serum of 1000 pts. Blood, 64'464</td>
<td></td>
</tr>
</tbody>
</table>
Fixed Saline Constituents.

In 1000 parts of Blood, 4.370
  " " Serum, 3.288
(1) " " Liquor Sanguinis, 3.299
(2) " " " " Solid Matters of Blood, 4.885
  " " " " Serum, 25.906
  " " " " Moist Blood Corpuscles, 45.576
(2) " " " " Liq. Sanguinis, 37.390
 " " " " Blood Corpuscles, 14.047
  " Serum of 1000 parts of Blood, 3.511
In Blood Corpuscles of 1000 parts of Blood, 1.432
  " Serum of 1000 parts of Blood, 2.938

1000 Parts of Blood Contained,

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>831.294</td>
</tr>
<tr>
<td>Dried Blood Corpuscles</td>
<td>101.941</td>
</tr>
<tr>
<td>Albumen, Extractive and Coloring Matters</td>
<td>64.184</td>
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</tbody>
</table>

1000 Parts of Blood Contained,

<table>
<thead>
<tr>
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<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>300.823</td>
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<tr>
<td>Dried Blood Corpuscles</td>
<td>407.764</td>
</tr>
<tr>
<td>Albumen, Extractive and Coloring Matters</td>
<td>592.236</td>
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</table>

1000 Parts of Moist Blood Corpuscles Contained,

<table>
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<th>Constituent</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>750.000</td>
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<tr>
<td>Dried Organic Residue</td>
<td>246.468</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>3.511</td>
</tr>
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</table>

(1) 1000 Parts of Liquor Sanguinis Contained,

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>924.664</td>
</tr>
<tr>
<td>Albumen, Extractive and Coloring Matters</td>
<td>68.858</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>3.289</td>
</tr>
<tr>
<td>Fibrin</td>
<td>3.189</td>
</tr>
</tbody>
</table>

(2) 1000 Parts of Liquor Sanguinis Contained,

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>887.265</td>
</tr>
<tr>
<td>Albumen, Extractive and Coloring Matters</td>
<td>103.880</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>3.885</td>
</tr>
<tr>
<td>Fibrin</td>
<td>4.945</td>
</tr>
</tbody>
</table>

This analysis shows that the dried organic residue, and especially the fixed saline constituents, of the colored blood corpuscles, have diminished. The moist blood corpuscles are less than normal by 100 parts in the 1000 parts of blood. The fixed saline constituents are less than one-half the normal amount.
The patient recovered sufficient strength to walk about the hospital grounds. His complexion continued anaemic and his forces were feeble and did not increase, notwithstanding the administration of tonics and iron. He complained continually of a severe pain in his head. Cut cups over the temples and back of the neck; cold applications and internal remedies failed to afford any relief.

On the 4th of October, he was taken with a chill followed by high fever. The chill came on at 1 o'clock M., and has returned daily at this hour.

October 6th, 12 o'clock M. The chill has been on one hour, and the circulation of the capillaries is becoming equalized and the temperature of the extremities is rising. Pulse 110, feeble than after complete reaction, but stronger than during the lowest depression of the cold stage. Respiration rapid, thoracic panting, 45–50; muscles trembling violently. It was with the greatest difficulty that the bulb of the thermometer could be held under the tongue with the lips closed around, on account of the violence of the inspirations and expirations. The air was drawn into the lungs and expelled with great violence.

The patient resembled an over-heated man after violent exertion in hot weather, panting for breath. Temp. of atmosphere, 70°F.; Temp. of hand, 97°F.; Temp. under tongue, 104°F. The bulb of the thermometer under the tongue excited vomiting. After vomiting the shaking of the muscles ceased, and the violent respiration became calmer and more regular. This attack yielded to sulphate of quinia, and the recurrence of the chill was prevented by the administration of arsenic.

The occurrence of intermittent fever after an attack of remittent fever, was due in this case to one or both of two causes. The malarial poison may not have been completely broken up and removed during the attack of remittent fever, or a fresh dose of the malarial poison may have been received subsequently to the complete elimination of the disturbing element.

Both these causes may have acted simultaneously. The hospital is situated in a malarious district, and a dose of the poison might have been received at any time.

The annexed table will give a condensed view of the most important phenomena. (See next page.)

A comparison of the phenomena of this case of remittent fever, with those of health and intermittent fever, establish the following conclusions:

(1). The secretions of the mouth are more completely checked, and the tongue is dryer, redder, and rougher to the feeling in remittent, than in intermittent fever.

(2). The glowing tongue of remittent fever, is not an index of inflammation. It indicates a want of circulation in the capilla-
ries of the superficial parts of the tongue. The secretions of the mucous membrane have been checked; the moisture is evaporated by the elevated temperature; the circulation in the superficial capillaries, is thus retarded, and they become filled with colored blood corpuscles, which give the bright color to the tongue.

The question arises, what checked the secretions of the mucous membrane of the mouth?

The consideration of the chemical alterations of many elements and secretions enter into the solution of this question. We will mention only five and acknowledge that this is nothing but a statement of the manner in which the changes may take place, and not a direct absolute answer to the question.

1. The cells of the mucous membrane. 2. The capillaries of the mucous membrane. 3. The serum of the blood. 4. The blood corpuscles. 5. The nervous system presiding over the elaboration of the blood, the circulation of the blood in the capillaries, and the formation of the secretions.

We have before demonstrated that the malarial poison, produces profound chemical and physical alterations in the colored blood corpuscles, destroying many, and in all inducing chemical changes which result in a great diminution of the fixed saline constituents.

The blood corpuscles, collectively form an immense gland, which elaborates the materials of the serum into compounds for the nervous and muscular system, and probably for the various secretions. Whatever therefore destroys or alters the chemical changes of the colored blood corpuscles, must produce corresponding changes, in the secretions and excretions, and in the structure and action of the nervous system.

There is a portion of the nervous system which presides over the circulation and chemical changes in the capillaries and thus over the secretions. The malarial poison may act upon the nervous system directly, or indirectly, by the changes induced in the blood corpuscles and the constituents of the serum, or it may act upon the nervous system in both ways combined at the same time. Whatever acts directly or indirectly upon the nervous system, will produce corresponding changes in the secretions, excretions and nutrition.

3. In this case we cast aside the advice of many of the older writers and administered the sulphate of quinia freely in the outset of the disease, regardless of the glowing parched tongue, tenderness upon pressure of the epigastrium, and severe headache and high fever, and rapid bounding pulse, thoracic respiration, and hot dry skin. Under the action of the sulphate of quinia, the dry red tongue became moist, clear and pale; the circulation and respiration abated in force and frequency, the dry harsh
skin was covered with perspiration, and all the symptoms subsided. The advantage of this mode of treatment will be illustrated subsequently.

4. The increase of the action of the pulse and respiration was attended by an elevation of the temperature. The elevation of the temperature corresponded more accurately with the increased action of the circulatory and respiratory systems in intermittent fever, than in this case of remittent fever. That is, the pulse and respiration were more accelerated in remittent fever, whilst the temperature did not rise higher than that of intermittent fever.

5. The urea was increased during the active stages of the fever, not only above the normal standard during rest and a deprivation of food, but also above the standard of intermittent fever.

6. The increased temperature and correspondingly increased chemical changes, were attended by an increase of the urea. When the temperature fell below the normal standard, in both intermittent and remittent fever, the urea was decreased in amount.

7. The uric acid was diminished in the active stages of intermittent and remittent fevers, and increased as the diseases subsided.

8. The changes in the acidity of the urine in this case, resembled in all respects, those during intermittent fever.

9. The coloring and extractive matters, were diminished during the active stages, and increased during the subsidence of the fever.

Case XXV. Irish seaman: aged 21; height 5 feet 4 inches; weight 125 lbs; brown hair, brown eyes, sallow complexion. Has been in Savannah three weeks, and has been sick three days. This is his first trip to Savannah, during the summer season.

October 12th, 12 M. Complains of great weakness and pain in his back and bones; says that he has had no chill and no fever during the three days of indisposition, previous to his entrance into the hospital. Pulse 80, full. B. Sulph. of quinia grs. v., every three hours, up to grs. xv.

October 13th, 12 M. Did not rest well last night; complains of pain in his head and bones. Had a chill two hours ago. Tongue clean, red, dry, and rough; papillae enlarged. Some tenderness of epigastrium. Skin hot and dry. Pulse 118; respiration 24–26, irregular, thoracic. B. Calomel, grs. x., castor oil in four hours. B. Soda powders during fever. B. After fever remits, give sulphate of quinia, grs. v., every three hours, up to grs. xx.

October 14th, 12 M. Medicine acted twice; tongue clean and very red; patient is not so restless; complains of great weakness.
Has taken xx grs. of sulphate of quinia; temperature of skin normal. B. Brandy, f3 viij.; sulph. of quinia, grs. xv.; snake-root tea, f3 viij. Mix. Tablespoonful every four hours.

October 15th, 12 M. Had an increase of fever yesterday afternoon, which was accompanied with severe pain in his head and bones. Now he is restless and nervous; countenance uneasy, anxious. All his motions are indicative of restless, uneasy, anxious, feeling; complains of great thirst; tongue as red as scarlet. At 9 o’clock A. M., this morning, it was dry and glazed; at the present time, (three hours afterwards), it is a little moister and softer; lips dry, red and rough. Epigastrium very tender upon pressure; trunk and head very hot, extremities only moderately warm. Complains of pain in the small of the back, and in the knees and bones of his legs. Pulse 106, feeble; respiration 30–40, irregular, labored, thoracic, panting. Temp. of atmosphere, 74°F; Temp. of hand 101°; Temp. in axilla, 105°. The temperature under the tongue could not be taken on account of his restlessness. Reaction of saliva acid. There is a great want of co-ordination between the circulation, respiration, and temperature of the extremities. The capillary circulation and chemical changes are impeded. B. 4 cut cups to epigastrium; 4 cut cups over the lumbar regions and spine. B. Mustard to extremities. B. Soda powders. Urine high colored, of a deep brownish red color. Sp. Gr. 1028; reaction decidedly acid.

Amount of Urine passed during the last 30 hours, grains, 15430

<table>
<thead>
<tr>
<th></th>
<th>Grs. 15430 of Urine passed during 30 hrs. contained grains</th>
<th>Grs. 12344 of Urine passed during 24 hrs. contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>727.500</td>
<td>582.000</td>
<td>47.178</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>9.300</td>
<td>7.440</td>
<td>0.603</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>75.000</td>
<td>60.000</td>
<td>4.863</td>
</tr>
</tbody>
</table>

7½ o’clock, P. M. Lies in a stupor, muttering to himself, and is with great difficulty aroused. When aroused, answers incoherently, and says that he feels very well. Temperature of extremities below the normal standard—cool; temperature of head and trunk normal; tongue of a bright red color; great tenderness of epigastrium, pressure here arouses him more quickly than violent shaking; pulse 100, feeble; respiration 32. B. Two cut cups to each temple. B. Apply a blister over the epigastrium 6 inches by 4 inches, and another to the back of the neck 4 inches by 5. B. Apply mustard to extremities. B. brandy and snake-root tea, and spirits of mindererus, f3 ss. of each alternately every half hour, until reaction is established. B. Sulphate of quinia, grs. v., every three hours up to grs. xlv.
Amount of Urine passed during the last 7½ hours, grains, 4072
" " " " hourly, " " " " " " 543
Calculated amount of Urine for 24 hours, - - " 13030
Urine high colored and strongly acid in reaction. After standing 50 hours there was no deposit, and the reaction was still decidedly acid. Sp. gr. 1018.

<table>
<thead>
<tr>
<th>ANALYSIS XLVI</th>
<th>Grs. 4072 of Urine contained during 7½ hrs.</th>
<th>Grs. 13030 Urine calculated for 24 hours, contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea..............</td>
<td>151.320</td>
<td>483.224</td>
<td>37.161</td>
</tr>
<tr>
<td>Urie Acid...........</td>
<td>1.888</td>
<td>6.086</td>
<td>0.461</td>
</tr>
</tbody>
</table>

October 16th, 9 A. M. Much better, intellect clear. The cups, blisters, and stimulants, and sulphate of quinia have restored the capillary circulation to its normal state.

12½ o'clock P. M. Continues to improve. Urine high colored, of a deep orange red; reaction strongly acid, after standing 15 hours, a slight deposit of mucous corpuscles, and after 100 hours a small light yellow deposit of mucous corpuscles, urate of ammonia and vegetable cells. The presence of the mucous corpuscles in the urine is due to the absorption and action of the cantharidin upon the mucous membrane of the genito-urinary apparatus. In several severe cases of remittent fever, I have discovered after the action of blisters, numerous spermatozoa in the urine. Sp. gr. of urine, 1021.

<table>
<thead>
<tr>
<th>ANALYSIS XLVII</th>
<th>Grs. 11231 of Urine passed during last 16 hrs. contained grains</th>
<th>Grs. 16746 of Urine calculated for 24 hrs., contained grs.</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea..............</td>
<td>357.445</td>
<td>535.667</td>
<td>31.826</td>
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<tr>
<td>Urie Acid..........</td>
<td>5.500</td>
<td>8.250</td>
<td>0.489</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>53.900</td>
<td>80.850</td>
<td>4.799</td>
</tr>
</tbody>
</table>

Amount of Urine passed during the last 16 hours, grains, 11231
" " " " hourly, " " " " " " 702
Calculated amount of Urine for 24 hours, " 16746
Actual am’t of Urine excreted during the last 24 hrs., " 15303
" " " " " hourly, " " " " " " 637

3 o'clock, P. M. Skin dry but soft. Has taken xliv grs. of sulphate of quinia. This has not as yet exerted its characteristic effects upon the skin; tongue red, but moist and soft; blisters have drawn well—serum from blistered surfaces of a golden color; patient complains of difficulty in passing his urine. This is due to the absorption and action upon the mucous membrane of the bladder and urethra, of the cantharidin absorbed from the blistered surfaces. Pulse 84; respiration 16; Temp. of atmosphere, 69°5'F.; Temp. of hand, 99°; Temp. under tongue,
99°5'.  B. Sulphate of quinia, grs. v., every three hours up to grs. xv.  B. Continue spirit of mindererus and brandy, and snake-root tea, f 3/3 of each alternately, every two hours.  Diet. mutton soup and arrow root.


Amount of Urine passed during the last 24 hours, grains, 8176

<table>
<thead>
<tr>
<th>ANALYSIS XLVIII.</th>
<th>Grs. 8176 of Urine excreted during 24 hrs. cont'd grs.</th>
<th>1000 parts of Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>185·240</td>
<td>22·578</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>4·400</td>
<td>0·538</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>40·000</td>
<td>4·892</td>
</tr>
</tbody>
</table>

The reduction of the temperature and of the action of the respiratory and circulatory system, has been attended by a corresponding diminution of the constituents of the urine.

October 18th.  Continues to improve, "feels quite well, with the exception of great weakness".  His appetite has returned; tongue clean, moist and soft, and not so red.  Pulse 72; respiration 18.  B. Continue brandy and snake-root tea.  Color of urine orange, much lighter; reaction in 20 hours decidedly alkaline.  Sp. gr. 1020.  Heavy light yellow deposit after standing 20 hours.

Amount of Urine passed during the last 24 hours, grains, 20400

<table>
<thead>
<tr>
<th>ANALYSIS XLIX.</th>
<th>Grs. 17374 of Urine passed during 24 hrs. cont'd grs.</th>
<th>1000 parts of Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uric Acid</td>
<td>11·730</td>
<td>0·675</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>93·500</td>
<td>5·381</td>
</tr>
</tbody>
</table>

Diet, soft boiled eggs, milk punch, arrow-root, and mutton soup.

October 19th, 12 M.  Skin, pulse and respiration normal.  Urine orange colored.  Sp. gr. 1020; reaction alkaline in 12 hours; heavy light yellow deposit in 20 hours.

Amount of Urine excreted during the last 24 hours, grains, 15300

October 20th.

