On Hydatid Disease
with special reference to its frequency, etiology and treatment.

by

Gustave Heuzé Hopp M.B, C.M. 1892.
Rome, Iononia.
Hydatid disease, as it has gained an evil prominence during the last twenty years cannot be looked upon as a discovery of modern medicine. The old apothecary of nothing new again proves true, what an nineteenth century hermaphrodists have rediscovered, the great fathers of medicine had himself found. There is but little doubt that Hydatid Disease is indicated in the description —

When the liver full of water bursts into the epiploon, the belly becomes distended with water and the patient dies (Kippuritis, Aphorisms Sect. VII, No. 35).

Salen commenting in this passage says:

The liver is very liable to develop hydatids in its lining membrane; for from time to time we find in slaughtered animals, this organ full of vesicles distended with fluid.

(Salen, Commentaries VII. 54).

Andreas not only knew of the disease, but in his work makes mention of lopping being had recourse to, with the result in some cases that a daughter cyst blocked up the puncture. He also notes that cases were reported in which the bladder escaped.
by the anus although he has never seen such a case. Such a termination we now know to be quite possible through rupture of the cyst into the intestinal canal. (Pellis, De Anima et vit. animal., p. 117, i.)

Many writers of the 16th and 17th centuries published cases of hydatid disease, amongst them Dioscorides who operated on an abdomen and evacuated one 200 cysts with the result that the patient recovered. The true nature of the disease was not known recognized, some writers regarding them as dilated lymphatic vessels, (Bostock, Woodard) some as collections of serum, pus, and mucus (Pellis, De Anima et vit., p. 117, i.) some as broken down glands.

Pellis in 1767 recognized the identity between the hydatid of man and of animals, the expulsion of very small capsules in the cyst, and in 1781 the fact that the cysts were due to a living creature. (Pellis, De Anima et vit., p. 117, i.)

Goze in 1782 confirmed these observations and avoided the cyst, the membrane and the echinocystic heads which he had obtained from a diseased sheep.
(Sezze Kanzleiner q. d. in p. 288).

Brenner was the first to describe echinococcus livers as occurring in men in 1821, and
Reidtuff in 1822 found echinocoe in a case of hydatid of the brain.

(Brenner, Thes. on Echinocoeus h. med. Trans. comp. in XI. 202; Reidtuff, Dissert. de hydatid. in oviparae,
Huma. chr. p. 222, X. 35).

Davaine in 1854 not finding the echinocoe in the cases of hydatid disease in man which he
had examined, concluded that such case,
differed from cases of hydatid disease in
sheep and cattle and called them
Accephalocystis.

Louis upset this theory, showing the frequent
reoccurrence of the echinocoeus in the hydatids
of man and proving that the accephalocystis
were really a variety and not a separate
form. (Nucheca, sur les Echinococques de Thiere de

Kuczynski, Siebold, Yarden, Suckart and
others have confirmed these observations and
have clearly proved that the hydatid
is but the cystic stage of paric
Echinococcus, a small worm infecting the
intestines of the dog.
We have seen that Hydatid Disease has existed from the earliest historical era; we have known that its geographical distribution embraces practically the whole inhabited globe; whether this wide distribution has always existed however is doubtful, and I am inclined to think that the existence of Hydatid Disease in some countries is due to colonization with the consequent importation of the ranges of civilization. I shall touch on this point later on.

The statistics of Hydatid Disease are as far as applies to Europe very deficient and in consequence the prevalence of the disease in that continent cannot be correctly gauged.

England

In England the mean mortality from Hydatid Disease during the years 1881-85 was 0.30 for 100,000 persons living, in 1891 there were 0.38 deaths a proportion of 1/50 for 100,000 persons living. There is little doubt however that the mortality is higher than is thus represented.
It is as far as I can see that the Registrar-Brueil's returns point out not more than a twelve-fold increase in the annual mortality due to Hydatids (Cleftide, Par. cit., p. 285).

The disease is said to be more prevalent in certain districts—Bradbury (British Medical Journal, 1877, page 472) states that it is not uncommon in Cambridgeshire, probably owing to the quantity of surface water drunk in which sheep droppings deposited the ova of Echinococcus.

In Scotland it is rarer than in England. 

American workers think that immunity can be due to the non-importation of foreign sheep into Scotland. (Schönlein, Clinical Lectures on Diseases of the Skin, p. 55).

France

In France Hydatid Disease cannot be rare considering the number of cases attended and the treatises published on the subject. 

As for the distribution, Larine says—

In Germany, Hydatid Disease is said to be especially prevalent in Hesse-Hanau (Handbuch der medizinischen Wissenschaften, 1885, p. 744) and in Sicily (Sicily quoted by Elstein in Ziemann's Cyclopedia of the Practice of Medicine, 1854, p. 744).

In Norway, Sweden, and Denmark, Hydatid Disease is believed to be rare - as for Spain, which was formerly the great pastoral country of the world and is now the home of most kinds of sheep from which country the statistics would be of great interest so far as the etiology of the disease. Russia, Italy, Turkey, no records are available to the

Iceland

Iceland is the country which has long enjoyed the unenviable privilege of being per excellence the home of Hydatid Disease. Schlesmer (Sicily quoted in the geographic of Iceland quoted by Ziemann, p. 390) states that 1/2 of the population suffers from this disease and that it is more prevalent inland than on the sea coast.
Guerrand (Note sur le maladie hydroa à
au Jér. de l'Emp. de l'Ile de l'Auro.
Gazette des hospitaux, ann. 30, p. 164)
estimates the proportion attacked as 3 of the
population. Simon (Arch. gen. de médecine
juvénile, 1869) estimates it as 1 in 43.
Although there is some doubt as
to the exact proportion of the population
attacked by the disease, there is no
doubt about the tenable prevalence of the
disease which as Larraza says, proves
true as an endemic.

The same writer seems to think that the
disease is on the increase, arguing
from the fact that in a work published
in 1802, which dealt with the diseases
which peculiar to each district, no mention
is made of Hydroa disease. (Voyage au
Ile de Java fait par ordre de l'H. E. Larraza).
This seems however to have been due
to the failure of the then doctors
to recognize the true nature of the disease,
for from the time of Denflien (1760)
to Fenger (1843) references are frequently
made in the reports of various physicians.
to a disease called variously - Kallum Hypochondriacum, Hepatolgie, Hepatitis Hypertrophicae etc. Seger appears to suppose that hepatitis is essentially a disease of the liver and so rare in temperate zones should be so prevalent in Iceland. Krabbe in his report to the Danish Government states that there is a great reason to believe that Hydatid disease had been common for centuries past in Iceland (Krabbe quoted by Thomas, Hydatid Disease p. 138).

We must conclude that since that Hydatid Disease is not a disease of recent date, and that its apparent increase is due to the better diagnosis and to the fact that medical advice is now much more frequently had recourse to.

Algeria

Military surgeons had frequently met with cases in the French soldiers and in the natives. (Daraine, Histoire des Maladies p. 389).
Egypt

Bilharz mentions that he met with (Duraine, Histoire des Entozoones p. 359).

India

Budd states that the existence of Hydatids is hardly mentioned by writers on the diseases of India. (Budd, Diseases of the East p. 440) and reports collected by the late Dr. Davies Thorne from the medical staff of the various provinces confirm the comparative rarity of the disease. (Transactions of the Intercolonial Medical Congress of Australia 1889 p. 356)

America

According to Duraine, Hydatids are very rare in the United States (Duraine p. cit. p. 184).

Olca of Montreal in his paper on Schistosomiasis Disease in America (American Journal of Medical Science 1882 4th number) states that in this section of the country it is rarely met with and in the inspection of over 200 bodies only 3 instances have been found. From various
Simes he collected 61 cases of Hydatid disease, unfortunately he goes on to remark, we cannot say positively how many of these cases were truly American as rejected in America and how many were imported; but in 16 it is stated that the patients were European—in all probability at least 3/4 of the cases were imported leaving only about 40 native cases.

This immunity may be due either to rarity of the adult worm or to the absence of conditions favorable to the infection of men.

He goes on to remark that Hydatids are not rare in animals there; in conjunction of this Dean he found a large proportion of hops slaughtered at St. Louis affected and Bros States that 1/3 of the hops in Cincinnati were so infected.

It would appear from this that conditions must be unfavorable to the infection of men.
In 1861, Hudson of Ballarat, Victoria, writing in the Australian Medical Journal for April of that year ventured to predict that Syphilis would become of frequent occurrence in Australia. His prophecy has proved only too true and the death rate of the various colonies reveals to us the fact that Syphilis Disease is becoming the natural disease of Australia.

Since the late Dr. Davies' valuable paper on the prevalence of Syphilis Disease in Australia was published some years have elapsed; I propose therefore to present some recent observations on the subject. I take this opportunity to express my thanks to the Government Statisticians of the various colonies for their kindness in supplying me with much valuable information. The principal source of information has been the official returns of the causes of death, and must be to some extent only approximate; inasmuch as the cause of death may be wrongly returned.
It is, therefore, the fact that all cases of
Hydatid Disease do not terminate fatally.
But even granting such to be the case
the statistics of mortality may be considered to
present the fairest attainable estimate of
the prevalence of the disease, with which
we must not content until Hydatid
Disease comes under a system of
notification.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>53</td>
<td>4.74</td>
</tr>
<tr>
<td>1891</td>
<td>58</td>
<td>5.06</td>
</tr>
<tr>
<td>1892</td>
<td>63</td>
<td>5.42</td>
</tr>
<tr>
<td>1893</td>
<td>65</td>
<td>5.33</td>
</tr>
<tr>
<td>1894</td>
<td>57</td>
<td>4.34</td>
</tr>
<tr>
<td>Total 290</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Means 58 5.02%
Similar table showing the mortality for previous 5 years 1885-89 in the colony of Victoria.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1885</td>
<td>47</td>
<td>4.92</td>
</tr>
<tr>
<td>1886</td>
<td>57</td>
<td>5.18</td>
</tr>
<tr>
<td>1887</td>
<td>61</td>
<td>5.02</td>
</tr>
<tr>
<td>1888</td>
<td>53</td>
<td>5.03</td>
</tr>
<tr>
<td>1889</td>
<td>61</td>
<td>5.61</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>263</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Means</strong></td>
<td><strong>52.6</strong></td>
<td><strong>5.15%</strong></td>
</tr>
</tbody>
</table>

From these tables it can be seen that during the last five years 1890-94 there was a small increase in the number of deaths, which may be attributed almost to the increase in the population. During the ten years 1885-94 the mortality was 53.
**New South Wales**

Table showing the number of persons who died from Typhoid Disease during the five years 1890-94 in the colony of New South Wales.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>35</td>
<td>3.18</td>
</tr>
<tr>
<td>1891</td>
<td>33</td>
<td>2.89</td>
</tr>
<tr>
<td>1892</td>
<td>33</td>
<td>2.79</td>
</tr>
<tr>
<td>1893</td>
<td>47</td>
<td>4.05</td>
</tr>
<tr>
<td>1894</td>
<td>41</td>
<td>3.31</td>
</tr>
</tbody>
</table>

**Total**: 191

**Means**: 36.2 3.246
Similar table showing the mortality for previous five years 1885-89 in the colony of New South Wales.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875</td>
<td>28</td>
<td>3.02</td>
</tr>
<tr>
<td>1876</td>
<td>23</td>
<td>2.37</td>
</tr>
<tr>
<td>1877</td>
<td>27</td>
<td>2.69</td>
</tr>
<tr>
<td>1878</td>
<td>22</td>
<td>2.12</td>
</tr>
<tr>
<td>1879</td>
<td>24</td>
<td>2.25</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>24.8</td>
<td>2.49</td>
</tr>
</tbody>
</table>

During the years 1870-94 there has been an increase not only in the number of deaths, but also in the mean annual mortality per 100,000 of population. During the ten years 1885-94 the number of deaths was 315.
South Australia

Table showing the number of persons who died from Typhoid Fever during the five years 1890 - 94 in the colony of South Australia.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>8</td>
<td>2.56</td>
</tr>
<tr>
<td>1891</td>
<td>12</td>
<td>3.79</td>
</tr>
<tr>
<td>1892</td>
<td>12</td>
<td>3.68</td>
</tr>
<tr>
<td>1893</td>
<td>11</td>
<td>3.29</td>
</tr>
<tr>
<td>1894</td>
<td>11</td>
<td>3.21</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Mean</td>
<td>10.8</td>
<td>3.30</td>
</tr>
</tbody>
</table>
A similar table showing the mortality for previous five years 1885-89 in the colony of Natal, Australia.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1885</td>
<td>5</td>
<td>1.60</td>
</tr>
<tr>
<td>1886</td>
<td>18</td>
<td>5.78</td>
</tr>
<tr>
<td>1887</td>
<td>9</td>
<td>2.89</td>
</tr>
<tr>
<td>1888</td>
<td>13</td>
<td>4.16</td>
</tr>
<tr>
<td>1889</td>
<td>11</td>
<td>3.57</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>

Means 11.2 3.578.