Amount of Urine passed during the last 24 hours, grains, 17374

Specific gravity of urine 1022; reaction alkaline in 12 hours—orange color.  After standing 24 hours, a light yellow deposit of triple phosphate and urate of soda was thrown down.
October 21st, 9 A. M. The patient is dressed and has been
walking about the hospital grounds. His pale sallow comple-
ion and feeble gait, show the effects of malarial fever. Urine of
a light orange color, only a shade darker than normal. Sp. gr.
1024. Reaction just after its deposition, acid—in 10 hours after-
wards alkaline. This change gave evidence of the formation
of ammonia, and was attended by the formation of crystals,
presenting, when the urine was held in the sun, a sparkling
appearance, like particles of silver. Under the microscope,
these crystals were found to be well formed prismatic crystals
of triple phosphate. The microscope also revealed a few crys-
tals of the urates of soda and ammonia.

| ANALYSIS | Grs. 9234 Urine ex-
| Grs. 18468 Urine cal-
| 1000 parts
| creted during 12 hrs. contained grains | culated for 24 hours, contained grains | Urine con-
| Urea | 229·599 | 458·198 | 25·128 |
| Uric Acid. | 7·740 | 154·80 | 0·935 |
| Fixed Saline Constituents. | 91·800 | 183·600 | 9·941 |

Amount of Urine passed during 12 hours, —— grains, 9234
"""""hourly, —— —— " 769
Calculated amount of Urine for 24 hours, —— " 18468

This case confirms all the conclusions which were drawn from
the preceding case of remittent fever.

CASE XXVI. Irish seaman, aged 38; weight 160 lbs; height
5 feet 6 inches; stout muscular man: first trip to Savannah. Has
been in Savannah 10 days, during which time he has worked
on a ship lying along the shore of the river, and has slept on
Bay-street at night.

October 14th, 2 P. M. Was taken sick four days ago with
pain in his head and in all his bones, accompanied with fever,
which has continued unabated up to the present time. Has had
no chill. Took a dose of calomel three days ago, which acted
freely. Now his face is much flushed; skin hot and dry; head
very hot; complains greatly of pain in his head; eyes look heavy
and stupid; tongue bright-red and dry; voice hoarse and gut-
teral; says that he has been vomiting, and can retain nothing
upon his stomach. R. Cut cups to each temple, and two to
back of neck, and four over the region of the stomach.

If the cut cups do not relieve the vomiting, administer a table-
spoonful of equal parts of milk, lime water, and the aqueous
solution of the acetate of morphia.

October 15th, 11 A. M. Says that he feels better; the cut
cups over the temples and back of neck relieved the pain in his
head, and the cut cups over the region of the stomach checked
the vomiting. Face is not so much flushed; tongue still very
red, dry and rough; no tenderness upon pressure of epigastrium, although the state of his tongue would lead us to look for it; skin soft and not so hot. This morning at 3 A.M., the fever remitted with a perspiration. Pulse 76; respiration 20. Has taken xxvi grs. of sulphate of quinia. B. Neutral mixture; drink ad-libitum.

8 o'clock P.M. Has been vomiting this evening. This was arrested by milk and lime-water, and acetate of morphia. Tip of tongue for three-fourths of an inch, clean, dry, glared, and of a brilliant red color—the remainder of the tongue is coated with brownish-yellow fur, which is dry and harsh to the feeling; face flushed and hot; skin, upon all parts of the body, hot, pun-gent and dry; no tenderness upon pressure of epigastrium. The calomel has acted several times, and is still acting. Pulse 94; respiration 26. B. Soda powders. Urine, high colored, like new Madeira wine.

October 16th, 1 o'clock P.M. Did not rest during the night; was tossing about, and getting up out of the bed every few moments, and was and is now tormented by unquenchable thirst; appears to be completely exhausted. Tip of tongue clean, dry, scarlet-colored, glazed, shining—posterior portion (base) of tongue coated with brown and black fur, dry, harsh, and as rough as sand-paper. The under surface of the tongue is dry, glazed and shining. There is no more moisture in his tongue, and in the walls of the mouth, than if they were made of glass. Skin hot, dry, and harsh to the feeling.

The temperature under the tongue, cannot be taken, on account of the dry condition of the lips and tongue. Bowels are loose—stools watery and yellow; no pain upon pressure of epigastrium. Complains of no pain anywhere. There is a great tendency to stupor.

Although his tongue is glowing red, and his face is flushed, and there is an inclination to stupor, still I will administer sulphate of quinia and stimulants, because he is exhausted, and the appearance of the mucous membrane of his mouth and tongue is indicative, not of inflammation, but of derangement of the capillary circulation, and of alterations in the structure of the nervous system and blood.


Amount of Urine passed during the last 17 hours, grains, 10210
" " " hourly, " " " " 600
Calculated amount of Urine for 24 hours, " " " 14406
Sp. gr. 1020; reaction decidedly acid; urine high colored, like
new Madeira wine. No deposit after 30 hours; after 60 hours, a slight deposit of mucous corpuscles and triple phosphate. Crystals of nitrate of urea, silvery and well formed. Hydrochloric acid showed the presence of coloring matters in large amount.

Oct. 17th, 11 o'clock A.M. Much better. Tip of tongue clean—superior portion coated with fur; tongue moister, softer, and not so red as on yesterday; face much less flushed; the burning thirst has almost entirely disappeared; has no pain anywhere, and says that he has an appetite; no tenderness of epigastrium. Has taken grs. xxx. of the sulphate of quinia since 1 o'clock P.M., October 16th. Pulse 68; respiration 18. Pulse much fuller—respiration more regular and soft. Temperature of atmosphere, 68° F.; Temp. of hand, 98°; Temp. under tongue, 99° 5'.

Here we see, that under the action of the sulphate of quinia and stimulants, his respiration has become regular; his pulse slower and fuller; his burning thirst diminished; his glowing tongue and flushed face, paler; his parched mouth, moister; his intellect brighter; his exhausted forces more active; and all the secretions and functions more regular. Urine, high colored. Decided acid reaction. Sp. gr. 1022. No deposit after standing 30 hours. After 80 hours, a small light-yellow deposit of triple phosphate and urate of soda.

Amount of Urine excreted during the last 24 hours, grains, 12264

<table>
<thead>
<tr>
<th>ANALYSIS LI.</th>
<th>Grs. 10210 Urine excreted during 17 hrs. contained grains</th>
<th>Grs. 14406 Urine calculated for 24 hours, contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>320.980</td>
<td>452.581</td>
<td>32.305</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>0.200</td>
<td>0.382</td>
<td>0.019</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>30.000</td>
<td>40.330</td>
<td>2.938</td>
</tr>
</tbody>
</table>

R. Continue camphor and sulphate of quinia, and brandy and snake-root tea. Diet, milk punch, wine whey, arrow-root, and mutton soup.

October 18th, 12 o'clock M. Rested well during the night—had no fever, and his skin was in a good perspiration. The great thirst has entirely disappeared. Tongue still redder than normal, but moist and soft, and the yellow fur coating the posterior portion is breaking up and cleaning off; skin moist, and normal in temperature and feeling. Pulse and respiration nor-
mal. Dressed himself, and has been walking in the ward. Urine of a deep orange color, several shades lighter than that voided yesterday. Sp. gr. 1019. Reaction slightly acid.

Amount of Urine passed during the last 24 hours, grains, 12737
"  "  "  " hourly,  "  "  "  "  614

R. Continue brandy and snake-root tea, table-spoonful every three hours. Diet, soft boiled eggs, milk punch, mutton soup, arrow-root and rice.

October 19th. Dressed, and walked about the ward.

October 20th. Walked about one mile into town, says that he feels well; urine orange color. Sp. gr. 1020. After standing 12 hours, a heavy light yellow deposit of triple phosphate and urate of soda. 1000 parts of urine contained uric acid, 0.607. Fixed saline constituents, 3.529.

October 21st. Says that he took a slight cold yesterday during the walk into the city; urine orange color. Sp. gr. 1019.

Amount of Urine passed during the last 17 hours, grains, 13247
"  "  "  " hourly,  "  "  "  "  770
Calculated amount of Urine for 24 hours, 19495

<table>
<thead>
<tr>
<th>ANALYSIS LIII.</th>
<th>Grs 13247 Urine ex-</th>
<th>Grs. 19595 Urine cal-</th>
<th>1000 parts of Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>creted during 17 hrs.</td>
<td>culated for 24 hours,</td>
<td>contained grains</td>
</tr>
<tr>
<td>Urea...........</td>
<td>181 565</td>
<td>290 508</td>
<td>12 992</td>
</tr>
<tr>
<td>Uric Acid......</td>
<td>6 110</td>
<td>9 770</td>
<td>0 461</td>
</tr>
<tr>
<td>Fixed Saline Constituents.</td>
<td>96 900</td>
<td>154 040</td>
<td>7 199</td>
</tr>
</tbody>
</table>

This patient had no return of fever and was discharged a few days subsequently. This case sustains not only the conclusions, but also the treatment of the two preceding cases of remittent fever.

CASE XXVII. Seaman, native of Scotland; age 21; height 5 feet, 5 inches; weight 154 lbs. This is his first trip to Savannah. Has been in this port three weeks, and during this time, has slept on board ship in the river. Two of the crew from the same ship are now in the hospital with remittent fever.

October 13th, 12 M. Was taken three days ago with a chill and pain in his back, head and all the bones. This was followed by fever. Has fever now. Skin hot and dry; pulse 108 full; respiration 38, thoracic; tongue pointed, red at tip and edges; coated with brownish yellow fur—dry and harsh, rough to the feeling; no tenderness of epigastrium. R. Calomel grs. x.; sulphate of quinia, grs. v. Mix. Administer, and follow by castor oil in four hours. The patient must be closely watched during the action of the medicine, and if he appears to be unduly exhausted, apply sinapism and administer stimulants.

9 P.M. Appears stupid, is aroused with difficulty. Tongue
dry and rough; face flushed; skin hot and dry; pulse 100. B. Brandy and snake-root tea, tablespoonful every hour. B. Sulphate of quinia, grs. v. every three hours, up to grs. xxx.

October 14th, 12 M. Much better; medicine operated freely; tongue soft and moist; pulse not so frequent; skin soft and much cooler; no tenderness upon pressure of epigastrium. Complains of pain in back, in the region of the lumbar vertebrae and cannot bear the slightest touch over the seat of the pain. B. Four cut cups over the region of the pain in the back. B. Continue brandy and snake-root tea, and sulphate of quinia, tablespoonful every four hours.

October 15th, 12 M. Cut cups relieved the pain in the back. Apex of tongue, for about half of an inch, clean, red and dry; the remainder of the tongue is coated with rough, dry, brownish black and yellow fur. No tenderness of epigastrium; skin hot, dry and pungent; pulse 90; respiration 30. Temperature of atmosphere 74° F.; Temp. of hand, 105°; Temp. under tongue, 106°. Reaction of saliva decidedly acid.

8 o'clock P. M. Face still flushed, and expression of countenance stupid; intellect dull and heavy; skin in a slight moisture; tongue presents the same appearance, only a little moister. The head and trunk are hot, but not pungent. Temperature of extremities above the normal standard, but cooler and not so pungent as at 12 o'clock. Pulse 90; respiration 22-26, irregular. B. Sulphate of quinia, grs. v., every three hours, up to grs. xx. Soda powders.

Amount of Urine excreted during the last 8 hours, grains, 5610

Calculated amount of Urine for 24 hours, 16830

<table>
<thead>
<tr>
<th>ANALYSIS LIV.</th>
<th>Grs. 5610 Urine excreted during 8 hours contained grains</th>
<th>Grs. 16830 Urine calculated for 24 hours contained grains</th>
<th>1000 parts Urine contained</th>
</tr>
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<tbody>
<tr>
<td>Urea</td>
<td>125-352</td>
<td>376-047</td>
<td>23-147</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>4-675</td>
<td>14-025</td>
<td>0-833</td>
</tr>
<tr>
<td>Fixed Saline Constituents</td>
<td>29-150</td>
<td>87-450</td>
<td>5-196</td>
</tr>
</tbody>
</table>

This urine, which was excreted during fever, and under the action of sulphate of quinia, differs from the former specimens, excreted under similar circumstances, in that the uric acid was greatly increased. Sp. gr. of urine 1020. Orange colored nitrate of urea, silky, silvery. No deposit after 30 hours; at the expiration of this time the reaction was still acid.

October 16th, 12 o'clock M. Tongue dry and rough; complains of pain in his legs and left side. Countenance is more easy. Urine, high colored, red. Sp. gr. 1020. Reaction acid. After standing 15 hours, a light yellow deposit of triple phosphate, and urates of soda and ammonia.
Amount of Urine passed during the last 16 hours, grains, 11220
Calculated amount of Urine for 24 hours, 101
Actual amount of Urine passed during the last 24 hrs., 16830

Amount of Urine passed during the last 16 hours, hourly 701
Calculated amount of Urine for 24 hours, 16830
Actual amount of Urine passed during the last 24 hrs., 701

<table>
<thead>
<tr>
<th>Component</th>
<th>Grs. 11220 of Urine excreted during 16 hrs.</th>
<th>Grs. 16830 of Urine calculated for 24 hrs.</th>
<th>Grs. 16830 of Urine excreted during 24 hrs.</th>
<th>1000 parts of Urine contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>341</td>
<td>440</td>
<td>907</td>
<td>30·906</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>4·400</td>
<td>6·600</td>
<td>0·392</td>
<td></td>
</tr>
</tbody>
</table>

B. Brandy and snake-root tea, and spirit of mindererus, 1/3 j. of each, alternately, every two hours. B. Sulph. of quinia, grs. v., every three hours, up to grs. xxxv.

3 o'clock P.M. Tongue moister and softer, tip and edges not so red—posterior portion still coated with brownish-yellow fur. Slight tenderness upon pressure of epigastrum. Pulse 75; respiration 20. Temperature of atmosphere, 70° F.; Temp. of hand, 101°33'; Temp. under tongue, 101°5'. B. Continue brandy and snake-root tea, spirit of mindererus and sulph. of quinia.

October 17th, 12 M. Much better; has been dressed and about the ward this morning; tongue soft, moist; the yellow fur is soft and rapidly disappearing; reaction of saliva decidedly acid; pulse 54; respiration 18; Temp. of atmosphere, 68°F.; Temp. of hand, 96°; Temp. under tongue, 99°. Urine much lighter in color, only a shade higher than normal. Sp. gr. 1020.

1000 parts of Urine contained,
Urea, - - - 20783
Uric Acid, - - - A trace—a few small crystals.
Fixed Saline Constituents, - 2156

The disappearance of the uric acid is, without doubt, due to the action of the sulphate of quinia. This patient continued to improve and was discharged on the following day. This case illustrates, in a striking manner, the beneficial effects of stimulants and large doses of sulphate of quinia in remittent fever. The prompt administration of sulphate of quinia and stimulants, not only cuts short the disease, but also supports the strength of the patient, and he comes through a severe attack with comparatively unimpaired forces.

(To be continued.)
INTERMITTENT FEVER, ATTENDED WITH A SWELLING OF THE TESTICLES.

J. O., was admitted March 10th, for injuries (fractured ribs) which he had received by a fall upon the deck of a steamboat. When examined, it was found that he also suffered from a swelling of the testicles. He was not sensible of any injury having been inflicted upon them, but thinks that no violence has been done them by the fall, since he is subject, upon exposure, to this peculiar malady. The ordinary mode of management of fractured ribs was pursued, attention being also paid to the swollen organs. In due time, these latter were restored to their natural size, and his condition, otherwise, so much improved that he was permitted to leave the hospital for a short time. He became intoxicated soon after his departure, and lay out that night in the street, exposed to a very damp atmosphere and an exceedingly heavy dew.

April 6th. Returned at 7 o'clock A.M. Was taken with a chill at 10 A.M., which lasted about four hours, and during the continuance of which his testicles became enormously swollen. Having been interrogated concerning his liability to intermittent fever, and whether or not this glandular swelling was a common attendant, he replied, that whenever he had a chill or was much exposed to cold and damp, his testicles almost invariably swelled, the engorgement, at such times, producing excruciating pain. He was visited during the chill; and being struck with this unusual feature in ague and fever, the testicular engorgement was closely watched, in order to ascertain whether or not it would subside with the termination of the paroxysm.

Treatment.—B. Spts. camphor gtt. xxv.; Chloric ether 3j.; Tr. opii. gtt. x.—to be given occasionally during the cold stage; also, mustard to spine and extremities.

April 7th. Patient in a profuse perspiration; bowels confined; testicles swollen and painful; tongue furred, yellow.
Treatment.—Mercurial cathartic immediately; quinine, 3 grs. every three hours; cold applications to testicles.

April 8th. Patient better; no chill; swelling of the testicles diminished.

Treatment.—Same as yesterday.

April 9th. Swelling of the testicles disappeared; patient up, moving about. Discharged 10th.

Remarks.—Perhaps no principle in pathology is more universally received by the practical part of the profession, than that of a congestion of the organs, which repose in the three great splanchnic cavities of the body, during the cold stage of an intermittent. Indeed, whilst they differ widely among themselves, as to its determining cause or causes—some attributing it to a state of poisoning of the blood, and others to primary lesion of the nervous system, yet they agree, that this cold stage is the result of a sudden retreat of the blood from the surface to the internal organs and structures. No exception to this fact is recognized, for we never read or hear of a congestive determination, to either of the four extremities, unless we regard as such, the rare instances upon record of a concomitant congestion of the genital organs. How far the occasional, perhaps accidental, determination of the vital fluid to these organs, constitutes it an example of an external or peripheral tendency, we are not prepared to say, since, like the arms and legs, in the language of Hunter, they "are not necessary for the existence or support of the individual, but have a reference to something else." The exceeding great rarity of these cases, entitles them to peculiar interest, if for no other reason, than the opportunity which they present of beholding an organ under the congestive influence of an intermittent. The penis, in this case, was unaffected, being entirely relaxed, notwithstanding the violent congestive determination in its immediate vicinity. All of the cases, affecting the genital apparatus, that have come within the scope of my study, have been confined entirely to the penis. The following is from Dr. Dickson,* of Charleston. "We had in our museum, a long while, though now lost, the preparation of a penis, which suffered

* Dickson's Elements of Medicine, page 214.
during a protracted attack of intermittent, the same, or analogous, engorgement, enlargement and induration which usually derange the spleen in ague, being obviously the seat of the congestive determination, familiarly taking place in that viscus. They possess an erectile structure in common. The case occurred in our almshouse, and was witnessed by a large number of physicians, none of whom, I believe, entertained any doubt of its nature." Further on, he states, that a similar case had been reported to him, as having occurred in the state of New York, "in which the same organ was attacked with congestive or vascular turgescence, during the paroxysms." Nothing is said concerning the adjoining organs (testicles) in these cases, but we are justified in the belief, that the determination was confined entirely to the penis. In the case reported, it will be observed, that the patient had just recovered from an attack of orchitis,† and doubtless the predisposition to a recurrence still remained. The history of this case might justify us in laying stress upon secondary influences, in producing such a determination; but in regard to those quoted, we cannot say, since nothing is mentioned as to their previous condition, whether diseased or not. A point of dissimilarity between the reported case and those quoted, exists in the fact, that the state of priapism of the latter, is said to have existed, "during the paroxysm," whilst the testicles in the former, remained swollen for several days, and were subjected to treatment. This dissimilarity becomes reconciled at once, we conceive, by a reference to the difference in the anatomical structure of the two organs and their physiological functions.

PHTHISIS PULMONALIS.

R. N., has been an inmate of this institution since Feb. 8— is about 45 years of age—has been subjected to great hardships, and undergone the numerous privations of poverty: is also addicted to drunkenness and its associate vices. Has been laboring under this disease since 1854. During this time, has had numerous hemorrhages, not, however, very profuse. At present, she evinces all the common symptoms of consumption—viz., cough, purulent expectoration, hectic fever, diarrhoea, etc. The

† There was no venereal infection.
most distressing symptom seems to be a difficulty of breathing, apparently asthmatic in character and referred to the right side.

_Physical Examination of the Chest._ Heart.—The action and sounds of this organ are natural in their evolutions.

_Auscultation of Right Lung._—Broncho-vesicular respiration established throughout the lung—is everywhere prominent, but most so in the infra-scapular and scapular regions. Inspiration high in pitch—tubular and blowing in quality—intense and shortened in duration; also, a sound, as of dry crackling, discovered at the end of inspiration in the scapular region and at its apex. Expiration high in pitch, being remarkably loud, bronchial in quality, and longer than the act of inspiration. The natural rhythm of the respiratory acts destroyed, being very irregular.

_Left Lung._—A modified (broncho-vesicular) respiration exists only in the apex of this lung: the vesicular respiration in the middle and lower lobes seems to be simply exaggerated, without noted deviations as to quality.

_Auscultation of the Voice._ Right Lung.—Bronchophony very prominent at the point of the scapula, and radiating in a more or less marked degree, all over the right side, even to the apex.

_Auscultation of the Voice._ Left Lung.—The normal vocal resonance slightly modified in the apex.

_Auscultation of the Speech._ Right Lung.—Perfect pectoriloquy at the point of the scapula—not discoverable at any other portion.

_Auscultation of the Speech._ Left Lung.—No departure appreciable.

_Percussion of Right Lung._—Marked dulness over the entire lung—more tympanitic than otherwise, in quality, about the point of the scapula, denoting, with its correlative signs, the presence of a cavity.

_Percussion of Left Lung._—Appreciable dulness over the apex of the left, with tenderness.

_Treatment._—Blisters, from time to time; syrup superphosphate ferri, 3 iij. three times daily.

_Remarks._—The principal treatment of the above case consisted in the use of the syrup superphosp. ferri. Indeed, having noticed at that time, frequent allusions, in the various medical
journals, to the treatment of consumption with phosphorus, this
course was adopted with an experimental view. It was given
in such a manner, that from 5 to 10 grs. of the salt (superphos-
phate ferri) were taken daily—it was continued up to the time
of the death of the patient (May 12th). She would frequently
express herself benefitted by it, but no beneficial effect could be
perceived by myself. The only good which it possibly accom-
plished, was an exhilaration of the system, which but increased
the fatal delusion of the sufferer, that she was better physically.
The preparations of phosphorus recommended by Dr. Churchill,
the hypo-phosphites of soda or lime, could not be obtained, and
this being at hand was substituted. Of course, no inference
would be safe, much less conclusive, in regard to the use of this
therapeutical agent, from a single case of phthisis, but, as far as
this case goes, it at least serves to negative, to some degree, that
recent special pathology of consumption, which ascribes it to a
deficiency of phosphorus in the system. It would be considered,
neither unwise nor unnatural to suppose, that a deficiency of
this chemical element did exist, amidst the outspread and almost
illimitable devastations of this disease; but such a condition,
if it exists, should be regarded in the light of a consequence or
coincidence, rather than the cause. I am not aware, that this
ideal pathology is supported by the chemical proof of a material
dimination, not to say absence, of this element of the numerous
salts, excreted by the various emunctories of the body. Molli-
ties ossium is a disease, attributed to a deficiency of a salt, one
element of which is phosphorus. Would not persons, subjects
of this disease oftentimes for years, present more or less of this
condition, as an ultimate symptom, if this pathology be true?
More than this: organic chemistry teaches, that the brain and
osseous system contain the greater part of the phosphorus of the
system. Physiologists also state, that “the quantity of phos-
phorus which may be found in the nervous matter varies con-
siderably at different periods of life, and is very small in idiocy.”
“The minimum of this element is found in infancy, in old age
and idiocy.” Now, this being true, intellectual development
would seem to keep pace with it, increasing with its increase,
and declining with its decline. Should we not, with consistency
look for a decided failure of the intellectual man, coextensive
with the diminution of this substance in the progress of the dis-
ease? Does the practical history of the consumptive teach this? There is no evidence upon record, to the end, that consumption produces greater prostration of the mental energies, than any other cachectic disease. On the contrary, examples are not wanting in history, showing the highest mental abilities, in consumptives, some of whom have distinguished themselves and left their mark upon the age in which they lived. To deny any benefit to alkaline phosphates or those tonic in their combination, in phthisis, would bespeak ignorance; but we think, that time and experience will prove that they are not curative, and will determine the circumstances under which they are to be used. In the above case, it produced no effect, other than an increased buoyancy of spirits, with a commensurate cheerfulness. Reasoning from its physiological importance to the system and its therapeutical action, as far as is understood, it is perhaps better adapted to the condition of certain dyspeptics.

**BRONCHIAL PHTHISIS, WITH DISEASE OF THE HEART.**

Edward M. was admitted March 14th, for cough: is about 26 years of age; dark hair and eyes—states that he has had a cough for five months; has never spit blood; is not hereditarily predisposed to consumption, but thinks that a brother of his died with disease of the heart.

*Symptoms.*—A violent, convulsive cough; scanty and frothy expectoration during the day, but consists, early in the morning, of pus and hardened mucus; shortness of breath, confined to the left side of the chest; frequent palpitation of the heart; the least exercise readily excites the attacks of palpitation; cannot lie upon the left side, from the violence of the cough, which is excited thereby; no pain in the chest; is not subject to headache; left cheek flushed; pulse natural in frequency, but rather full; bowels regular, and appetite and digestion good.

*Physical Examination of the Lungs.*—The respiratory murmur on the right side, normal in its various features; on the left, the vesicular murmur is somewhat exaggerated in the upper lobe, whilst a broncho-vesicular respiration is observed in the other lobe—an expiratory murmur, however, only occasionally perceptible.

*Auscultation of Voice and Speech.*—No variation.
Percussion.—Normal vesicular resonance observed throughout the chest.

Physical Examination of the Heart.—In the supine posture, its impulse is very strong, being felt and heard everywhere on the lower part of the left side, in front, and in the infra-clavicular region of the right; in the erect, in the supra-scapular region of the left, also. The sounds appear to have a muffled quality or tone, and with the impulse, are distinctly audible in the supra-scapular and upper inter-scapular region of the left side. In no other part of the superficialities of the chest, can the sounds be heard, than in the immediate vicinity of the heart and in this particular region.

Percussion—shows a larger area of dulness over the cardiac region, than is usually found in healthy persons.

Treatment.—Blister \(2\frac{1}{2}\) by 6 inches to chest, (left side), running obliquely towards the spine; alkaline cough mixture.

March 19th. Patient somewhat improved; cough less frequent and violent—since the drawing of the blister, has lost its convulsive character; expectoration more loose. Treatment continued.

March 23rd. His condition the same, except that the cough has regained its convulsive character, since the drying up of the vesication.

Treatment.—Blister renewed; ext. belladonnanæ, in suitable doses, added to the alkaline cough mixture.

March 29th. Cough less frequent—expectoration still contains pus early in the morning.

Treatment.—Cod-liver oil, \(\frac{3}{4}\) ss. three times daily, in conjunction with the above remedies.

March 30th. Physical Examination of the Chest.—Broncho-vesicular respiration more general in the left lung—sonorous rhonchus sometimes observed in the same; the other characters, the same as were noted at the first examination.

Percussion over the left lung shows an appreciable dulness in the infra-scapular region.

A close examination of the heart was prevented by the recent vesication: so far as was observed, the result confirmed the previous one.

April 20th. Patient is decidedly better—coughs but little, and only when he first awakes; general health improved—can walk
up and down stairs, without being distressed by palpitation; is gaining flesh; still expectorates pus. Treatment, same.

May 10th. This patient was so much improved, that he left the hospital for New York.

We regret, not having had another opportunity of examining him physically, which was prevented by his sudden determination to return to the north.

Remarks.—In the differential diagnosis of diseases of the chest, from a frequent association of disease of the different organs, contained in the cavity, it is exceedingly difficult, if not impossible, always to distinguish the one primarily affected; for they all present such a community of symptoms as to require the nicest tact and the most accurate judgment to determine, unequivocally, the order of the diseased actions. In the case above the patient had entered the institution to be treated for a cough which, as is usual among the unprofessional, when protracted, he considered as an evidence of consumption. Happily, physical exploration, by the absence of certain landmarks, when associated with the history of the individual, as to predisposition and the previous occurrence of haemoptysis, was sufficient to decide in favor of a bronchial affection, without tubercular complication. Having determined this point, another presented itself; viz: With the heart and the bronchiæ, both diseased—which is the primary lesion? This, to the patient, became a question of great moment; for, if the lung be primarily diseased, with its cure, which might reasonably be expected, the sympathetic affection of the heart, now assuming an organic nature, might also be expected to retire. But if the heart be the primarily diseased organ, notwithstanding the bronchial affection yield to treatment, yet, to say the least, recovery would be more than doubtful, such condition of the organ, as we suppose this to have been, seldom, or never, proving amenable to treatment. Without mentioning, in detail, the reasons which impelled us to the conclusion, we are satisfied, that the heart was primarily diseased, and that the bronchial affection was secondary, being kept up by its proximity to the former, its increased action and the want of proper treatment. What the particular diseased condition was, we have not stated, and is still a matter of doubt, but we suppose it to have been, one of hypertrophy,
with, perhaps, dilatation of its cavities—its various signs and symptoms pointing more particularly to this. The most remarkable feature presented by the case, and the one which induced its publication, was that of a distinct appreciation of the impulse and sounds of the organ, without solidification of the pulmonary tissue, at the supra-scapular and upper part of the inter-scapular region of the left side of the chest. In healthy persons, this latter phenomenon is not observable at any point on the posterior aspect of the chest, but is confined to an extent of surface between the right infra-clavicular region and the anterior aspect of the left side of the chest. The only conditions of the thoracic viscera which have been proposed for the interpretation of this phenomenon, are an increased conducting capacity of the pulmonary structure from solidification, as in pneumonia, carcinoma, pulmonary apoplexy, compressions of pleuritic effusions, and tuberculous deposits; also, in cases of emphysema, where the conduction of sounds seems to be abnormal in one lung from the diminished capacity of the other. In this case, no evidence of a consolidated condition of the lung was observed; on the contrary, the normal vesicular resonance was unmodified beyond that which occurs in ordinary cases of bronchial disease. No materially increased conductibility of sound could be attributed to this organ under this condition of things. It could not have been produced by emphysema of the right, since no evidence to this effect existed, and, moreover, the left was the diseased one. How, then, are we to explain its production? We have no satisfactory answer to the query, unless it be, that under the increased action of the heart, the enlarged extent of its surface, which came in contact with the chest, the thoracic parietes became the instruments of this greater transmission of its sounds. On the other hand, if this be so, would not every case of hypertrophy, with dilatation, even unassociated with diseased lungs, be characterized by the same observation?

In connection with the production of this phenomenon, it may not be amiss, to present the following quotation:*

"Dr. Walshe states, that in a case of intense emphysema of the left lung in which the disease was limited, and especially marked at the posterior aspect of the chest, he found the heart

* See Flint, on the Respiratory Organs, p. 291.
sounds considerably more distinct posteriorly on the right, than on the left side, there being no evidence of induration of the right lung to intensify the sounds on that side. The disparity here was attributed to an abnormal diminution of the transmission of the sound to the posterior surface of the left chest, the right remaining in a normal condition in this respect. Without knowledge of the fact that the transmission may thus be abnormally diminished, a normal intensity may be mistaken for a marked sign."

An obvious inference from this quotation is, that this transmission of the sounds of the heart to the posterior of the chest, may take place even in health; but so far as our reading and observation extend, it is at variance with other authors, for the vesicular structure of the lungs produces such a diffusion of the sonorous vibrations, as effectually to prevent such a perfect transmission, as will be appreciated by audition. Being analogous to the production of the physical sign, pectoroloquy, it necessarily requires a more solid conducting medium, than the porous, vesicular tissue of the lungs. It will be remarked, that the phenomenon was only distinguishable at a particular part (the supra-scapular and upper inter-scapular region of the left side): if it had been owing to a natural transmissibility by the lung, it would not have been so circumscribed.

The only alternative, to which we may resort, by which to account for the morbid sign, viz., transmission by the thoracic walls, is, when we examine strictly the circumstances of the case, perhaps fully adequate to its accomplishment. In health, during the alternate contraction and dilatation of the heart, no part of the organ touches the thoracic walls, except its apex, and that only during the contraction of the ventricles. The impulse, the result of this action, is most distinctly felt between the 5th and 6th ribs. Again, those parts, the various valves, which are the agents in the production of the two sounds, occupy a position in this organ higher up, being situated beneath the 3rd and 4th ribs, whose spinal attachments are in the supra-scapular and upper inter-scapular regions. Now, when the heart is of its natural size, it is entirely separate from these ribs (3 and 4), therefore, whatever of sound is transmitted by them, must be derived indirectly from the impulse below, through the muscular septum of the intercostal spaces. Now, if the heart be en-
On Headache. By John Addington Symonds, M.D., F.R.S.E., Consulting Physician to the Bristol General Hospital, etc.