For comparing the two quinquennial periods little or no alteration is seen to have occurred in the rate of mortality.
The total number of deaths during the ten years was 110.
Table showing the number of persons who died from Hydatid Disease during the five years 1890 - 94 in the colony of Tasmania.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1891</td>
<td>3</td>
<td>2.01</td>
</tr>
<tr>
<td>1892</td>
<td>8</td>
<td>5.23</td>
</tr>
<tr>
<td>1893</td>
<td>5</td>
<td>3.05</td>
</tr>
<tr>
<td>1894</td>
<td>7</td>
<td>4.46</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

Means 4.6  2.93
Similar table showing the mortality for previous five years, 1885-94 in the colony of Tasmania.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1885</td>
<td>2</td>
<td>1.56</td>
</tr>
<tr>
<td>1886</td>
<td>2</td>
<td>1.53</td>
</tr>
<tr>
<td>1887</td>
<td>3</td>
<td>2.24</td>
</tr>
<tr>
<td>1888</td>
<td>2</td>
<td>1.46</td>
</tr>
<tr>
<td>1889</td>
<td>5</td>
<td>3.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>2.8</strong></td>
<td><strong>2.07</strong></td>
</tr>
</tbody>
</table>

In the year 1890-94 there has been an increase not only in the number of deaths, but also to some extent in the mean annual mortality per 100,000 of population. The total number of deaths for the ten years 1885-94 was 37.
Table showing the number of persons who died from Dysentery Disease during the five years 1890-94 in the colony of Queensland.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>2</td>
<td>0.48</td>
</tr>
<tr>
<td>1891</td>
<td>3</td>
<td>0.74</td>
</tr>
<tr>
<td>1892</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1893</td>
<td>3</td>
<td>0.46</td>
</tr>
<tr>
<td>1894</td>
<td>6</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Total 13

Mean 2.6 0.608
Similar table showing the mortality for previous five years 1845-49 in the colony of Queensland.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Deaths per 100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>3</td>
<td>0.97</td>
</tr>
<tr>
<td>1846</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1847</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td>1848</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1849</td>
<td>3</td>
<td>0.80</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Means 1.4          0.412

From this table it is evident that Hydatid Disease is rare in Queensland, during the quinquennial period 1890-94 that seems to have been a slight incursion in its recurrence, but further observation will be required for a number of years to confirm this point. The deaths for the ten years 1845-94 amounted to 20.
Western Australia

No statistics are available from this colony, but it is known that the death rate from Myeloblastis Disease is very low.

Table showing the mean annual mortality from Myeloblastis Disease (1870-74) in the Australian colonies is as follows:

<table>
<thead>
<tr>
<th>Colony</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Per 1000 of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>32.8</td>
<td>25.2</td>
<td>58</td>
<td>5.08%</td>
</tr>
<tr>
<td>South Australia</td>
<td>4.2</td>
<td>5.6</td>
<td>10.8</td>
<td>3.30%</td>
</tr>
<tr>
<td>N.S. Wales</td>
<td>20.8</td>
<td>17.4</td>
<td>38.2</td>
<td>3.245%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>3.2</td>
<td>4.6</td>
<td>8.8</td>
<td>2.95%</td>
</tr>
<tr>
<td>Queensland</td>
<td>1.2</td>
<td>1.4</td>
<td>2.6</td>
<td>0.608%</td>
</tr>
</tbody>
</table>

From this table it is evident that the disease is most prevalent in Victoria, next in S. Australia and N.S. Wales, and of rare occurrence in Queensland.
Hydatid Disease is said to Sex.

<table>
<thead>
<tr>
<th>Colony</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>100</td>
<td>76.8</td>
<td>100</td>
<td>93.08</td>
</tr>
<tr>
<td>S. Australia</td>
<td>100</td>
<td>107.0</td>
<td>100</td>
<td>90.86</td>
</tr>
<tr>
<td>N. S. Wales</td>
<td>100</td>
<td>83.6</td>
<td>100</td>
<td>86.64</td>
</tr>
<tr>
<td>Tasmania</td>
<td>100</td>
<td>48.7</td>
<td>100</td>
<td>88.37</td>
</tr>
<tr>
<td>Queensland</td>
<td>100</td>
<td>116.6</td>
<td>100</td>
<td>77.33</td>
</tr>
<tr>
<td>Average in the Colonies</td>
<td>100</td>
<td>85.64</td>
<td>100</td>
<td>87.05</td>
</tr>
</tbody>
</table>

From this table it can be seen that in Australia as a whole Hydatid Disease attacks the sexes in about the same proportion as they exist in the population, the male sex, if anything, suffering slightly more. In Tasmania especially, and in Victoria the mortality is higher amongst males, in other parts Wales slightly higher, whilst in S. Australia and Queensland the reverse is the case.
The greater prevalence amongst males is due probably to the fact that they in their occupations are often exposed to the environment suitable for the propagation of the disease.

### Age in relation to Hydatid Disease

Below giving the deaths from Hydatid Disease occurring in each decade of life during the year 1890-94

<table>
<thead>
<tr>
<th>Age in Decade</th>
<th>Victoria</th>
<th>S. Australia</th>
<th>Tasmania</th>
<th>Queensland</th>
<th>N.S. Wales</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20 yrs.</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>20-30 yrs.</td>
<td>35</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>27</td>
<td>72</td>
</tr>
<tr>
<td>30-40 yrs.</td>
<td>79</td>
<td>15</td>
<td>6</td>
<td>4</td>
<td>29</td>
<td>189</td>
</tr>
<tr>
<td>40-50 yrs.</td>
<td>41</td>
<td>13</td>
<td>8</td>
<td>0</td>
<td>44</td>
<td>106</td>
</tr>
<tr>
<td>50-60 yrs.</td>
<td>24</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>38</td>
<td>73</td>
</tr>
<tr>
<td>60-70 yrs.</td>
<td>45</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>20</td>
<td>78</td>
</tr>
<tr>
<td>70-80 yrs.</td>
<td>*</td>
<td>*</td>
<td>0</td>
<td>1</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>80+ yrs.</td>
<td>*</td>
<td>*</td>
<td>0</td>
<td>1</td>
<td>19</td>
<td>4</td>
</tr>
</tbody>
</table>

In the colonies of Victoria and S. Australia there were 53 deaths, and 3 deaths occurred respectively in occurring over 60 years of age.
On studying the chart showing the deaths at different ages, it will be seen that the greatest mortality occurs between 20-30 years, the next greatest between 30-40 years, and, in fact, most of the deaths of 20-40 years of age, an age which embraces the climacteric period and comprises 20% of the population, are due to either Disease 1 or Disease 2. Old age is exempt from these diseases, having been met with in the child of three and the old man of eighty.

**Organs affected**

Table of causes of death from Hydatid Disease (1890-94) for N. S. Wales, Victoria, South Australia, and Queensland, showing the proportion in which the various organs are affected. The returns for Tasmania were incomplete as to the site of the lesion and are not included. The returns for Victoria are for three years.