It is an interesting but a difficult investigation to ascertain the mode of production of some of these sympathetic pains in the head. Here, for instance, is a question. What is the cause of a so-called bilious or sick headache in a person who suffers such an attack once in a year or so? In him there cannot be any great susceptibility on the part of the cerebral nerves, or it would occur oftener. But what is the course of events when it does occur? We need not stop to ask whether it is some imperfectly chymified substance in the duodenum, or some depraved secretion which begins the mischief. We will assume it to be some disturbing impression on the nerves of the alimentary tube.

This impression may or may not produce a sensation of indigestion before the headache. If it does, we might suppose that the impression has passed by extension from the parts of the sensorium in relation with the nerves of the stomach to that which is in relation with the nerves of the head, and that the pain is, so to speak, reflected on the latter nerves. If this is the course, I think it must be presumed that there must have been some previous disposition in the centres related with the nerves of the brain to be so affected.

I doubt if this hypothesis is so tenable as the supposition that the impression is communicated along the sympathetic chain to the nerves of the brain, and there excites the disturbance.
Whatever may be the function of the sympathetic nerves as to sensation, motion, and reflex action, it is impossible to observe their intricate nexus, as well as their distribution, without suspecting that one part of their duty must be internuncial between the viscera, and that they must be the agents of that consentaneous operation without which the functions of organic life could not long continue.

Order in time must be as necessary in the human microcosm as in the macrocosm of the universe. Were the processes of digestion, sanguification, respiration and circulation, to go on independently, the vital machinery would soon come to a stop. The heart beats at definite intervals, the respiration keeps a proportionate time, food should enter, and its residue leaves the system at regular periods. But the rates are perpetually changing, from the variations of daily or even hourly life. and the changes must be announced from one part to another, in order that the requisite adjustments may take place. Without entering, however, more minutely into speculations as to the final cause of the intimate nervous connexions of the viscera, we may content ourselves with pursuing the way of exclusion. The cerebro-spinal nerves mixed up with the ganglionic nerves account for as much of sensation and emotional influence and reflex action, as we meet with in the viscera. The contractions of the muscular fibres of organic life, probably have special relations with true ganglionic fibres and ganglionic centres, uni-polar, bi-polar, etc. Still there are a large number of plexuses and nerves, entering and departing from those plexuses, whose function is scarcely accounted for, unless we infer that their office is to keep up a connexion of some sort between the viscera.

A general survey of the ganglionic system and the connecting nerves, impresses us with the unity of the whole system. But without the à priori assumption that organs so connected must work together, we have strong à posteriori evidence of the connexion in the events of disease. One organ, the variations of whose actions may be considered typical of the rest, is more easily observed than the others. I need not say that I allude to the heart. Much has of late years been done to prove the dependence of its rhythmical action on ganglionic centres. Since these researches, I think we can no more definitely understand than ever we could understand before, the readiness with which the rate of the cardiac pulsations is affected by disorders of any organs within the ganglionic chain. The intermittent pulse of indigestion, the alarming rapidity of the heart's action from inflammation of the peritoneum, or the depression of its action from injuries without loss of blood or severe pain—show that this regulating central power of the circulation, not only receives tidings of distant organs with great quickness, but also that it is seriously perturbed
by them. There is every reason from analogy to infer, that, although we have not such ready means of noting the influence of other ganglionically connected organs on each other as in the case of the heart and the other viscera, yet that communications are continually going on in health, and that the same links of communication produce the association of morbid phenomena. That the connexion in health is quite irrespective of sensation is obvious, from the fact that in perfect health individuals may live for long periods of time unconcious of internal viscera, and, therefore, that their harmonious action had not been indebted to sensation. The sensory nerves of the viscera seems to have no other function than that of denoting unusual states of the organs. But if this be the function, the question arises, What possible good can accrue from the transference of the sensation from the sick organ to one that is well, or comparatively so?—a common enough occurrence in sympathetic disorders. The good would certainly appear to be beyond our discovery; but we may endeavor to learn the course of transmission. Do the sensory fibres convey the impression direct to the sensorium? and, before its conversion into a sensation, is the impression transferred to another part of the sensorium, related with sensory ganglial fibres from some other viscus? Is the impression which has been made on the gastric nerves by a lump of ice, allowed to pass over the encephalic cells related with those nerves without being converted into a sensation, while on reaching the cells related with the sensory fibres of the first branch of the fifth nerve, it causes a state which is felt in this nerve as neuralgia? Is this the probable route? or is there not another equally probable? If we admit that impressions are exchanged between the different ganglia, may we not conjecture that the impression made by the ice on the gastric nerves, instead of running along the nearest rami communicantes to the spinal ganglia, and thence up the sensory tracks (whatever they are) to the sensorium, or, if you please, by the more direct course of the vagus; instead of either of these courses; I say, may we not conjecture that the impression takes its route up the chain of sympathetic ganglia, making no disturbance till it reaches the ophthalmic ganglion, which being in a susceptible state, undergoes a certain change, which change, on being imparted to its sensory nerves, excites a sensation of pain referred to the parts over which the sensory nerves of that ganglion are disturbed? In this hypothesis I assume the ophthalmic ganglion to be predisposed to disorder, because an organ sympathetically affected with disease, implies a readiness for disease in some part of its structure. A sympathetic disorder is, so to speak, not forced on the sympathizing organ—it is invited by the readiness of the latter to take offence.

Let us endeavor to apply some of these considerations to
another particular instance bearing on our immediate subject. A gentleman had for many years been liable to attacks of headache on the slightest provocation. Long-continued intellectual exertion, the excitement of an agreeable party, a journey, any error of diet, would inevitably lead to an attack of headache. During the same period he suffered at different times from pain in his teeth, which decayed rapidly, and at last were removed, and replaced by false ones. This change happened more than a year ago, and since that time he has been almost exempt from pain of the head. In other respects, his health and mode of life have been unaltered. What was the connexion between the diseased teeth and the headache? The morbid impressions on the ganglionic fibres of the fifth pair might, without any stretch of hypothesis, be reasonably presumed to induce a morbid state of the Gasserian ganglion, whether the impressions on the senory fibres did or did not reach the sensorium, and induce a painful sensation referred to the teeth. The Gasserian ganglion is connected by marked fibres with the cephalic ganglion, from which a large number of nerves pass to the cerebral arteries. The cephalic ganglion probably partook of the morbid condition of the Gasserian, and hence might have arisen so susceptible a state of the ganglionic nerves of the brain, that they may have become disposed to ache under the influence of impressions which, without the predisposition in the nerves, produced in the manner I have described, would have had no effect. It seems to me that if this explanation cannot be accepted, there is no alternate but the supposition that morbid impressions on the dental nerves (not creating pain in those parts) arriving at the central extremities of the nerves, are passed on to that part of the sensorium which is related with the sensory fibres of the ganglionic nerves of the brain, and maintain in that part of the sensorium a morbidly susceptible condition; and that this condition is brought into such action as constitutes pain, whenever the said part of the sensorium receives impressions transmitted from nerves which have been offended by causes acting directly upon them in the brain itself, (as in over-study or anxiety,) or when it has received like disturbing impressions from the nerves of other parts of the ganglionic system.

I confess that the first of these views, which I have ventured to propound, is the one that seems to me more admissible. The course of communication traced in that survey is more direct, and involves less complexity of causation.

I should feel myself to be taking an unwarrantable liberty, were I to occupy the time and attention of such an audience as that which I have the honor of addressing, with hypothetical suggestions if the case would admit of a theory. We have not the means of subjecting ganglia and their nerves to satisfactory experimental observations in reference to sensation. When the
vivisector has made his way to the base of the cranium, external-
ly and internally, though he might obtain satisfactory information
as to the conduits of motor influence, I know not how it would
be possible, in the midst of such tearing and severing of tissues,
to determine degrees of sensation, which can only be demonstra-
ted by cries or quiverings.

Allow me to try the hypothesis by another example. A gen-
tleman, after playing at bowls one evening, awoke in the night
with slight hemoptysis. The source was referred by his own
feelings and his physician's examination to the upper lobe of the
right lung. Whether or not a tuberculous nodule was the nucleus
of the disease, there was evidence for a short time of a portion of
the lung in the right infra-clavicular region, and in the same part
pain was felt for a long time afterwards, when the patient laughed
vehemently, or made any strong muscular exertion. But after
awhile he observed that pain would occasionally come on in the
same part whenever his stomach was at all deranged, and that it
would subside after a slight eructation of wind. What was the
chain of events in the production of this obviously sympathetic
pain? Was the morbid impression, which had been made by
gas in the stomach on the gastric nerves, transmitted by sensory
nerves to the sensorium, and instead of being transformed into a
sensation in the part of the sensorium related with the gastric
nerves, passed on to the central cells related with the sensory
nerves belonging to that portion of lung which was formerly dis-
eased? Or is it not more probable that the gastric impression
was transmitted by ganglionic nerves to the pulmonary plexus
belonging to the spot of lung in question, and that the impression,
acting on the morbid susceptibility left in that plexus by old
disease, excited in it another impression, which, having been
transmitted to the sensorium, produced a sensation referred to the
lung?

There is, however, another element to be considered in that
curious process, by which, when impressions are being made on
many sensory nerves, some in particular will be converted into
sensations, and which may easily lead to a fallacy. It is a famil-
lar fact that, amid the din of confused sounds in a street, or at a
dinner party, the only auditory impression which become sensa-
tions, that is, which are presented to the consciousness, may be
the words of a friend in colloquy. The cause of this appears to
be simply the predominance given to one cluster of impressions
by the desire, or the compulsion of the will, in other words, the
expectant attention. If of two impressions, starting severally
from the gastric ganglionic centre, and its related pulmonary
centre, one is more intense than the other, it will become the sen-
sation perceived in the sensorium. Or supposing the intensity to
be equal, the prevalence may be determined by the expectant
attention. If, for example, the pulmonary impression has been linked with apprehensions as to the nature of the illness, or with previous suffering, it will be perceived to the exclusion of the gastric.

This subject of morbid sympathy as to sensation may, perhaps, be still further elucidated, if we consider the sympathy between the tegumentary surface and the internal organs. What, for instance, is the order of events in catching cold, in the common occurrence of a catarrh? A person, liable to such attacks, may have been standing at a corner of a street, or at an open window, conversing with a friend. According to the degree of interest in the conversation, he may or may not feel chilly; but in twelve or twenty-four hours he has the symptoms of incipient catarrh. What has happened during that period of incubation? What did the current of cold air do to him? It may be said that the insensible perspiration was interfered with, and that matters were thereby retained in the blood which ought to have been eliminated; and that the blood, thus contaminated, excites disease in any predisposed organ—the Schneiderian membrane, for instance. This may be the case; but another view might present itself. It might be inferred that an impression has been made on the nerves belonging to the cutaneous blood vessels, reaches the ganglionic centres, and in its further diffusion, extends to the grey ganglionic nerves belonging to the blood-vessels of the Schneiderian membrane, and, through them, so alters the circulation and secretion of the membrane, as to produce what is called catarrh. The one view seems at least as likely as the other. But suppose the cold to have operated on some limited portion of the body, say the scalp; or suppose the outward cause to have been damp ground operating only on the feet. It is not easy to presume, in this case, a general defect of elimination. The more probable presumption is, that an impression is made on the nerves belonging to the blood-vessels in the skin, and that they transmit the impression to the visceral ganglia, and disturb such parts as are most prone to disorder.

Or we may take another case for investigation. I have a patient who frequently suffers from severe attacks of headache, and who tells me that one of the most frequent causes is driving in an open carriage in a cold wind. She has no general chill, for she is well clothed, but some morbific impression must be made on the face. In a few hours, the headache comes on. There is here no general interference with elimination, but an impression is made on the skin of the face, which may be transmitted to the Gasserian ganglion, and thence to the cephalic; or it may travel by the route of the arteries to the nerves of the brain. But the road which the sympathy travels may be traced in the reverse direction. Thus a patient is the subject of headache, attended
with heat of the scalp, dilated and with throbbing temporal arteries. Cold is applied to the forehead and scalp, and the pain is lessened or removed. How is it thus sedative to the nerves of the cerebral vessels? Its operation on the vessels of the scalp is to cause their contraction; and I presume that this is effected by its operation on the vascular nerves. The impression on them, transmitted to their ganglion and plexus, must reach the nerves of the brain. We cannot think that the cold penetrates the bony case, and so reduces the vascular disturbance within it; or, should any one think that this is not impossible, let us suppose that instead of cold lotions, leeches have been applied. No influence is in this way transmitted through the cranium; the quantity of blood lost is too small to affect the heart or the general circulation, and it is a clear case of sympathy. The relief is afforded here unequivocally through the blood-vessels and their nerves, the latter nerves being the only media of communication between the vessels of the scalp and the vessels of the brain and *pia mater*, whatever communication may be traced between those of the scalp and the cranium and *dura mater*. An analogous train of argument might be pursued, as to the action of anodynes applied to the surface.

The phenomena of a *coup de soleil* also illustrate the principle; for, unless it be thought that the sudden elevation of temperature in the scalp is extended to the cranium, and thus directly irritates the vessels of the membranes and the surface of the hemispheres, there seems no other way of tracking the influence than that which I have already pursued, along the nerves of the external blood-vessels to those of the corotidal plexus.

**Cerebral Circulation.**—Having thus far considered the relation which painful affections of the head bear to impressions on distant nerves, let us turn our attention to their connexion with the cerebral circulation.

The intimate connexion of the nerves of the brain with its blood-vessels, enables one to account for the difficulty which is often presented to our diagnosis—that of distinguishing the pain which is purely nervous, from that which is the effect of vascular disorder. The peculiarity of the intracranial circulation enhances the difficulty; for though the researches of Dr. Burrows have settled the question as to whether the quantity of blood in the vessels can vary, having proved that it is variable, yet the nature of the outward barrier indicates plainly that the compression of the vessels, and consequently of the nerves, must at times be very considerable. Suppose the nerves be in a normal state, the pressure of distended vessels may occasion pain, as in the inflammation of the pulp of the tooth. Or suppose the nerves to be hyper-aesthetic, very slight changes in the force and the volume of the circulation will distress them. The aggravation of a nervous headache by palpitation, by interruption to the venous circulation, in cough-
ing, straining, or other muscular exertion, must be familiar to most persons. I have just supposed the case of the nerves being in a normal state, and then distressed by the hydrostatic pressure; but, on consideration, I doubt whether pain is ever due to simple vascular distension, unless the latter has been extreme and long-continued.

It is difficult to find a combination of circumstances exactly like that of the vessels and nerves of the brain. Some resemblance may be found in a limb compressed by an article of dress, as a foot by a tight shoe, which in the evening, under the influence of heat and long dependence, begins to swell. The pressure of the shoe makes the swelling painful; but here, again, there is a want of strict similarity. For the pain comes from the superficial nerves of the skin, which are directly compressed. The pain is not like that which ensues when the vascular nerves only are affected. That mere compression of healthy nerves by their distended vessels should occasion pain, is rather negatived by the freedom from pain during violent muscular exertions and strains, which put the vessels of the head under the highest degree of pressure. And again when the accumulation of blood takes place in the other direction, whether attracted into the capillaries by unusual functional exercise, or injected into them by emotional excitation of the heart, or by the more composite influence of alcohol, there is often an entire exemption from pain, and in the latter instance a feeling of great enjoyment. I think it may be inferred that when fulness of the vessels gives rise to pain, there must be an accompanying or preceding unhealthy state of the nerves of the part, or that the congestion must have been long continued enough to beget such textural disorder as the nerves will necessarily partake of. In inflammation the nerves are for the time injured by the changes in which the process consists, as well as by the first action of the exciting cause.

The headache which follows an epileptic paroxysm, and that which attends or ensues on prolonged dyspnœa, or violent fits of coughing, might seem to be examples of pain occasioned by simple disturbance of the brain-circulation; but the latter cases are exceptional; that is, it so often happens that both long-continued dyspnœa and cough occur without producing headache, that we cannot but infer that some nervous element must be introduced into those cases in which pain attends upon difficult breathing and cough. As to epilepsy, though we have much to learn respecting its pathology, yet a paroxysm presents unambiguous evidence that the vessels are enormously strained; and the pain after the attack and the functional disturbance of the brain bear a direct ratio to the severity and frequency of the attacks.

It was while I was considering the relation of headache to altered states of the circulation in the brain, and speculating on the pos-
sibility that the duration of a fit of headache might be connected with the time requisite for the adjustment of the disturbed balance, and especially for change in the distribution of the cerebro-spinal fluid, which has been supposed to play an important part in such adjustments—it was with the view of confirming or correcting this supposition that I determined to make some experiments on animals. In the performance of these I had the valuable assistance of my friend, Mr. Michell Clarke, a gentleman well versed in anatomy, and expert in operating.

If the cerebro-spinal fluid replaces blood withdrawn from the intracranial vessels by gravitation, or if, conversely, the recession of the fluid makes room for congestion of those vessels, it appeared to me that were an animal kept some time in a certain position, the cerebro-spinal fluid ought to be found accumulated either in the cranial or in the vertebral cavities; if erect, in the ventricles and subarachnoid space of the brain; if inverted, in the theca vertebralis.

Three rabbits were selected. One was suspended by its ears and fore-legs, another by its hind-legs, a third was kept for comparison.

The two suspended rabbits were poisoned with prussic acid after about half an hour, their position having been strictly maintained. The post-mortem examination was made immediately, and with the bodies kept steadily in the same position.

In the rabbit inverted during suspension the eyes were very prominent, and the membrana nictitans was congested (but there had been no manifestation of distress during life). The vertebral canal was first laid open. All the tissues in the lumbar and dorsal regions were bloodless; those of the neck and cranium were gorged with blood; the membranes and the substance of the spinal cord in the lumbar and dorsal regions were quite pallid. In the cervical portion of the theca there appeared a slight accumulation of sanguinolent serum. On opening the cranium, the bony tissue was full of blood; the meninges were highly congested, and the puncta sanguinea in the cerebral substance were numerous and strongly marked. There was no serous fluid in the ventricles, and none external to the convolutions.

The rabbit which had been suspended by its ears and forelegs was of course examined in an erect posture. The tissues of the head, neck, and back were exsanguine; but those of the lumbar region were in an opposite condition. When the cavities were laid open, the membranes of the spinal cord in the same region were found injected, while those of the brain and the vessels of the brain substance were extremely pallid. Serous fluid was anxiously and carefully looked for in the ventricles and between the convolutions, and at their base, but none was found.

The third rabbit was poisoned with prussic acid, and examined
immediately in the horizontal position. There was a pretty equal
distribution of blood, and nothing remarkable was observed, ex-
cepting the absence of anything like cerebro-spinal fluid, either
in the cranial or in the vertebral cavity.
These experiments, while they entirely confirmed the observa-
tions and conclusions of Dr. Burrows, as to the production of an
increased or lessened quantity of blood in the brain by gravitation,
were negative as to any adjustment affected by cerebro-spinal
fluid.
I thought it well therefore to repeat the experiment on two full-
grown and very strong rabbits. They were suspended for an hour.
The rabbit which hung by the ears and forelegs was found dead. The other, quite vigorous, was poisoned with prus-
sic acid. They were examined with the same results, excepting
that in the inverted animal there was not the same appearance
of sanguinolent exudation in the cervical portion of the theca
vertebralis which had been found in the first case. The rabbit
which had died suspended by his ears and forelegs was examined
with particular care and interest. No serous fluid was discover-
able in the ventricles, and none beneath the pia mater—none in
any part of the cranial cavity. But the membranes and brain-
substances were absolutely blanched. The appearances corres-
dponded with the plate in Dr. Burrows’s work, representing those
of a rabbit bled to death.
As this observation was interesting in proof of the fatal effects
of a posture which diverted blood from the brain, it was repeated
on two other rabbits. One was suspended by the ears and fore-
legs, the other by the ears only. Death occurred a few minutes
earlier in the former than in the latter case. The appearances
within the cranium were similar to those described in the former
instance.
In order to meet the supposition that the animals might have
been distressed by the weight of the body, and the strain on the
ligaments of the neck, the weight had been taken off by a support
applied to the haunches.
Thinking it desirable to ascertain whether the inverted position
would occasion death, if continued longer than in the cases of
the animals suspended in that posture, a strong middle-sized rab-
bit was hung up by his hind-legs and kept in that situation for
more than four hours. After being cut down, he looked for a
moment astounded, then gave his head a shake, and seemed to
have recovered his self-possession. He was in fact quite well,
and began to feed quite heartily.
Rabbits are known to hold their lives on a slighter tenure than
do many animals. We thought it right therefore to try the effect
of the erect posture in one of another order. A cat, being pro-
verbially tenacious of life, was selected. Mr. Clarke found it
difficult to keep her head constantly upright. She died in three hours and a half. The brain and its membranes were perfectly bloodless, but there was no fluid in the ventricles, nor under the pia mater, nor in any part of the cranial cavity. Neither could more than a very few drops be discovered in the vertebral cavity.

Whatever may be the physical agency by which the brain deprived of its blood is still capable of filling its bony case, the proof given by the experiment of the degree to which blood may be drained from the cerebral vessels by posture only, has, it seems to me, some considerable value. We see that, independently of the nutritive relation between blood and neurine for the performances of brain function, one of the conditions under which this function is performed is a certain amount of pressure, a greater or less amount of which may produce distressing or even fatal results. In the rabbit the circulation is not so arranged as to maintain even for a short time an adequate supply to the brain under the disadvantageous circumstances of erect posture. While the egress of blood is helped by gravitation, the afflux is to be kept up by the exertion of a heart not vigorous enough to overcome the difficulty presented by gravitation. The heart soon becomes further weakened by the reflected influence of that very state of the brain which its own incapacity has engendered, and fatal syncope is the result.

The fact teaches us also how important to man, with his "os sub-lime" is a sufficiency of strength in his left cardiac ventricle. It may be that in him there is a larger amount of cerebro-spinal fluid normally existent, and that he is furnished with adjustments for his greater variety of postures. But still nothing is more to be apprehended than the result of diminished afflux and pressure, from a failure of the cardiac impulse. And the observation is, I think, confirmed by all clinical and pathological experience.

I need scarcely say that in these experiments it was a surprise to Mr. Clarke and myself that no appreciable quantity of fluid should have been found corresponding to the cerebro-spinal fluid, though it was carefully looked for. Mr. Clarke was at the pains of examining under every precaution the vertebral and cranial cavities in a cat, and in dogs poisoned with prussic acid, but with the same negative results. The examination of a dog was made in the presence of Mr. Henry Clark, an accomplished anatomist, and myself. The whole quantity of fluid collected on bibulous paper from the theca vertebralis, the ventricles of the brain, and the cranial cavity, amounted at the most liberal computation to no more than seven drops.

It is not difficult to reconcile these negative results with the fact that one finds more or less serous fluid in the cranial and spinal cavities of the human subject, because the latter is always examined several hours after death, and when there has been
abundance of time for the transudation of fluid in these as well as in other serous cavities. And, à priori, a large proportion might be expected from the exceeding vascularity of the pia mater, which represents sub-serous cellular tissue. But it is more difficult to explain the absence of the fluid in the animals examined by us, when we consider it in relation to the experiments of Magendie, Cruveilhier, Ecker, and others, on the living animal. It would be presumptuous, as it is unnecessary to question the accuracy of such practiced observers. And without other evidence I shall come to the conclusion that the presence of true cerebro-spinal fluid is confined to the living animal, and that when the quantity of blood in the vessels is diminished by death, the fluid passes into them by endosmotic action.

But I have before me the note of an experiment made by Mr. Clarke on a living dog, previously rendered anaesthetic by chloroform, which fully corroborated those of Magendie and Cruveilhier. The dog was of smaller size than that which was examined after death, yet nearly sixty drops escaped from the puncture through the occipito-atlloid ligament, though from a dead animal of the same size the sum total of serous fluid obtained from ventricles, cranium, and theca vertebralis amounted at the outside to seven drops only.

I have already said that it also remains to be explained how the brain all but emptied of blood, still fills the cranial cavity. Two cats were killed, especially with a view to this point. The brain was drained either by posture, or by division of the cervical vessels, but on opening the cranium the dura mater was found as tense as if the vessels had been full of blood, and yet no serous fluid was discoverable. As there is no ground for attributing resilience to the cerebral substance, we are forced to speculate upon the possibility of some interstitial fluid or serous halitus. As the experiments have proved that the cerebro-spinal fluid of the living animal is not to be found after death, can it be that this fluid instead of being extra-membranous becomes interstitial? Or is there some æriform substance in the vessels, such as prevents the coats of many of the arteries from collapsing after death, though they no longer contain blood? I have already suggested some experiments to Mr. Clarke in elucidation of this subject, some of which he has already performed, while others are still in progress.—[New Orleans Med. News and Hosp. Gaz.


GENTLEMEN,—We have had, since Summer Session, commenced various instructive "eye" cases in the hospital, to which I
Conical Cornea and its Treatment, &c. [September, wish to direct your attention to-day. Several severe cases of syphilitic iritis, with, and, I may say, without complications, as also a most unique case of that very singular disease "conical cornea." Iritis is a very ordinary disease in practice, so that your attention cannot be drawn to it too early in the session; it is also on seen under unexpected circumstances. The first case of which I may speak is that patient suffering under

INFLAMMATION OF THE EYE WITH GONORRHEA.

You will remark, I say, inflammation of the eye attended with gonorrhoea—not gonorrheal ophthalmia; the diseases, in fact, are quite different, as well in their pathological seat and import as in their mode of treatment, constitutional or otherwise.

In cases of gonorrhoeal ophthalmia, of which I speak hereafter, it seems as if a patient laboring under gonorrhoea conveyed much of the puriform discharge immediately to the conjunctivitis, of which, no doubt, you have all read in your books; but in this patient now under our notice, with a gonorrhoeal history of a somewhat like kind, the infection from some constitutional cause or peculiarity, probably of a rheumatic character, extended from the conjunctiva to the sclerotic coats of the eye: from thence even to the iris, causing great intolerance of light, with remarkable dullness of colour in the iris itself. To these signs of this affection were added profuse lachrymation, and what I consider almost as pathognomonic of this class of cases, most severe supra-orbital pain—pain of a most remarkable kind, extending round the orbit, and, no doubt, in some measure engaging all the fibrous tissues of that part. Now I wish you to remark that both these diseases arise under similar circumstances; yet this is, you see, quite a different thing from gonorrhoeal conjunctivitis, or a conjunctivitis of any kind, properly so called.

The supra-orbital pain of scleritis is absent in the disease of the conjunctiva. The appearance of the patient himself is also peculiar; you can, in fact, scarcely mistake these cases when once you have studied them. Fortunately, this serious thing—gonorrhoeal ophthalmia—is not very often seen in this hospital; but if any cases do offer themselves I shall take the opportunity of showing them to you.*

The treatment of these cases differs, also, so that a proper diagnosis is not a matter of idle curiosity or ingenuity, but of necessity. In this patient we had to combat the inflammatory symptoms in the sclerotic coat with much vigour. Depletion and cupping on the temple were ordered and mercury used night and morning: calomel and opium, not for any specific

* Mr. Wilde, of Dublin, as previously stated in the Circular, has recently discovered that simple leucorrhoea in a married female produced as marked infection in the conjunctiva as gonorrhoea.
action, so much as to stop inflammation. To these remedies we added a blister on the nape of the neck; yet all did not answer, and we were obliged to have recourse to the wine of colchicum —(5 ss., sex tis horis). This affected his stomach a little, as colchicum very often does, so that it is a drug requiring much caution in its administration. In my experience, however, I find that when the pain and sickness are induced, the action of the medicine is more certain and specific; still great caution is also necessary, for very serious results have followed overdoses of this powerful agent.

If the colchicum* be used without due caution, even fatal results might arise, so that it will be necessary to watch its action with great care. I am not going now to enter into the minute diagnosis of sclerotidis, we shall see it as we go through the wards during the summer, and it will be better to point it out to you in the wards.

The next case I wish to speak more in detail about, is a patient suffering under what is termed,

**CONICAL CORNEA.**

The patient is E. W——, a poor woman, it seems, who has been led about the streets quite blind. She is a comparatively young woman, only aged thirty six years; she has occasional flashes of light, she says, but with that sole exception she has been now thirteen years totally without vision of any kind.

This is a most singular disease, one of the pathology or nature of which we know absolutely nothing. As far as I have seen it during fifty years' experience (if possible to add to its anomalous character) it usually takes place in young and healthy subjects who have not suffered in any manner from excessive use of the eye, like watchmakers, needlewomen, printers, &c. This young woman, our present patient, you see, is perfectly healthy; she tells us nothing of any previous disease of her eyes; in fact, it is a gradual change occurring over a long space of time in a cornea otherwise healthy. I have seen the cornea in this state become in shape quite like a cone; the rays of light, too, present a most unusual appearance in conical cornea; the patient does not present the vacant, dull eye of the amaurotic patient, who holds his head towards the sky whene'er he may chance to catch a glimmer—everything dark, dark,

"Amid the blaze of noon
Irrecoverably dark, total eclipse."

* It may be prudent to observe that very few surgeons share Mr. Lawrence's dread of the use of colchicum, at least in Hospitals. Mr. Hancock, uses tinct. of aconite in such cases, which is nearly the same medicine, and probably aconite and atropine will, ere long, supersede all the routine plans of calomel and opium, belladonna, &c., &c.
There is nothing of this dulness or opacity of the eye in conical cornea, but no doubt you have observed it in this woman; the eyes here have an unusual bright appearance, sparkling like diamonds or those bits of cut glass that sometimes represent diamonds! The rays of light passing into the eye in conical cornea are, I think, reflected (not refracted, mind you) before they fall on the retina, and are thus thrown into those singular glittering or diamond-like reflections in the vitreous humour and lens of the eye. I think that even on physical principles the blindness of the eye in conical cornea is to be explained; her eyes are like a telescope that has been pulled out in a wrong manner, or fixed at half cock. But neither a gun or a telescope will answer if fixed firmly at half the measure of its capacity. In the eye it must also very seriously impair the focus of vision, as you see it does in this poor woman. She says, over and over again, that for years she has been totally blind, led about like a child!

Well, on examining the eye with some care, I found that, though the cornea in each eye is in a very marked manner, bulged into a cone—from what cause I never could meet any surgeon who could exactly say—yet that the immediate circumference of the cornea, situated next the sclerotic, remained unchanged; indeed, few persons not familiar with the different varieties of blindness would detect that this healthy young woman, with what the story-books would call "brilliant eyes," was a poor creature almost totally blind. Any one accustomed to eye cases will at once distinguish these cases, however, from cases of photophobia, amaurosis, &c.*

Now, on the admission of this woman with conical cornea to hospital, having seen some similar cases, benefitted by the only remedy I know of in these patients, I was anxious to give that

* In these times, when sanitary science shows the value of light, it is very interesting, with the additional knowledge imparted by modern science, to study the early observations of Milton, who, "in the latter years of his life suffered severely from rheumatic gout, which, attacking his eyes, left him totally blind"—so severe this "dim suffusion" which veiled his sight! Speaking of light he exclaims—

"Thee I revisit safe,  
And feel thy sovereign vital lamp; but thou  
Revisit'st not these eyes that roll in vain  
To find thy piercing ray."

And again he makes the blind Sampson say—

"Since light so necessary is to life  
And almost life itself—  
Why was the sight  
To such a tender ball as the eye confined."

"Almost life itself" is a very beautiful idea! Marshall Hall has shown that perhaps the first link in the long chain of actions ending in assimilation, digestion, &c., is a reflex action in the lenticular ganglion, and eighth pair from light exciting the retina.
remedy, which is belladonna, a full trial. I will now read some of the notes of the case:

May 5,—"The patient has had the belladonna applied," (I read in the notes furnished by the House-Surgeon,) "since when, greatly to our astonishment, she begins to see objects all around her, and on bringing a book close to her face she sees the type and recognises the larger letters." Exactly so. Now, the reason of that is at once obvious: I have already remarked that the immediate circumference of the cornea, next to the sclerotic, remained unchanged; very well, now comes the belladonna or atropine, and dilates the pupil; more light is thus permitted to pass, and through a healthy portion of cornea a mere line or so of pupil is left, and on bringing a book up to the face she can read very respectably indeed. It is remarkable and curious that the retina retains its sensibility for a very long period. Now, the conical cornea in these cases is subject to friction, and becomes roughened; you must be prepared also for that, but I am of opinion that in young and healthy subjects it will not give much trouble.