<table>
<thead>
<tr>
<th>Site of Disease</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>108</td>
<td>50.97</td>
</tr>
<tr>
<td>Kidney</td>
<td>4</td>
<td>1.61</td>
</tr>
<tr>
<td>Spleen</td>
<td>3</td>
<td>0.90</td>
</tr>
<tr>
<td>Intestine</td>
<td>2</td>
<td>0.66</td>
</tr>
<tr>
<td>&quot;Pleure&quot;</td>
<td>3</td>
<td>0.90</td>
</tr>
<tr>
<td>Bladder</td>
<td>1</td>
<td>0.41</td>
</tr>
<tr>
<td>&quot;Abdominal&quot;</td>
<td>37</td>
<td>11.21</td>
</tr>
<tr>
<td>Total</td>
<td>240</td>
<td>72.78</td>
</tr>
<tr>
<td>Site of Disease</td>
<td>Number of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
<td>------------</td>
</tr>
<tr>
<td>Lungs</td>
<td>55</td>
<td>16.6</td>
</tr>
<tr>
<td>Pharynx</td>
<td>4</td>
<td>1.21</td>
</tr>
<tr>
<td>Heart</td>
<td>2</td>
<td>0.60</td>
</tr>
<tr>
<td>Pericardium</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Mediastinum</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>‘Knee’</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>19.3</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervous System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td>21</td>
<td>6.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femur</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Hip</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
<td><strong>0.40</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larynx</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Neck</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Hand</td>
<td>1</td>
<td>0.30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undetermined</td>
<td>79</td>
<td></td>
</tr>
</tbody>
</table>
Table gives in which more than one organ was affected, during the same period and in the same colonies.

<table>
<thead>
<tr>
<th>Organs affected</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver + Lung</td>
<td>11 cases</td>
</tr>
<tr>
<td>Liver + Brain</td>
<td>10 “</td>
</tr>
<tr>
<td>Liver + Kidney</td>
<td>2 “</td>
</tr>
<tr>
<td>Liver + Pleura</td>
<td>1 ”</td>
</tr>
<tr>
<td>Liver + Spleen</td>
<td>1 ”</td>
</tr>
<tr>
<td>Liver + Stomach</td>
<td>1 ”</td>
</tr>
<tr>
<td>Kidney, Spleen</td>
<td>1 ”</td>
</tr>
<tr>
<td>&amp; Stomach</td>
<td>1 ”</td>
</tr>
</tbody>
</table>

From a consideration of these tables, it can be seen that the Liver cases number 57 per cent, the Lung cases 16 per cent. The largest proportion of cases of Lymphoedema occurred in Victoria, while there were 34 cases of Lung affection to 70 of Liver affection. The largest proportion of central cases occurred in South Australia.
Although the liver and lungs are the organs most affected as part of the body is exempt.
I have seen a large cyst of the female breast, and cases are recorded in which the uterus, ovary, and testicle have been affected.

Cysts of the long bones of the body are of rare occurrence; they have been found rarely in the bones of the skull, the temporal, frontal, and sphenoïd bone the ribs affected, in the bones of the vertebral column, and in the jaws.

Hydatids are not uncommonly met with in the muscles and cellular tissue, when recurring they are said to be most frequent in the vicinity of the principal portal vessel of the region.
They have been seen in the neck, the axilla, the sublunary region, the intercostal muscles, and the inguinal region.

Several cases of hydatids of the whit have been recorded in which nephritis, phthisis, pain from pressure...
Excavation of the papilla and diminution of visual acuity have been present to symptoms in different cases.

(Primary Trait de, Entropies p. 539)

Hydatid cysts of the eyelids have been observed by Czekel, of the lacrimal gland by Schmidt, of the canine jeter by Riend (Primary op. cit p. 539).

A hydatid cyst has been met with growing under the tongue, and worsen of all conditions, Auriculifer, in the Britannica de medicine, article Acrophylacys, p. 264, describes the hydatid of the

Aor of the lower jaw and thyroid gland have also been described.

The presence of cysts in these sites, however, are interesting only because of their rarity, still the possibility of their occurrence in other than the usual sites should always be kept in mind.

Yet the term is few equalize the rest of hydatid disease, my statistics together with similar observations from Europe, Iceland and America prove.
As to why the liver is the organ preferred by the parasite is a question more difficult to answer. Certainly most of the 'Kukuan worms' seem to have a preference for some special organ, while this is probably some condition or group of conditions which are especially conducive to the growth and full development of the parasite.

Kuehnemidt explained the selection of the liver by the parasite by imagining that the embryos travelled from the stomach into the duodenum and thence up the common bile duct into the liver. The most probable way, however, in which they reach the liver is that having found their way through the duodenum wall into the small bowel venous they are carried into the portal vein and are caught in their passage through the portal capillary system as is found in the sponge of a filter; they undergo further development in the capillary in which they were lodged or migrate into the liver parenchyma.
Next to the brain the lungs are the organ most affected, and in Victoria the proportion of lung hydatids is very high, there being one or two of these cases during the last five years.

Dr. Bird of Melbourne has already drawn attention to the frequency of lung hydatids in that colony (in Hydatid of the Lung by J. Dunlop Bird p. 3) and has endeavoured to explain this frequency by the hypothesis that the one contained in the dust are inhaled and gaining entrance into the air passages are there developed.

How is it that the inhabitants of our metropolis, such as poor suffer from it just so frequently as the shepherd of the western plains, or the miners of Ballarat – Bendigo? There can be no doubt that the one have an extraordinary tenacity of life and it is more than probable that unclean New Year water is a common vehicle for them. To go a step further, it is well known that desiccation below a certain temperature will not destroy the vitality of many forms and species of insect life
The dust of our streets is the result of mud from the frequent use of the Yan Yuan hydrant dried by the hot wind and powdered by the constant traffic of the day. It is noticeable that this fine dust also, during inspiration into the air passages, more particularly if women who are less protected about the mouth were by hair their men.

Nothing is more likely than that the dried up murr, revivified by the moisture and steady warmth of the body, should now commence its new career. Any one who has witnessed the chafing of sheep or cattle in a hot day will readily understand how well this dust may apply also for the explanation of the origin of pulmonary phlegm in those engaged in pastoral pursuits, the readily dried and pulverised droppings of the sheep daily furnishing the nutritive murr ready made in the effort. (Medical, of the King, Empire Kind p. 2).

In opposition to Dr. Riddle's hypothesis, is the general opinion that the eggs must pass entrance into the stomach to have their
Skulls digested before the embryo can become active.

Causes of its prevalence in Australia

In an earlier part of this thesis I expressed a doubt as to whether Hydatid Disease had always had such a wide distribution as it has at present, and stated that I believed that Hydatid Disease in some countries was due to civilization with its consequent impertinence of the remnant of civilization. Especially is this the case in regard to Australia. Of course it is impossible to say whether or not Hydatid Disease did exist amongst Australian aborigines before the appearance of Europeans, but it is highly probable that it was unknown or at any rate of rare occurrence.

Old residents in New South Wales tell me that in the early days, the aborigines never suffered from Hydatid Disease while of late years it has become frequent enough amongst them.

Doubtless the early settlers when they
imported their dogs, cattle and sheep
imported the *Sonchus oleraceus* together with
the most suitable bolts for the spread of
the disease.

In connection with this part of the subject,
Dr. Douglas Reid (*Hydatid of the Dog*, p. 32) states
"a very intelligent gentleman who has lived
many years in the Western District, told me
that in his opinion the dingoes or native dog
never had *Sonchus* till the introduction of the
European dog, since which echinococcus has
become common. The aborigines have not
hydatid very frequently, but before our advent
it appears to have been uncommon.

As is well known the dog is the direct
source of *Hydatid* infection in man and
animals. It suffers from a parasite
the *(Sonchus oleraceus*) whose eggs escaping
with the dog's feces are conveyed by
drinking water or by other means to
man and animals. The dog in its turn
is infected by eating the organs of animals
containing these bladder-like growths or
"Hydatid Cysts" which represent the
Cystic Stage of the *Sonchus oleraceus*.

*Note: the *Sonchus oleraceus* infects in, as well the small intestine of the
dog, it has been found also in the wolf, feral, Australian dogs.*
Disease it can be seen that the factors which influence the frequency of Hydatid Disease must be

1. The number of dogs in a country
2. The number of sheep, cattle, pigs
3. The climate of the country, its water supply, and the habits of the people.

In Australia the number of dogs is immense, and country swarming with them, epidemic attempts are made at times to reduce their numbers but do little to mitigate the nuisance. The dogs are too often allowed to live in the homes of their owners, and to eat all kinds of offal whether containing Hydatid Cyst or not; little or no attention is given to the health of these animals to see whether or not they are infected with Echinococcus. Australia being a pastoral country, the herds of sheep and cattle are very large, many suffer from hydatid disease, but owing to the vast extents of country and the large flocks and herds, no means are taken to stamp out the disease.
...the regions of which are often entered by the dogs, if the water supply be scanty, and procured from togs, swamps, waterholes, and dams, in the bases of which dogs may deposit the eggs, to be blown in by the wind or washed in by the rains, and there be dogs in abundance, we then have all the conditions necessary to the spread of the disease" (Davis, Diseases of Australia, p. 100).

Large numbers of the population are engaged in pastoral and mining pursuits and are compelled to live under conditions especially favourable to the spread of the disease. Drifting sheep for hundreds of miles, swallowing thinning dust containing the feaces of the dogs, drinking at times the water of insanitary wells, living with the dogs, drinking at a filthy waterhole where men, sheep, and dogs alike obtain their water. How can they escape the disease. Watercress, lettuce, and other uncured vegetable fare, doubtless, at times, served to carry the disease through containing the dog's feaces...
The bodies have fallen in gardens or
streets broken up, while the cow have
been blown by the wind or washed
by the rain or to the vegetables.
It is possible too, that the disease
has been conveyed by the feeding of
dogs, a practice too often indulged
in especially by children.

The Prophylaxis of Typhoidal Disease.

Typhoidal Disease being a presentable
disease, all care should be taken
in a country like Australia where
the disease is unfortunate so
common, to observe the following
precautions. If this course were
pursued, Typhoidal Disease could
be unable to claim such a
defence of victims.

1. The registration of dogs to be
rigorously enforced, all useless and
shaggy dogs to be destroyed
1. Dogs to be prevented from eating the offal of slaughtered hogs, to be fed on cooked meat only, to be physically examined in order to get rid of intestinal worms. The excreta of dogs to be buried or burned and kennels to be regularly cleaned with boiling water. 
Dogs to be kept out of the house and not to be fondled by children.
2. The water supply, whether it be natural or otherwise, to be protected from the access of dogs. If in tanks to be covered in order to prevent dust gaining entrance.

Water to be filtered, if the quality is doubtful to be boiled.

Water from wells, and small streams not to be drunk except in case of necessity - if so to be boiled.

4. No water access, let this or other vegetables to be eaten raw if grown in places where dogs have free access.

In some of the colonies circulars have been issued by the government with
instructions as to the precautions to be taken against the spread of Hydatid Disease; unfortunately there seems to be a widespread ignorance or indifference about this matter; till these have been dispelled there will be little chance of improving the existing state of affairs.

The Treatment of Hydatid Disease

I. Medical

The treatment of Hydatid Disease by the administration of drugs is useless. As Pasteur many years ago remarked 'On peut affirmer que la plupart des médicaments qui ont été proposés jusqu'aujourd'hui sont restés sans effet; dans plusieurs cas où l'existence des hydatides a été bien déterminée, tandis que l'on ne croyait peut-être aucune observation bien constatée de guérison que l'on puisse, dans les cas semblables, attribuer au médicament' (Pasteur, L'Évolution, p. 572).
Until we discover a substance which can become circulated into the blood in sufficient quantity to prove fatal to the hydatid with which it is brought in contact without proving fatal to its host, we may refrain from wasting time with drugs in this disease. Chloride of sodium prepared by Savigny, protocloride of mercury prepared by Roumer, iodide of potassium, bromide of potassium and a host of other remedies have had their supporters and have proved useless. 

Aetna of Kamaia according to Schaffin (Edinburgh Medical Journal August 1847) has proved of assistance and Dr. John Bird of Melbourne (Hydatid of the Lung p. 48) believes that the bromide or iodide of potassium combined with Kamaia given continuously for several weeks has a distinctly cleansing and irritating effect in the ascrophysgect – the cases known in which he founds this belief were cases which had not been subjected to tapping and in which the apparent improvement for he have no further history of the cases, may have been more probably due to the operation.
Subsequent observers have failed to find this treatment of the slightest value.
Of course drugs used to meet symptoms as they arise, to alleviate pain, to improve
the general health, will be always of assistance.

The Surgical Treatment of Hydatid Disease

The surgical treatment of Hydatid Disease varies somewhat with the site of the disease; for
instance if the cysts are situated in the cellular tissue of the arm, they may be
dissected out and removed, if in the cavity
of the femur they may necessitate
amputation. But as has already been
pointed out in this thesis, the majority
of cases occur in the abdominal and
thoracic viscera especially the liver and
lungs. It is to them therefore that
I refer in dealing with this part of
the subject.
The following methods are to be considered.