An elderly gentleman, a clergyman, quite blind, consulted me some time ago; he was perfectly well in all other respects, but he was totally blind, and had this singular disease of the cornea. A change had occurred, unfortunately, in this case, in the apex of the cone due to friction, it appeared quite opaque. The old gentleman was very far advanced in life, perhaps about eighty—an age, of which one is not fond of new experiments or new theories. It has been suggested now—by the new Ophthalmological School, if I mistake not—to make an artificial pupil in such cases. I simply ordered the atropine drops, from which he obtained a very fair amount of comfort; indeed, he went to church, he rode about in his carriage, took exercise, and, much to his delight, renewed his acquaintance with an old friend, the 'Times' newspaper! which he read, holding it up close to his nose and forehead. I cannot say that I am favorable to cutting operations in these cases; the palliative plan of atropine answers every purpose.

We next pass on to a different order of cases, but one which must attract, as it deserves your serious attention. The next is a case of

SYPHILITIC IRRITIS.

I may say, in the beginning, this has been a patient a little out of the ordinary hospital routine of such cases—a respectable young person coming to us in perfect health, but attacked with iritis! If we put the question of syphilitic or non-syphilitic to herself out of book, I should be disappointed if she answered it exactly as it might be wished. She comes to us from the coun-
try; she looks something like a quiet governess in a private family. Now governesses may go wrong, I dare say, for all that you know, as well as those over whom they may be said to govern. It is very probable that we are favored with this lady's society because she has kept the thing a profound secret up to the present. All this has a bearing on the case, however, and if we make any hand of it, it will be by going slowly, as there is such a thing as idiopathic iritis, rheumatic iritis, &c.

She admitted that she had taken some medicine, but it was all Epsom salts, certainly nothing else. Well, not knowing much of what are now termed, in the phraseology of the day, this lady's "antecedents," or the amount of moral control she may or may not have practiced as a governess on herself by way of example to her pupils, Mr. —, my House Surgeon, commenced what the newspapers call a "delicate investigation." She, of course, denied point blank all syphilitic taint, but on untying the strings of her bonnet—which she was requested to do, as you saw on the day of her admission—there were some copper-coloured spots under the ribbons, not as inviting as one would like; yet this was not sufficient for our purposes of a diagnosis, though it left no doubt on my own mind of the true nature of the disease; but we further made out: this is the month of May, but about last Christmas she had a discharge, attended by swellings in each groin, but she merely took small doses of Epsom salts, and did nothing else. She would not for the world have told the family surgeon. You will see the bearing of this 'delicate investigation' presently: she took her salts, and rested contented that it would all blow over. Now let us retrace our steps with this new light. About five months ago, you perceive, she had primary syphilis: it may have been very slight; she had a discharge probably from an abrasion in the passage. Two months after she noticed the marks under the ribbons of her bonnet—viz., a scaly eruption, and now more of a copper colour, yet she very probably knew of no bearing of one of these things on the other.

May 4.—Together with the previous history, we find the left eye of this governess has been bad for ten days. She was ordered strong poppy fomentation and gray powder, ter in die—eight leeches to the temple. When I first saw the muddy colour of the iris, and perceived that she complained of dimness of vision, that the pupil was contracted, and did not seem to answer to the stimulus of light, I had no doubt in my own mind of its being syphilitic iritis.

13.—I need not go over the notes of treatment; they do not present anything worthy of stopping to remark on, as you have seen the case to-day; but here, on the 18th, she is reported as "nearly well;" the leeches and gray powder have answered
their purpose; the iris is again safe; and she will probably leave the hospital, thus rescued from further temporising mischief.

Now, gentlemen, this history interests us all as surgeons. You see it is made up of quiet, confidential demeanour towards even the poorest patient; and when this is adopted you seldom fail to come down on the truth; the educated surgeon will not go astray, and then, also, it teaches you a great fact, as I take it to be, in the natural history of syphilis, to be arrived at in the same manner, that you may most undoubtedly have all the phenomena of syphilis, even in syphilitic iritis, without one grain of mercury having been previously administered. Iritis is said especially to be a "mercurial symptom." Some of my colleagues and many other surgeons express themselves strongly on this point of doctrine—a doctrine I do not hold at all. This young woman, as Horace says, was striving to drive out Nature, but still it would ever keep returning—

"Naturam expellas furca," &c.

She took no mercury; she dosed herself soberly with salts; but still we have the usual course of natural symptoms—an abrasion or an ulcer, probably getting well by cleanliness, and not using any irritating washes; then muco-purulent discharge, next buboes, all cured, for the time by salts; then the inexorable spots under her ribbons, as completely copper coloured as ever I saw, and now iritis; but all, I am firmly satisfied, generated without mercury!

You probably know that the surgical world is divided into two opposing, if not hostile, camps: the mercurial and non-mercurial plan of treatment having each its ensign flying, and some battle—some Knights arrayed with their hosts on one side or the other; but of the natural progression of syphilitic symptoms, even as far as iritis, without the agency of mercury, I have had no doubt whatever; indeed, this single case—every bit of which is now coherent and simple—proves it. Do not be misled, then, by the supposition that diseases of the iris or periosteum are due to mercury more than to syphilis, for disease of the iris brook no delay if you wish to preserve the integrity of vision in the organ.—[Medical Chronicle.

An Experimental Inquiry into the Effect upon the Mother of Poisoning the Foetus. By W. S. Savory, Demonstrator of Anatomy and of Operative Surgery at St. Bartholomew's Hospital; Surgeon to the great Northern Hospital.

The structure of the placenta and the character of its circulation—the close and intimate relation which exists there between the foetal and maternal blood—is naturally appealed to in ex-
planation of the well-known effects produced in the child by various morbid and other peculiar conditions of the maternal system occurring during pregnancy. This intimate relation between the two circulations at the placenta is looked to for an explanation, not only of the transmission of obvious and fully developed disease from the mother to the foetus, as variola and syphilis, but also of those more subtle and obscure changes which are likewise understood to be capable of affecting the child.

Although the influence thus exercised by the mother upon the foetus has been known to every one for ages past, and is continually illustrated by striking examples, it is only comparatively recently that the converse relation—the influence of the foetus upon the mother—has received any attention.

The subject has been most ably brought before the profession, by Dr. Alexander Harvey, in a very interesting series of philosophical papers "On the Fœtus in Utero, as inoculating the Maternal with the Peculiarities of the Paternal Organism."* In these well-known essays, he advances some excellent observations, and cites many cases to show "that an explanation offered by Mr. M'Gillivray, of Huntly, is the true one—viz., that while, as all allow, a portion of the mother's blood is continually passing by absorption (and assimilation) into the body of the foetus, in order to its nutrition and development, a portion of the blood of the foetus is as constantly passing, in like manner, into the body of the mother; that as this commingles there with the general mass of the mother's own blood, it inoculates her system with the constitutional qualities of the foetus; and that as these qualities are in part derived to the foetus from its male progenitor, the peculiarities of the latter are thereby so engrafted on the system of the female as to be communicable by her to any offspring she may subsequently have by other males."

Now, although we are in possession of absolute facts, which furnish clear and convincing evidence of the direct transmission of what may be termed accidental matter from the mother to the foetus, not only of certain diseases, but also of foreign substances—as camphor and oil in the experiments of Magendie and D. Williams—yet we have no such conclusive facts in support of the converse proposition. However strong the argument from analogy may be, supported as it is by the record of cases of extreme interest, yet demonstrative evidence is wanting of the direct absorption of foreign matter from the foetus by the mother. Indeed, the only experiments in reference to this point with which I am acquainted was attended by a negative result.

In his "Compendium of Physiology," Magendie briefly says,

"I have often injected very active poisons into the vessels of the cord, directing them towards the placenta; but I have never seen the mother suffer from the effects of them."

And this negative result may be supposed to depend upon the fact that after all the communication between the maternal and foetal blood is only an indirect one, and is therefore limited. It may reasonably be believed to be one office of the cells which intervene between the foetal and maternal vessels to regulate or control such transmission, to exercise a selecting influence on the materials absorbed, as some other cells in all probability do. It is commonly supposed that the office of these cells is solely connected with the transmission of materials from the mother to the foetus, one set selecting and separating, and the other elaborating and absorbing them.* Therefore, even if an interchange to the certain extent be admitted, there is still no proof that poisons or other morbid materials, whether arising from within or without, must necessarily pass from the foetus to the mother.

But in whatever way the argument may be supported, it is certain that two very opposite opinions are expressed by physiologists on the subject. Dr. Harvey, after quoting this sentence from Mr. M'Gillivray, "I am quite aware that many physiologists maintain that, in the highest species of animals, the blood cannot be returned by the foetus to the mother during utero-gestation," endorses it with the following statement:—"That this opinion is very generally held by physiologists in this country is quite certain. Dr. Alison, for instance, after observing (on the authority of Magendie and of Dr. David Williams, of Liverpool) that camphor and oil injected into the blood of pregnant animals are soon detected in the blood of the foetus; but that poison injected into the umbilical arteries, although mixing with the blood on its way from the foetus to the placenta, does not affect the mother; and that fatal haemorrhage in the mother does not apparently diminish the fulness of the vessels of the foetus—adds 'so that it would seem that the transmission of fluids is almost entirely from the mother to the foetus.'

Again, Dr. Kirkes, referring to Professor Good sir's observations as to the intervention of two distinct layers of cells between the foetal and the maternal portions of the placenta, speaks of the one being, 'probably designed to separate from the blood of the parent the materials destined for the blood of the foetus,' while the other 'probably serves for the absorption of the material secreted by the other set of cells, and for its conveyance into the blood vessels of the foetus'—no idea, seemingly being enter-

tained of a converse process.* Moreover, the view taken by most physiologists of the destination of that portion of the foetal blood which is transmitted to the placenta appears to be exclusively that of renovation or aeration, by coming into relation with the oxygenated blood of the mother, nothing being said as to re-absorption into the maternal system." In a note he adds, "In his 'History of Medicine,' Dr. Alison expresses himself even more strongly on the subject: 'The experiments of Magendie and others have proved that any substance which may be circulating in the blood of the mother finds ready access to that of the foetus, but that there is little or no transference of fluids in the opposite direction.'" Those authors who express a contrary opinion, cannot refer to any facts in support of it.

As the question at present stands, then, the only demonstrative evidence is that yielded by the experiments of Magendie, and these gave a negative answer. All the rest of the evidence which has been adduced on either side is devoid of proof, is indirect and inconclusive.

This subject was brought before the notice of the Hunterian Society by Mr. Jonathan Hutchinson, in a paper on the "Communication of Syphilis from the Foetus to the Mother," read there in the latter part of 1856.† It was followed by a very interesting discussion, and it then occurred to me that it should be brought to the test of experiment. I could find no such evidence on record, excepting the experiments of Magendie already referred to, and these had yielded a negative result. But the nature of these experiments appeared to me objectionable; for it seems almost impossible to open the vessels of the cord and inject directly into them, without interfering to a fatal extent with the foetal circulation.

This was the general plan of my experiments:

By opening the abdomen and uterus to expose and isolate a living foetus. Then to inject into it, with the least possible amount of violence, some substance capable of ready absorption,

* It is however, only fair to add that in the latter editions of his work, Dr. Kirkes in a note expresses the following strong opinion:—"Although in the text mention is made only of the passage of materials from the blood of the mother into that of the foetus, yet there can be no doubt of the existence of a mutual interchange of materials between the blood of both foetus and parent, the latter supplying the former with nutriment, and in turn abstracting from it materials which require to be removed." The most recent expression of Dr. Carpenter's opinion is to this effect. After giving the common account of the function of the placenta as furnishing materials for the nutrition of the embryo and as a respiratory organ, he adds, "And it is probable, too, that the placenta is to be regarded as an excreting organ, serving for the removal, through the maternal blood, of excrementsions matters, whose continued circulation in the blood of the foetus would be prejudicial to it."

† This question in relation to the transmission of syphilis had previously been often suggested by various authors, but it is much more fully discussed by Mr. Hutchinson.
and the operation of which is marked by obvious and unmistakable effects. To be sure that no trace of the substance came into direct contact with the maternal tissues. To place the foetus thus injected in a condition most favorable for the continuance of the circulation, and then to watch for symptoms of the operation of the poison upon the mother.

The poison I selected from some others was strychnia, for these reasons:

It is extremely active in very minute doses.
It is easily dissolved, and therefore readily absorbed.
Its absorption is rapidly followed by its operation on the system.

The symptoms of its operation are striking and characteristic.
Its effects are not materially counteracted, nor its symptoms marked, by the influence of chloroform.

After some experiments with strychnia dissolved in various menstrua, as alcohol, benzole, &c., I preferred as the most eligible a solution of strychnia in diluted acetic acid. In this way I obtained a very convenient solution of the acetate of strychnia, of sufficient strength.

Twenty-four grains of strychnia were dissolved in seven drachms of distilled water by the addition of one drachm of acetic acid. Twenty minims of this solution, therefore, contained one grain of strychnia.

A certain quantity of this solution was introduced, usually, into the abdominal cavity, through the parietes, by means of Anel’s syringe. This little instrument is very convenient for the purpose. The abdominal wall can be easily pierced with its fine point without any violence. The quantity of fluid injected can be accurately calculated, and when withdrawn, the minute puncture is so closed by the natural elasticity of the tissues, when the foetus is far advanced in development, as to prevent the escape of any portion of the solution.

The subjects of my experiments were dogs, cats and rabbits. Dogs, from their size, are the most convenient, and furnish the most satisfactory results.

From a considerable number of experiments, I select the following ones as fair examples:—

**Experiment 1.**—A pregnant bitch, a common smooth-haired terrier, weighing about twelve pounds, was rendered insensible by chloroform. The abdomen was opened in the median line, and the uterus was partially drawn out. It was carefully divided over a foetus. The amnion was punctured, and the foetus, lively and vigorous, was allowed to escape. It was received upon a napkin, and remained connected with the mother only by the cord. The foetus was carefully supported, so as to avoid
stretching the cord. The abdominal wall was cautiously punctured with the point of the syringe, and ten minims of the solution (half a grain of strychnia) were injected into the cavity. When the syringe was withdrawn, no fluid escaped. The puncture was so minute that nothing exuded even upon pressure. The foetus, which struggled slightly after the operation, and then became tetanic, was suffered to remain where it lay, not in contact with the mother.

An incision was then made in another part of the uterus over a second foetus, which was only partially exposed, and not drawn out. The side of the chest was wiped dry, the point of the syringe was inserted between the lower ribs, and about the same quantity of the solution was injected into the thorax. The piston was slightly retracted before the pipe was withdrawn, and not the least trace of moisture appeared. The part where the puncture was made was carefully watched for some seconds by Mr. Crowfoot and myself, and we both were fully satisfied on that point. That portion of the uterus which had only partially extruded, was now carefully replaced, without any protrusion of the foetus, then the rest of the uterus, and lastly the foetus first operated on was returned into the abdomen, and the wound was closed by sutures.

The bitch lay on her side motionless, and breathing tranquilly for eight minutes from the time of the first operation. In about nine minutes slight spasms appeared. These gradually increased in intensity, and continued, with scarcely any intermission, for eighteen minutes. In twenty-eight minutes from the time of the injection the dog was dead.

Five minutes after her death, the abdomen was re-opened. There were two other foetuses besides those two which had been injected—four in all. While the two which had received the strychnia revealed no signs of life, the other two were still alive and vigorous. They lived some time after separation from the mother, and one which was suffered to escape from its membranes respired and otherwise displayed such evident signs of full development, such as crying, that any doubt of the near approach of natural labour which could have been entertained after a mere inspection of the foetuses were completely set at rest. The parts were found in the abdomen as they had been replaced, and the foetus which was operated on in the uterus still remained there.

Now, I am satisfied that in these experiments none of the solution escaped from the foetus through the puncture, because I ascertained that, if proper precaution had been adopted in the injection, none escaped upon pressure. Moreover, I had learned, from another set of experiments, that when the solution is allowed to come into direct contact with the maternal tissues, as
when injected into the uterine or peritoneal cavity, or when allowed to escape from the foetus, its symptoms are never delayed for a period at all approaching the length of time which elapsed between the closure of the abdomen and their manifestation in these experiments. The usual period is two minutes, and this is rarely extended to five. The animal is in most instances dead before that period.

But that this source of fallacy did not arise, I have more than once unintentionally obtained still better evidence in another way. Some of my experiments, the earlier ones more especially, were attended with a negative result. Foetuses were injected and returned into the mother, but no visible effects on her of the poison followed. Prolonged exposure and rough manipulation when the foetuses were small and feeble, had been fatal to their circulation. But I now see the importance of the negative results which these experiments yielded. The solution could not have escaped from them, or in any way have come into contact with the maternal tissues.

More recently I have performed the following experiment:—

Experiment 2.—I removed two foetuses, within a day or two of their full term, from the uterus of a cat, immediately after its death from chloroform, having previously placed ligatures on the foetal portion of the cords. They both were lively. I injected ten minims of the solution into the abdominal cavity of each by perforating the walls with the point of the syringe in the usual manner. When the syringe was withdrawn, the punctures remained dry, and the spots were scarcely visible. No fluid exuded upon pressure. Then, without in any way securing those punctures, I introduced the two foetuses alive and tetanic into the abdominal cavity of another cat under chloroform, and allowed them to remain there for more than twenty minutes. Not the slightest symptom of strychnia was produced in the cat.

We are naturally reminded by the negative result of these experiments of the impunity with which a mother may carry a dead and decomposing foetus. In neither case is there any longer a circulation.

In the following experiment the possibility of the fallacy occurring, which has just been alluded to, was prevented:—

Experiment 3.—A cat, far advanced in pregnancy, was rendered insensible by chloroform. The abdomen was opened and the uterus exposed. It was carefully divided at a part to which a placenta was not attached, and a vigorous foetus extracted in its membranes, which were removed from it. It was carefully supported on a napkin, and into the abdominal cavity about ten minims of the solution were ejected. The portion of integument around the puncture was then carefully pinched up and
secured by a ligature, so as to prevent the possibility of any escape of the solution. A second foetus was then extracted, and treated exactly in the same manner. Both, with the portion of the uterus, were then returned into the abdomen, which was closed with sutures.

For ten minutes from the period of the first injection, the cat, lay on her side breathing tranquilly. Then slight spasms ensued in the hinder extremities; these gradually increased, and at length passed into violent and general ones. In seven minutes more the cat was dead.

The abdomen was then re-opened, and the ligatures placed upon the punctures in the foetuses were found still perfectly secure. Both the injected foetuses were yet alive. Within a few minutes after they were injected, they exhibited decided spasms, and these continued for a long period after the death of the mother frequently to recur. The other foetuses were not affected.

In the next experiment the foetuses, after being injected, were not returned into the abdomen.

Experiment 4.—A pregnant rabbit, within a day or two of her full term, was rendered insensible by chloroform, and the uterus was exposed by the usual longitudinal incision, and protruded considerably. It was carefully divided over a foetus, which was immediately expelled, and received on a napkin, remaining connected with the mother only by the cord. The point of the syringe was inserted through the abdominal wall, and about five minims of the solution were injected. None escaped. Five other foetuses—all but one—were removed and injected in a similar way; from five to ten minims of the solution being thrown into each. The punctures remained dry. In one case the cord gave way. The foetuses were all fully developed, and very vigorous. Almost immediately after the injection, decided tetanic spasms appeared in all, but each survived and moved actively for some time after. None of the foetuses were replaced after injection; indeed, it would have been impossible to do so owing to their size. They were allowed to lie outside the mother, and remained connected with her only by the umbilical cords.

At the end of fifteen minutes from the time of the first injection decided tetanic spasms appeared in the mother, and after repeated attacks she died rigid in three or four minutes more. During the spasms of the mother two or three of the placentæ became detached.

The following experiment is a still more striking one:

Experiment 5.—A large bitch, far advanced in pregnancy, was rendered insensible by chloroform. The uterus was exposed and opened to a small extent, at a spot as far as possible from
the attachment of a placenta. Through this, by means of very gentle pressure, a foetus enclosed in its membranes was readily expelled. The membranes were carefully divided, and the foetus now only connected by the cord, was placed in a large, but shallow, vessel of water, conveniently arranged, the temperature of which was about 100°—that is as nearly as possible, the temperature of the fluid in which it is naturally immersed. Into the abdominal cavity of the foetus, which was kept distant from the mother the entire length of the cord, some two or three inches, twenty minims of the solution (one grain of strychnia) were injected, the foetus being raised from the water for that purpose. In about two minutes the foetus, which was vigorous and lively, exhibited decided spasms, and these continued to recur at frequent intervals.

Another foetus removed in the same manner, and placed in the same water, was similarly treated and similarly affected. In about five or six minutes, a ligature was placed on each cord, and the foetuses were separated, by dividing the cords on the foetal side of the ligature. Little or no blood escaped from them. Three other foetuses were subjected to the same process, and after a few minutes likewise removed. The quantity of the solution injected into each varied from twenty to twenty five or thirty minims. Into one nearly forty minims were thrown. They all exhibited tetanic spasms which, in the majority, continued, though feebly, after division of the cord. The protruded portion of the uterus, which still contained three or four foetuses, and such portions of the intestines as had escaped, could be only partially replaced, owing to the contracted state of the abdominal muscles.

The mother continued to breathe placidly under the influence of chloroform for thirty minutes from the period of the first injection, and for fifteen minutes after the last foetus had been removed. At the end of that time very slight twitchings were visible; these became more and more marked, and passed at length into a decided spasm. The spasms, preceded by twitchings, gradually increased in intensity, occurring at intervals of about two minutes. For fifteen minutes I watched some six or seven, to remove any doubt of their character, and then as the effects of the chloroform were rapidly subsiding, I did not choose to prolong the experiment further, and the dog was killed.

In this experiment, all direct contact between the injected foetuses and the mother was prevented. No communication whatever existed between the injected foetus and its mother except through the cord, and placenta. It cannot be doubted that the poison passed from the blood of the foetus to the blood of the mother at the placenta.

These experiments, more especially the latter, are very deli-
cate ones, and unless certain conditions concur they are very likely to fail. When foetuses are removed from the uterus and exposed, they soon become feeble; the circulation very rapidly declines; and of course they perish the more quickly in proportion as they are young and small. Therefore, in order to ensure success, it is most important that the foetuses be well developed, near their full term, large and vigorous. It is more difficult, but, nevertheless, quite possible, to succeed when the foetuses are much younger. For the same reason, and to facilitate the necessary manipulation, the larger the mother is the better. In dividing the uterus, care must be taken not to wound the placenta. This may be avoided by gently raising up the uterine wall between the thumb and forefinger, before cutting it; in this way the absence of placenta can be ascertained. It is also as well to avoid, if possible, dividing the larger veins. For this and for other reasons, the most convenient part of the uterus for division is towards the constricted portion between two adjacent foetuses (as the placenta are circularly attached around the dilated portions in which the foetuses are contained), and at a point most distant from its attachment. In operating on the foetus, traction of the cord must be most rigidly avoided, for, besides interfering with its circulation, it is very likely to tear a portion of the placenta from the uterus.

All these remarks apply with increased force to the last experiments, where the foetuses remained exposed, for when they are returned in a feeble condition to the abdominal cavity the warmth of the mother often greatly restores them. In the latter experiments the more foetuses that can be injected the better, and in a few minutes after the injection of each, it is as well to detach it, for its circulation has then probably almost ceased, and by retaining it the experiment is complicated and the risk of accidental contact of the foetus with some part of the mother or separation of the placenta is increased. But this more delicate and difficult experiment is doubtless most obviously free from objection.

One or two points in these experiments appear worthy of notice. The great length of time the foetus survives after the injection of strychnia is remarkable. I think this may be thus explained: When the strychnia kills rapidly, it produces death principally by affecting the muscles of inspiration, thus fixing the chest and so suspending respiration. When strychnia kills quickly it kills by apnoea. This kind of death the foetus in utero of course escapes, and in it death is probably produced by exhaustion, as in ordinary cases, when strychnia kills more slowly.

Again in my experiments after the mother has died from the effects of strychnia, I have carefully watched for any appearance of tetanus in those foetuses which still remain untouched in the
uterus: and although the effect of strychnia is so striking in the foetus when directly injected, I have never observed any of its symptoms in those which I had not poisoned. This fact is most interesting in relation to the present inquiry, and may probably be explained by the short time the mother survives the effects.

A similar remark applies to chloroform. Although in my experiments the mother was invariably reduced to a state of profound insensibility, yet the foetuses, when exposed, were always active and lively.

I submit, then, that proof is no longer wanting of the direct and rapid transmission of matter from the foetus to the mother through the blood in the placenta.

Although it has hitherto been the custom, when considering the close and intimate relation between the foetal and maternal blood, to speak only, or especially, of the effect produced on the foetus by morbid materials present in, or other unnatural conditions of, the blood of the mother, to say the least, it must be admitted that there is an equally free and direct transmission of matter, though for many reasons a less obvious one, from the foetal to the maternal blood.

When the influence which the foetus in utero thus exercises upon the mother shall be fully recognised, it will soon become more clearly understood. At present, it is impossible to estimate the importance of the subject. While standing only on the very threshold of the inquiry, enough is visible to tempt any one beyond. Why should not the investigation of this question lead to results which, although more difficult to obtain, are perhaps not less worthy of research than those useful and extensive ones which have already been disclosed by the study of hereditary transmission of disease?—[London Lancet.


On Uterine Hæmorrhage.

For the first twenty-five or thirty years of my professional life, I had a very extensive midwifery practice, consequently many cases of uterine hæmorrhage, and some of them which caused me intense anxiety of mind for the safety of the patient. The first seventeen years of my practice, I was in the habit of following the example of my medical brethren in giving, as a medicine, alcohol in the form of port wine and brandy, and the tincture of opium. The tincture of opium—a valuable remedy—was given in proper doses; but the wine and brandy were
administered according to the degree of haemorrhage and consequent depression, often with little attention to either the quality or quantity of the intoxicating fluid, depending on the law of tolerance for safety in such cases.

In these terrific cases, along with the stimulants, were used every local application, as cold water, ice, pressure on the uterus, &c., to cause contraction of the organ. Under such treatment the patient would rally a little; but very soon the sinking pulse, the blanched face and white lips, would indicate the necessity of more wine or brandy, which was immediately given, very soon to be followed by an increased flooding and consequent lowness. This alternate state of reviving and sinking has continued for several hours, when the stomach has become so much distended and irritated by the stimulants and other fluids given as to produce a full vomiting of the contents of the stomach; after this the haemorrhage has ceased, the patient has gradually recovered, and required nothing more than a little gruel or tea. This happy termination by vomiting does not always take place, but the wine and brandy have been given in such quantities as thoroughly to narcotize the patient; she becomes insensible and comatose, and cannot be roused, and death takes place. Alcohol has caused her death; not the haemorrhage. The following is a case in point:

In June, 1823, I attended Mrs. M——— in labour; she was of a stout, plethoric habit of body; she had after delivery a very profuse flooding. The usual stimulants of wine and brandy, and also opium, were given her, and the customary local applications were resorted to with very little effect. Her friends became alarmed for her safety, and called in an old physician, without my knowledge, who immediately was dissatisfied with the brandy. He said it was not strong enough, it having been procured from a neighboring public-house. More brandy, supposed to be of a better quality, was procured and given to the patient. The quantity administered was thought quite requisite to keep up the sinking powers of the patient; insensibility and coma ensued, breathing became heavy and laborious, and in about two hours after her delivery she died. The stomach in this instance unfortunately retained its contents; her only safety would have been a full vomiting of the contents of the stomach. In this instance I have always been of opinion that she died from alcoholic poisoning, and not from the haemorrhage.

The following case will show the value of vomiting in a similar case, and which led me to the disuse of alcoholic stimulants in cases of flooding:

Mrs. C———, a delicate female, about thirty years of age. I had attended her twice in labour in the years 1821 and 1823; each time she had severe flooding directly after the separation
of the placenta. I employed the usual local applications, and administered wine and brandy and tincture of opium. These cases were attended with great anxiety, and I had to remain with my patient several hours before I could leave her with safety.

On her third labour, in the year 1826, I was afraid she would die, after having used all my remedies, and having given her a pint of port wine, and half a pint of brandy, during the three hours after the birth of the child, which proved of no avail: it occurred to me that in both former times in which I attended her, when I had used similar means to check the hæmorrhage, that there was no amendment until she had ejected the contents of the stomach. I was then most anxious that vomiting might take place in hope of relief, as she was rapidly sinking. I thought as vomiting had been so beneficial to her in the former instances, that I was in this case justified in procuring it by giving an emetic. I directly gave her an emetic dose of ipecacuanha; a full vomiting soon succeeded, and a large quantity of fluid was ejected. I was much struck with an expression of my patient, which I had several times before heard in similar cases after vomiting—"Oh, I'm better; I'm better now!" The hæmorrhage ceased directly, and did not return, the symptoms of sinking abated, and the patient appeared soon in her usual state of body, but very feeble; a little plain gruel was all the nutriment given her, and she recovered gradually from the weak state.

I attended the same patient three times afterwards, in the years 1827, 1829, and 1831, and, what is very satisfactory in favor of the secale cornutum, which was about that time coming into use in this locality, I gave her in every case half a drachm of the powder before the birth of the child, a second dose before the separation of the placenta. This remedy had the desired effect of preventing the hæmorrhage, so that I had no further need of the ipecacuanha, or indeed any other remedy.

I have attended patients since that time, when the secale had no effect in checking the flooding, both in my own practice and in consultation; and I have resorted to the ipecacuanha emetic, when other means have failed, and with immediate success.

For more than thirty years I have lost all confidence in the diffusible stimulants, such as wine, brandy, &c., in uterine hæmorrhage, from a conviction that they increase the arterial circulation, and consequently the hæmorrhage. The common practice of giving the patient a little cold water, or vinegar and water, to drink, and keeping the body in a cool state by means of a well-ventilated, cool room, are more likely to restrain the hæmorrhage, and thus preserve the strength of the patient.

The ipecacuanha emetic, in half-drachm doses, I consider a
Valuable Remedy for Dysmenorrhœa and consequent Sterility.

Professor E. D. Fenner presents some valuable considerations on the subject of Dysmenorrhœa, and offers his experience with a new formula. We select the following from the Medical News and Hospital Gazette:

"Soon after I commenced the practice of medicine, I received from my brother, Dr. Robert Fenner, of Jackson, Tenn., a recipe for an emenagogue which, he said, was not to be found in any medical book of the day, but had been given to him by our father, a practitioner of forty years experience, and he had gotten it out of an old English work, then extinct, written by a Dr. Falk, of London. I was told that it was an excellent emenagogue, more especially in that painful form of obstructed menstruation called dysmenorrhœa, and that it was remarkable for almost invariably causing fruitfulness in the cases of young married women.

The following is the original recipe and directions:

R. Gum guiac, 3i.
   Balsam canadens, 3i.
   Ol. sassafras, 3ii.
   Merc. corrosiv. sublimat., 3i.
   Rect. spt. vini (alcohol), 3viii.

'Dissolve the guiac and balsam in one half the spirit, and the corrosive sublimate in the other. Let the guiac and balsam digest for several days; then pour off the clear liquor, mix with the sublimate and add the oil. Dose—Ten or twenty drops night and morning in a glass of wine or water, pro re nata.'

This was called by Dr. Falk, 'Tinctura Antacrida.'

I have continued to use this prescription for dysmenorrhœa ever since I first received it, and with the most satisfactory results. I have given it to my brother practitioners wherever I have lived, and they have all pronounced it the best remedy they ever used for this complaint. It is only very recently that I accidentally discovered in the tenth edition of Ellis' Medical Formulary, the same recipe, though not exactly the same direc-
tions for preparing it (See page 189 of that work). It is there placed amongst his alteratives, with the commendation of Dr. Emerson and other practitioners of Philadelphia, in lues venera, etc., but no allusion whatever is made to its admirable virtues as an emenagogue. Dr. Falk also used it in lues, and I myself have had some interesting experience of its virtues in that disease, but I shall confine my remarks at present to its effects in dysmenorrhœa and sterility.

Directions.—I usually direct the patient to begin a day or two before the expected period and take twenty-five drops in an infusion of sage or sweetened water, night and morning, until the discharge is freely established; then cease till the next period. In obstinate and severe cases, the medicine should be commenced a week or ten days before the period; and if the pain appears, the medicine should be taken every four or six hours till relieved. The pain usually disappears as soon as the discharge becomes free; but in most cases the discharge comes on without pain after taking a few doses. I have known immediate relief to be given by a single dose taken in the paroxysm; but I have seen cases in which the pain was excruciating, causing shrieks and even violent convulsions. In such I have had to resort to a more prompt and efficient anaesthetic, as the inhalation of chloroform, or the following, which I often known to act like a charm:

3. Spirit Camphor, 3 iii.
Chloroform, 5 ii.
Tinct. opii., 3 i. M.

S. A teaspoonful in sweetened water once an hour till relieved.

In violent hysterical spasms there is nothing comparable to the inhalation of chloroform. In the treatment of dysmenorrhœa, it is important to obviate costiveness by the use of aloeetic pills. When dysmenorrhœa is relieved by this treatment, conception almost invariably soon occurs in married women.