I. Simple Tapping
II. Aspiration
III. Electrolysis
IV. Injection of various substances into the cyst with or without tapping
V. Introduction of large tube and cannula
VI. Incision, allowing the contents to escape spontaneously
   a. Immediate opening of the cyst
   b. Preliminary operation to secure adhesions
VII. Incision and removal of the whole or partial part of the contents
   a. Immediate opening of the cyst
   b. Preliminary operation to secure adhesions.
Simple Tapping and Aspiration

This will be considered together.

Tapping for Hydatids seems to have been known to Achilles, as is shown by the following passage, "if you perforate the abdomen so as to evacuate the fluid, after a small discharge, a slender will thicken up the passage" (Achilles' Iliad, Book 3, 837).

Simple tapping will tear and cannule which was first adopted as a routine practice by Andrews of Ballarat, Victoria (Australian Medical Journal, April 1946) has, until the last few years, been the recognized method of treatment. In addition, Sydenham, B.E. Belling, Dr. Bird and many others have practiced it with comparative success; there is very little doubt that numerous cases have been cured and others relieved by this method, and that its adoption marked a great advance in the old practice of losing fluid.

In the early part of this century, Dr. Benjamin Brodie, and

Reamier tapped cases of Hydatid of the liver with good results.
There is equally little doubt however that many cases of so-called 'cures' were often led to submit to repeated tapings or more radical operations, while suppuration of the cyst was of frequent occurrence. I have repeatedly seen cases of hydatid disease which had been tapped one, two, or three years ago or even longer and which had been dismissed in some cases as reputed cures, returning for further treatment and I have but little doubt that this is the experience of many of the profession in Australia.

Jonathan Hutchinson (Archives of Surgery, April 1890) is of the same opinion, he makes mention of a case of hydatid which he tapped and which returned to him eleven years afterwards with a recurrence of the disease, illustrating the fact that in some cases what appear to be cures of Hydatid tumours by simple puncture are not always such; in this instance the tumour did not begin to refill after the first tapping for several years and he thought the patient cured. He believes that in other cases which he published as cures by puncture, relapses may have occurred.
Davis Jones and Gardner at the International Medical Congress of 1889 also expressed their doubts about many of the so-called cures by puncture, Sydney Jones of Sydney, and Fitzgerald of Melbourne were in favor of puncture, but having seen numerous cases some years after the operation, Jones was the length of saying that a cyst might refill after 10 years, which as we have seen actually occurred in Jonathan Hutchinson's case. Jones looked on aspiration as almost perfectly safe, never having had a case of death from simple aspiration, he believed that in all cases of Hydatid Disease other than that of the thoracic cavity the first duty was simple aspiration; in cases where the patient cyst was packed with daughter cysts and in cases of suppurating Hydatid incision should be performed, stitching the incision to the piastra, excising the daughter cyst, and draining. Pulmonary Hydatid should be incised, the piastra and pulmonary pleura stitched together, and drainage attended to. Fitzgerald preferred the simple tourniquet and cannula to the aspirator. Unfortunately neither Jones nor Fitzgerald furnished any statistics of their cases.
The following is a table showing the results of flapping operations from a paper by Davie Jones read at the Congress.

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>18.58%</td>
</tr>
<tr>
<td>Successful cases</td>
<td>0.99%</td>
</tr>
<tr>
<td>Methylen blue</td>
<td></td>
</tr>
<tr>
<td>Followed by new operation</td>
<td>26.04%</td>
</tr>
<tr>
<td>Intel failure of puncture</td>
<td>13.6%</td>
</tr>
<tr>
<td>Relived</td>
<td>14.37%</td>
</tr>
<tr>
<td>Repaired cases</td>
<td>39.36%</td>
</tr>
<tr>
<td>Intel success</td>
<td>54.87%</td>
</tr>
</tbody>
</table>

(Transactions of the Intestinal Medical Congress 1889, p. 392-5)

Operation is much the same in its results although according to Donían Reck (in Regulation of the Lung p. 31) and Fitzgerald (Intestinal Medical Trans. p. 391) it is more dangerous than the knot and caudle. Its chief apparent simplicity has favored the method of treatment but numerous cases are on record of its danger, may of its fatalities. Davie Jones (Australian med. Journal April 1889) mentions three cases of death immediately after puncture of the gut from shock, in the West Hospital two cases of pyloromyotomy died, one in five minutes,
The is held on how often puncture, and
asymptomatic symptoms are of comparatively frequency.
Specially, asymptomatic is the tipping of pulmonary
ovary from the folding of the broad ligament
by the fluid, and consequent risk of infection.
Buchan (Hydatid Disease, 1848) mentions a fatal
case occurring after an exploratory puncture of
the bag, in which, post mortem, the healthy lung
was found flooded by the hydatid fluid.

Electrolysis

Many years ago Kovarikas in Iceland
had a successful result with this
method (Bavame, Boole, and Entology, 1898),
since then it has been tried by various
operators with varying results. Tagge and
Durrant reported 10 successful cases. Tagge
attributed the success of the operation to the
punctures made by the needle, allowing some
of the fluid to escape out of the cyst into the
abdominal cavity. He tried simple acupunture
and found it did equally well.
Injection of various substances into the cyst

This method of treatment has been practised with or without removal of the fluid. Carbolic acid, iodine, extract of willow bark, ice, bile, alcohol and other substances have been employed. A very frequent result was the suppuration of the previously healthy cyst, with no present knowledge of surgery, such a method of treatment to be unscientific as it is dangerous.

Introduction and Retention of a Large Tissue and Cannula.

1. Immediate introduction and retention of cannula.
2. Preliminary incision down to peritoneum followed by introduction of tissue and cannula.
3. Preliminary use of corks or needles to procure adhesions.

Each and all of these methods have been successful in some cases, but with our present knowledge of operative surgery, the reprehensibility of the method of introducing a large instrument as it were in the dark, the dangers of the instrument slipping out of the cyst...
as it empties, and allowing the escape of its contents into the peritoneum or pleura, the resultant septicity, all condemn the practice of such methods.

Incision

With the knowledge and consequent advantages of the surgery of to-day, there is no doubt but that the proper treatment of hydatid tumours consists in radical operation.

In years gone by when surgery had not reached its present stage of advancement—tapping and aspiration were certainly the only legitimate methods of procedure, but to revert to the present day to either of these in preference to the radical operation is to deliberately shut our eyes to the lessons of experience, and to prefer a present apparent cure with recurrence and that recurrence in all probability in a more unfavourable form, on the ground of its false simplicity, to an operation which, although it is one of more magnitude yields a lasting cure.
Of course I except those cases where the patient being of advanced years or incapable from any reason of submitting to the severer operation, tapping is resorted to.

Lindemann of Hanover is believed to have been the first to have performed this operation, in 1871 he cut down on the hepatic cyst not previously recognizing the nature of the tumour; the patient died. Jackson of Birmingham was the first to deliberately perform the operation in 1882. Since then it has been frequently performed; Gardner of Adelaide one of the most zealous supporters of the radical treatment of hydatid disease special mention for his record of successes.