After giving many cases illustrative of the value of the remedy, he closes with the following incidents, which are striking, both for their significance and the quiet drollery with which they are related:

"I might give numerous cases of newly married ladies in which I was consulted for dysmenorrhœa. This tincture hardly ever fails to restore the healthy function of the uterus, and 'send them on their way,' but not always 'rejoicing,' as the following incident will show. A gay, sprightly and robust married lady, mother of three or four children, and without the least desire for more, after indulging too freely in the fashionable dissipations of the 'gay season' in New Orleans, began to have symp-
toms of engorgement of the uterus, and more than ordinary pain at her monthly period. I was consulted, and gave the ordinary advice in such cases; urging upon her the necessity of abstaining from late hours, too much dancing, and rich suppers. She disregarded my advice, got worse, and sent for me again. She was now a plain case of dysmenorrhoea, and I knew what would soon cure her; but I also knew that if aware of the probable consequence, she would not take the medicine. So I took the liberty of judging for her what was best to be done under the circumstances, and gave her the tincture. Her next period passed free and easy; but it was not long afterwards that she found, to her horror, that she was pregnant. She has since borne two fine children, but I have never ventured to reveal to her the trick that was played on this occasion.

In several instances where the ladies had learned from experience the only danger of the medicine, after putting it off until they could see no other prospect of relief, have taken the medicine again, and were soon in the condition they expected.

Only a few months since I was consulted by a young married man about the case of his wife, who was suffering greatly with dysmenorrhoea. They had been married about twelve months. The young wife had been afflicted with this complaint during the whole time, and was now very pale and feeble. Getting no relief from the prescriptions of the family physician, they had been induced to consult a Medical Spiritualist, one of the various charlatans who practice on the credulity of the people in this city, with great profit to themselves alone. He said the spiritualist told him 'his wife would get better and then worse again, and thus go on for a long time, but finally recover her health; and that there was no medicine that would do her much good.' The gentleman permitted her to go on this way for several months, but finding his young wife continually declining, and her monthly pains increasing in violence, he resolved to seek further medical advice. About this time he happened to mention the case to a friend whose wife had suffered in a similar way, and been relieved by medicine obtained from me. Upon this he came to consult me. I prescribed this tincture, with aloetic pills, to obviate costiveness, and at the same time foretold what would be the probable consequence, which did not seem to terrify either of them. The very next period passed off free and easy, and she has had no return. Her health is greatly improved, and they are now rejoicing in prospect of an heir.

In the dysmenorrhœa of virgins, a complaint by no means uncommon among our delicate young ladies of the South, I have known this tincture to produce the happiest effects. I have prescribed it in numerous instances, and never knew it fail to give relief when directions were properly attended to. Some
of the most severe and obstinate cases I ever met with were in young girls from the age of fifteen to twenty years. As in married women, these unfortunates sometimes suffer excruciating agony, and even go into spasms. In this emergency I usually prescribe the compound tincture of chloroform mentioned in the preceding portion of this paper."

The Amaurosis of Laziness. (Under the care of Mr. Ernest Hart.)

No other affection of the eye comes more frequently under care, whether in private or in hospital practice, than scrofulous ophthalmia attacking all the various tissues of the eye in turn. Its most frequent, and usually its earliest, seat is the palpebral and ocular conjunctiva. Out of the total number of cases treated by him at this Infirmary, we are informed by Mr. Hart that at least two-thirds are either confined to the mucous membrane, or initiate there and pass on to the other structures. The cornea is the most frequently attacked after the conjunctiva, and the ulceration which so commonly occurs here—due to the softness of the tissue—is frequently followed by opacity. This varies from dense leucoma to a slight want of polish only. It is stated by Mr. Hart to be due to the deposit of a granular lymph between the lamellae in the former instance, and to the formation of a freshly and irregularly developed epithelial layer in the latter. He has two cases of amaurosis now under treatment—a result of leucoma which is not perhaps so unfrequent as it may be thought to be, and to which little attention is commonly directed, perhaps because its origin and character are not always clearly perceived. The frequent result of leucoma is amaurosis, as in these cases; but an amaurosis of a peculiar character—the amaurosis of laziness. The opacity of the cornea renders vision difficult with the eye affected, and hence the effort necessary is constantly evaded. The whole burden of vision is thrown upon the other eye, and hence it is overworked. From this two evils result: a confirmation of inefficiency and increased amaurosis in the eye which is dimmed by the veil of opacity, and fatigue, weakness, and inflammation of the overtaxed organ. Under these circumstances, the attention of the surgeon is not to be led astray and fixed upon the inflammatory condition of the otherwise sound eye. Remedies applied to this are perhaps somewhat worse than useless. The cure is to be effected by the treatment he adopted—that of compelling its leucomatous fellow to assume a share of work, and so relieve the overstrain. The sound eye should be bandaged, and the necessary effort for vision with the other should thus be made compulsory. Vision rapidly improves, the retina adapting itself to the necessary effort with considerable facility.—[London Lancet.]
EDITORIAL AND MISCELLANEOUS.

Practice per capita.—We withhold our editorial and much of our miscellany in order to give place to the following judicious remarks upon what appears to be, as we learn from many sources, a great evil in our profession, in certain parts of the country. Although we may not be prepared to adopt the severity of tone used by our correspondent, we can yet heartily endorse his sentiments, and feel very much like commending even his indignation:

Messrs Editors:

As one of the objects of a medical journal, is, to expose the abuses of the Profession, and thereby purge it of all corruption, so as to secure a steady course of improvement, as well as maintain its dignity and honor, we propose, at this time, to furnish you for publication an exposition of one evil, to which many men, calling themselves Doctors, and pretending to practice the "healing art," have resorted. We allude to the taking of families per capita, or by the head.

We regard this as being unprofessional, unjust, mean, and venal. There is such a practice as a mule or a hog-drover paying toll over a ferry or bridge for so much a head. Circus companies may sometimes let a man with his family, or his negroes, enter for so much a head. Chicken wagoners may sell fowls to a Hotel-keeper for so much a head. Stock raisers may furnish the flesh market for so much a head. These are all right and proper, and in keeping with the business. But for a man to practice medicine—that most responsible, time-honored, and noblest of all professions—which has for its high object the preservation of the body during life's temporal existence—upon which so much is relied in the hour of physical suffering and despair—and which has been distinguished in almost all ages for its wise, learned, and great advocates, for so much a head, cannot be too severely censured, and ought to receive the condemnation of every philanthropist.

We say it is unprofessional, because its tendency is to bring the Profession into disrepute. It is illegal, because, nowhere in all the past history of the Science of Medicine, can there be found the least semblance of authority for it—neither is it tolerated by any of the regular schools of the present day—nor is it authorized by the medical board of the State: hence it is a usurpation of privilege. It is unjust, because it robs many of patronage which their superior qualifications and honest merits entitle them to. It is mean, because it is beneath the dignity of the Profession. It is venal, because a man hires himself by the year, as he would his own servant, and in that way enslaves himself.
The practice has been inaugurated, and is still pursued by a few Charlatans, who care nothing for the dignity and honor of the Profession, and are forced to it for want of due qualifications. We have come to this conclusion, because we have never seen a man that was really qualified and learned in the science, that would deign to do such a thing. So generally true is this, that whenever we hear of a man guilty of it, we mark him as a quack; and as one who has not medical learning and intrinsic merit enough to commend him to the favor and patronage of the people. We know men engaged in this kind of practice, who are just beginning business, and we must confess it is a very low and niggardly claim for a young man to set up. Our advice to all such, is, to quit physic, and do something for which they are qualified. Adopt the motto, that if you can be of no honor to a profession, be sure that you are of no disgrace to it. We know of others, who have been practicing for years, and have amassed wealth by a combination of extraneous influences, and now, that young, scientific, and skillful physicians have set up in opposition to them, relying entirely upon their capacity, and contending for a just and full remuneration for their services—their avarice and the devil have seduced them into the same ignoble practice of taking families for so much a head, seeming to care nothing for the interest of the Profession after they have made a "speculation" out of it, and contending with the poor young physician, upon a dishonorable principle, for the very last dollar.

We further denounce it as a system of bribery. For it is a voluntary inducement offered, to obtain that which rightly belongs to another, by virtue of his superior skill and qualifications. Our doctrine is, that every thing should stand upon its own merits, for good or for evil—for weal or for woe. It is the same glorious doctrine inculcated in Scripture, in the passage, "according to thy works shalt thou be judged"—evidently implying the just reward of merit. Every man, with ordinary faculties of mind, has a talent for something,—and if he will but cultivate it, he may safely calculate on success. We are sorry to assert, that there are many persons who have so meagre an opinion of the Science of Medicine, and depreciate its responsibilities and duties so far as to imagine that any ordinary mind may grasp it and practice it successfully. This is enough to verify the fallacy and incompetency of all such, when it is well known that the Science of Medicine is one of the most extensive and recondite in all nature. It is not only difficult to comprehend, and a thorough knowledge acquired by a course of hard and lengthened study and application, but demands research and attention at every step in a man's life. A physician should be a student of medicine as long as he continues to practice it.
We come now to the causes that have engendered this evil. They are two: one exists in the so-called Physician, as has been sufficiently indicated in the above remarks; and the other in his patrons. This is considered a fast age—one of improvement—of enterprise—and of progress, which would naturally suggest the idea of liberality. But such, in the main, is not the fact. For as the people grow richer, their hearts grow more callous, contracted, and fixed upon the idol—mammon. When a man wants to buy an article of merchandize, he goes to the cheapest store, it matters not whether it be Dutch, Jew or American. He consults his purse, and nothing else. So, when he wants a physician, he employs the cheapest—it doesn't matter whether he has ever heard a course of lectures or not—he may be of the same or a different creed. He will employ him by the year, at a small sum, and if he loses half his family, it is better than to pay a learned physician double the amount, or the usual rates, and save all his family. Well, experience and observation have taught us, that cheap things are of little value. Hence we conclude that cheap Doctors, like cheap goods, are of little use.

Many people are ready to cry out against the Profession, as failing to accomplish the object of its institution, and impute to it many hard and unkind things. But we ask, in all candor, how can they expect any better, when they throw all their patronage and influence into the hands of the cheap and illiterate Doctor, while the educated, intelligent, and skillful physician, who has devoted time, money and labor, for the acquirement of a thorough knowledge of his profession, and upholds its dignity by contending for even customary rates, and refusing to condescend to anything uncourteous and unprofessional—is forced to abandon his profession, and seek other means of support—or plod along through life with a mere pittance as his share of public favor and patronage.

This is certainly a deplorable state of things, and is tending to a degeneracy of the Science of Medicine, at a time when it is thought to be in a high state of improvement and progress. Let this evil only continue a few years longer, and we predict for the science a state of obscurity and bigotry exemplified in the dark ages of the world. The successive teachings of Hippocrates, Stahl, Boerhaave, Cullen, Brown, Brousais, Sydenham, Harvey, Jenner, Rush, Chapman, and many other great and shining lights in Medicine, will be lost, and there will be none to succeed and revive them. Then, instead of having a beautiful Science, as we now have, which harmonizes with the laws of Chemistry and Natural Philosophy, and is so efficient in counteracting and subduing the pathological conditions of human organism, we shall have a mere nominal system—an insignificant wrecked skeleton of the existing mighty
and magnificent ship. What a great calamity it would be to deprive the world of the immense amount of learning, skill, and usefulness that characterize the ranks of the Medical Profession, when it can be so easily maintained by a just and manly reward of the arduous and meritorious labors of the qualified physician.

Patron, we exhort you to reflect upon this subject: for the evil and its remedy are both in your hands. If the science ever does fall, which seems to us inevitable, in view of the evil which we have been discussing, the dreadful curse of the sacrifice must rest upon your own heads. For, as long as you continue to reward medical merit, so long will it assume a high and honorable standard. But whenever you disregard and ignore it, by casting all your influence and patronage into the hands of the illiterate, and the quack, on account of his cheapness, as many are now doing, you at once consign it to ruin, decay, and oblivion.

There is another consideration to which we would call the attention of the patron. Suppose one of your family gets sick—are you not bound, as Father or Master, as the case may be, to employ the best medical skill and learning, without regard to price, to combat the disease, and, if possible, restore health? But suppose, instead of doing this, you employ one of those cheap, illiterate, yearly Doctors, and the patient dies, as is frequently the result, then, we ask, upon whose skirts does the blood of the sacrifice rest? Certainly upon yours. Then, if you want good, skillful, and intelligent physicians—such as are worthy of the appellation, and such as you can repose confidence in, in the hour of physical affliction and trial—when all your earthly hopes are at stake—bestow your patronage upon those who merit it, (even if your bill is a little larger,) and you will be vastly benefitted, in the saving of life, and in the discharge of your duty to your family, and the satisfaction that will accrue in the just reward of merit. But when you wilfully pursue any other course than this, you risk life, which is dearer than all things upon earth—subordinate it to money, barter it away as you would hides and tallow, and thus perpetrate one of the most heinous and unpardonable offences against the law of God and man.

We also call upon the Profession, everywhere, to assist in expunging this evil, now in its incipiency, for it is a monstrous one, and a few years will develope it, when it cannot be eradicated. If there be found any in the Profession so devoid of respect for its dignity and honor, as to resort to this abuse, let them receive the condemnation of all men, both in and out of the Profession. Let us have and sustain those in our ranks who are worthy and well-qualified. Let us contend for just and remunerating prices, and maintain all other considerations in keeping with the cause. Then may the hopes and wants of the afflicted be realized in the timely,
skillful, and effectual ministrations of the genuine, true, and enlightened physician.

_Sulphur and Nux Vomica in Hæmorrhoids._—M. Van Holsbeek recommends the following formula as being rapidly beneficial:—B. Sulphur loti. sacchar. alb. _aa, 3/4_; extr. strych. nuc. vomic. gr. _vj_; muceil. gum. tragacanth. sufficient to form twenty-four lozenges. The patient is to take two the first day, increasing the dose by one daily until six a-day are taken. He now rests a few days, and then diminishes the dose in the same proportion, until he gets to the two again. If the cure is not complete, he must begin again; but it is rare to find the treatment required for more than a week. During its continuance alcoholic drinks and a too stimulating diet are interdicted. The treatment is applicable to all stages of uncomplicated hæmorrhoids.—[Druggist’s Circular.

_Wind of a Shot._—The following extract from an Indian letter confirms the doubts entertained as to deaths attributed to the “wind of a shot”:—“Brigadier Russell is also about to leave the army, under the advice of a medical board. Never, perhaps, in all the chances of war has there been such an escape as his. A cannon ball cut the gold watch chain at the back of his neck as cleanly as if it had been a pair of nippers, and did him no further injury, except inflicting a shock to his nervous system.—[Med. Times and Gaz.

_Pennsylvania Medical College._—Dr. T. G. Richardson has resigned the Professorship of Anatomy in the Medical Department of Pennsylvania College, and Dr. J. H. B. McClellan has been elected to the vacant chair.—[Med. News and Library.

_Augusta, Ga. the Healthiest City in the Union._—We are pleased to record the following from the _Constitutionalist_ of this city:

“The editor of the Charleston _Mercury_, in a recent article on the mortality of cities, says: ‘Looking at the returns of Augusta, Ga., we find it to be, at the present time, the healthiest city in the Union, and having less deaths.’”

_Sir Philip Crampton’s Coffin._—As any thing which relates to this great Surgeon must be interesting, we insert the following:

“By the singular directions of Sir Philip Crampton, made just prior to his death, the body was placed in a solid Irish oak coffin without any lid; around this was placed a thick concrete of Roman cement, which was made to fill up all the spaces in the interior of the coffin not occupied by the body, which was covered over, and entirely imbedded in the cement, of which nearly five hundred weight was used. The heavy mass was placed within another Irish oak coffin of great strength, which was covered with fine black cloth, on the lid of which was a shield bearing the following inscription: ‘Sir Philip Crampton, Bart., died June 10th, 1858, aged eighty-one years.’”—[London paper.