Operation by one Stage in Liver Hydatid.

The preparations are to be made as in a case of Laparotomy. The incision about 4 inches long should be over the most prominent part of the tumour and should be as much as possible in the long axis of the body. Before opening the peritoneal cavity all
bleeding should be stopped by pressure or ligature if necessary, it first about an inch of the peritoneal cavity should be opened sufficiently to allow of the introduction of the exploring finger, the incision can afterwards be enlarged as required.

Sometimes there may be firm adhesions between the tumour, or the liver, and the abdominal wall; if so those adhesions may be taken advantage of in the operation.

The cyst or its purulent may now be sized and pulled forward a little, if the tension of the cyst be high, a little of its contents may be withdrawn by the aspirator—this renders subsequent manipulations easier.

In some cases where the cyst will is strong enough, a circle of stitches should be placed uniting the cyst wall to the peritoneum—so shutting up the peritoneal cavity. The stitches should be passed through the peritoneal peritoneum, and abdominal wall but not through the whole thickness of the cyst wall.

Having thus securely streaked the cyst to the abdominal opening, the cyst may be divided and healed in the manner
described later. In many cases it will not be possible to do so however. If such be the case, two long stitches shall be passed in either side through the cyst wall by means of a curved needle mounted in a handle, by means of these stitches, the cyst can be drawn well forward and approximated closely to the parietal wound. Having carefully surrounded the proposed opening of the cyst with flat sponges to prevent the fluid contents escaping into the peritoneal cavity, the cyst is now opened; the finger of the operator may be introduced to draw forward the cyst and by raising the side walls of the cyst with care; grasp the cyst can be still more drawn forward, approximated to the abdominal wall and so held. An assistant should carefully catch the cyst contents and prevent them entering into the abdominal cavity. The operator with another finger can aid in evacuating the cyst, using the finger first, as a scoop and so getting the cystic contents to come away; when no more escape the cyst may be touched at with an antiseptic linen -ovic linen, weak carbolic linen or simple
filled with — when the cyst and other contents whether paler or not are
firmly carried away by the return current.
Having emptied the cyst as completely as possible, it should now be stitched
to the abdominal wall; before doing so
know the sponges used to protect the
abdomen should be removed, and, if thought
necessary, the peritoneal toilette should be
cautiously performed.
The stitches which should be of silk
should pass through the cyst wall and the abdominal wall
so that peritoneum is approximated to peritoneum
and should be placed close enough to prevent any
leakage into the peritoneal cavity. When the cyst
has been securely attached to the abdominal wall
a further attempt may be made to remove
any remaining contents by douching and gentle
manipulation by means of the finger or still
gentle traction by the sceps; in some cases it
may be possible to introduce a sponge into the
cyst and wipe it dry, or by means of a
tile and syringe to soak up any remaining
contents. Having emptied and cleaned the
cyst by one of these methods, a drainage
Take of large calibre should be introduced (one with a diameter of \( \frac{1}{2} \) - 1 inch) - the wound stitched at its upper and lower angle, cleaned, dressed with lint, and dressings applied. The dressings should consist of lint or carbolic gauge, covered by plenty of absorbent carbolic wool, and be retained by means of a hanging tailed bandage.

Where there is likely to be a large amount of discharge more or less irritating I prefer to cover the wound with a large piece of protective mitt while set in it to allow of the exit of the drainage tube, covering the edge of the protective and the adjacent part of the abdomen with boric ointment, and mix this to blend the gauge. This serves to prevent the wound becoming infested as it sometimes does, from the dragging of the stitches, and the irritation of the discharge. After-treatment - the dressing should be changed every day, as often as first, and the cyst treated with a weak antiseptic lotion; in a few days it will be found that the cyst cavity gets smaller and smaller.
If the cyst is suppurring, the operation is the same, still greater care should be taken however to prevent entrance of pus into the peritoneal cavity.

Operation in two stages. The earlier method consisted in incising the abdominal wall and peritoneal peritoneum, packing the wound with gauge to cause adhesions, and opening the cyst in a few days; a later method consisted in cutting down on the cyst, stitching it to the lips of the wound, packing with gauge and opening the cyst in 3 or 4 days; in some cases the stitches were passed deeply into the linn substance and adhesion secured between the peritoneal covering of the linn and the peritoneal peritoneum. In all these cases the cyst may be incised from the 3rd to the 6th day.

In most cases the advantages of operation by two stages are not great, that is, if the precautions are taken to prevent the entrance of septic matter into the peritoneal cavity. In a few cases, however, it may be advisable after stitching the cyst to the lips of the abdominal wound to wait for firm adhesion to occur before
opening the cyst.

Cysts not on the anterior surface of the liver.
In the previous description I have assumed that
the cyst is on the anterior surface of the
liver; suppose, however, that in opening the
abdomen no cyst is apparent. An
exploratory puncture with the aspirating needle
should be made to localize the position of
the cyst; having done so, the operator
proceeds as in a hepatectomy.

Having decided at what point he will
incise the liver, he proceeds to make that
incision to the abdominal wall.

The stitches should be of silk worm gut
and should be passed by means of a
curved needle used with or without a
needle holder, as the surgeon finds
most convenient. They should be passed
through the peritoneal surface and part of
the liver substance itself, and then through
the posterior peritoneum and abdominal wall.

They may or may not be passed through
the skin as the operator pleases. If
passed through the skin they sometimes
infect it, on the other hand
they have a firmer hold; they should be sufficiently close together to prevent any leakage and special care should be taken in suturing to the point at the angles of the wound.

I have found one row of sutures usually sufficient to make the closure complete, but if necessary a second row of sutures may be introduced after the method described by Collee (British Medical Journal Jan. 18, 1890) - he separates the sutures from the posterior layer of the sheath so as to expose a portion of such and with Sagedare's needles applies two rows of sutures on these interrupted one of silk and an inner continuous one of catgut.

With a sharp knife an incision should now be made through the thin substance in the direction indicated by the aspirating needle previously used. The bleeding may be fairly profuse at first, but I have never found it dangerous, and it usually yields to pressure with a hot sponge; I have cut 4 inches through the thin substance to reach a hydatid cyst, on one occasion through a little thickness of skin, and the hemisphere has never proved troublesome.
Care should be taken to prevent the escape of cyst contents into the peritoneal cavity; the cyst should be well washed out with antiseptic solution and a large drainage tube inserted.

For some time there may be a free escape of bile from the live incision and in consequence there may be some jaundice, tenderness from the elimination in the quantity of bile discharged into the intestine, flatulence, heart burn, aches and pains, and swelling of the face, but gradually as the wound closes the biliary discharge diminishes; in no case that I operated on is which there were three distinct cysts in the liver which had supported and in which an incision about 3 inches deep was made into the live the biliary discharge was not profuse—requiring daily changing the dressings three or four times; the stools were white and foul smelling, and the patient suffered much from flatulence, eventually be made a good recovery.
Results. The mortality in Gerhard's cases was 2 in 32 cases, a percentage of 6.25. According to Davis Jones statistics, the mortality was 10.29 per cent. (Intemecral Medical Transactions p. 342; Davis Jones, Hydatid Disease p. 176), giving at the lowest estimate 90 per cent of recoveries; compare this with the statistics of taping with 54.74 per cent of reported cases of 18.88 per cent of deaths and its 45.91 per cent of total failure.

Hydatid cysts of the liver operated on by thoracic incision.

Thoracic incision has been used to reach cysts growing on the central surface of the liver either with or without removal of part of a rib. The pleura is opened, an incision is made through the diaphragm, and the cyst exposed. A couple of stout staples are passed through the cyst to prevent its retraction and at the same time to pull it forward when required and some of the contents are removed by aspiration. The cyst is then pulled well forward to
the opening in the thoracic wall to which it is attached by nature. When adhesions are cleanly formed e.g. in 4-6 days the cyst is incised and drained. The mortality in these cases has been about 30 per cent. In later cases, after carefully stitching the cyst to the opening in the thoracic wall the cyst has been operated directly without waiting for adhesions to form.

Removal of Hydatid cysts of the liver in man has been performed by Sansoni in a case of a cyst of the size of a football in a patient, the abdomen which was purulent being stripped by ligature and pressure the patient recovered. Milian excised the part of the liver containing the cyst with a ligature and allowed the part to slough off outside the abdomen - the case recovered. Spiegelberg, Fitzgerald and others have all removed cysts in man from the liver. Gazetta degli Ospedali Jan. 21, 1891, British Medical Journal, Sept. 7, 1891, Mota Urban Med.-Chirurgicus und seine Anwendung p. 24 Australian Medical Journal 1890 May 18, p. 206)
Pulmonary Hydatids

For unruptured pulmonary cysts, having localized its position by a preliminary puncture with the aspirator, an incision should be made on the chest of the cyst and a portion of the pleura reflects, stopping back the peritoneum and taking care not to injure the pleura. Having stopped all bleeding by pressure and ligature the pleura should be opened. The incision should be made with a very sharp knife through the lung tissue down to the cyst; the cyst will wriggle by the finger and held while two stout stitches are passed through it by a curved needle mounted on a long handle. If the cyst is too tense to allow of prising it, a little of its contents may be evacuated by the aspirator. Pulling the cyst will forward by the two stitches, the cyst is raised and its contents evacuated as well as possible by the use of the fingers on the fingers. The cyst will in now united to the edge of the external wound and a drainage tube introduced. If injection are used, it should be in to great care, as they may cause dangerous symptoms. If very many are, they can be disposed of.
Results. In 9 cases operated on by Lebuen, there were no deaths, in 38 cases collected by Davis, there were 32 recoveries and 6 deaths, being a mortality of 15.7%. Several of these cases had been operated on some years ago, when the operative procedure was not so well understood as at present.

Cysts, reentered into the pleural cavity, free

resection with drainage is evidently the only
hope for such cases, and has been successful
even when the extent was striking.

Indications for resection in pulmonary hydatid,
according to Davis, 15 cases are —

cases in which there is pur Judicial of the
nature of the disease and its primary locality,
provided that there is a distinct, even though
limited, area of cedema in some part of
the chest wall; where on the other hand
the attention of the percussion note is to
the production of tympanitic note, usually
indicating expansion of the lung which still
contains air, puncture with the aspirating
needle is to be preferred.
Speaking of treatment by thorax or aspirator, the same author says:

1. The purulent, especially of large lung cysts is by no means devoid of immediate danger.
2. Purulent often fails to cure the disease; in many cases in which it seems to do so the patient is really affected by the expectoration of the multiple cysts, a process often accompanied by much danger to the patient from affection, hemoptysis, and pleurisy.

3. Even when the sac has been completely evacuated by the parastyle, the contents in its walls have become degenerated from the long continued suppuration as to readily rupture and cause hemothorax. (Textbook of Physical Diagnosis, 1915, p. 723-73)

Hydatid of the Brain

The possibility of surgical interference in Hydatid of the brain depends chiefly on the position of the cyst; and as at present all parts of the brain are not open to the surgeon's art, the number of cases of Hydatid of the
Brain suitable for operation is limited. In a case of cerebral new growth, the probability of the recurrence of a hydatid cyst should always be kept in mind, especially if the case comes from a 'hydatid' district; and while the symptoms serve to localize the site of the trouble and to indicate the possibility of surgical interference, an operation should be performed. Unquestionably the tendency in Australia is to lean rather much to the diagnosis of hydatids in doubtful cases, and I know of two cases of intracranial ancoma which were operated for supposed hydatid cysts. Still the operation did no harm, and is certainly justifiable on the ground that it allows of remedial measures being carried out if the case is suitable.

There are no special symptoms which serve to differentiate between hydatid cysts and other new growths of the brain. Much has been laid by some writers on the intermittency of the symptoms and their intensification at recurrence; such a condition
however is of little or no value in the differential diagnosis.
It is useful to have the head examined the bones of the skull carefully for thinning or bulging.
The same rule and the same precautions are to be observed, as are observed in trephining for ordinary tumors of the brain. The head is to be shaved and cleansed prior to the operating.
The situation of the cyst marked out, the bone exposed by incision, and the trephine applied as in these cases. If the cyst is on the surface of the brain, it usually bulges as a saucere of the dura mater. A fine exploratory needle should be introduced and the fluid content of the cyst aspirated. The dura mater should then be divided around about 1/4 of the margin of the trephine hole, the incision being a little distance from the bone to allow of stitching the flap later. The collapsed hydatic cyst may now be removed by gentle traction.
If there is much bleeding from the dura, it may be necessary to ligature some of its vessels which may be done with fine
cystic; the dural flap is brought up
position by a few cystic sutures, leaving
a little space for drainage.

The scalp flap is brought together by sutures
leaving room for drainage; a test is
kept in for from 24 to 48 hours.

Chirchon, Vicoe and others have operated for
cysts of various portions of the brain mostly
known with unsuccessful issues.

Able of Sydney had a successful case in 1870
removing a cyst 4 inches in diameter which
had been pressing on the motor area of the left
side and causing paralysis of the right side of the
body with optic atrophy and blindness.

The paralysis cured but the blindness continued
much as before.

Haweset of New Zealand in 1879 and
Titspare of Dublin (M. J. W.) both have had
successful cases.