

13 A small bottle containing  
 the distal or point end of an  
~~under~~ ordinary pumpeitan dart.  
 I shall have something to  
 say respecting it in my notes  
 on Ipoh Poison, make & action  
 so include it in these exhibits  
 for safe keeping by you

Have made our 300 exper-  
 iments in the action of Ipoh  
 sap used alone without admixture  
 taken fresh from the tree to the  
 animal. As it is very doubtful if  
 much of the Ipoh sent to Europe  
 is at full fresh strength, I am  
 trying it here.

The exhibit is to show how  
 much poison is actually sent into  
 the body, & is a fair average dart  
 midway between very slightly tipped  
 with poison and those very heavily  
 tipped. Have carefully observed the  
 same quantity as known in all  
 my experiments.

Eleven (11) drops of the sap as  
 it falls from the fresh incision in  
 the Ipoh tree is equal to (i.e. reduced  
 by evaporation of the watery part) \* six (6)  
 most probably there is a slight difference in the  
 amount of water in the sap at various periods  
 of the year.

drops of the sap when it has been allowed to stand exposed to the sun for an ~~hour~~<sup>hour</sup>\* (as closely as I can judge)

Partly & in greater measure, this difference in the number of drops <sup>and the dart</sup> is actual concentration by loss of water. but it must be borne in mind that some allowance, on the other hand, must be made for the drops of the coagulated or exposed sap being of larger size than the thinner, more fluid, fresh sap from the tree.

The only test for comparison of effect in strength that I can assume is the varying number of minutes that any given number of drops takes to kill given animals selected as nearly as is possible to judge of same age size & strength; with the poison injected in the same place & manner in all. Out of a large number of experiments the average may be taken as fairly correct for general statement. And that average I shall deal with in my special paper.

The poison on the dart point

\* The poison of my experiments is all "day old" & I do not try to get the same quantity as nearly as possible in each. In a dry state, the day old drop is about midway between A & B of Ex. 47.

of this exhibit is of unboiled Gosh  
sap only, without any admixture  
of other ingredients

4. Is unboiled Gosh sap, direct  
from the tree, <sup>after sun drying & Buckening.</sup> on to paper in  
successive coatings, allowed to  
set or dry in the sun, between  
each coat. There is no doubt about  
the deadly power of this sap as  
sent. For I tried on various animals  
while preparing the exhibit &  
found certain death result in  
all. The sap, as collected from the tree is run dried  
too <sup>early</sup> run, before it is put on the paper.

My practice is, in all cases  
to incise, what would be the  
case of the leg in human being  
By thus selecting the most  
remote spot from the heart. I give  
the poison every opportunity to  
display itself and, incising only  
into flesh, avoiding veins &  
arteries take the maximum time  
for the Gosh to ~~best~~ enter the  
heart.

Under these conditions, I find  
(as will be more fully detailed  
hereafter), that two (2) drops of the

\*

Spoke I send as this exhibit is sufficient  
to kill a small monkey, (i.e. two drops  
when it was in coagulated or sun  
exposed state and four drops fresh  
from tree to animal), and larger  
animals in proportion.

Now, (as you have no doubt  
by this time settled by exact analysis  
there is a large proportion of the bulk  
of the drop made up of water and  
of resinous extracts &c. making up  
the living sap. The quantity of  
actual poison, therefore, if scientifically  
isolated must be very slight indeed  
in sufficient <sup>(of sap)</sup> to kill, & must be  
proportionately powerful.

If on your experiments the  
color of this exhibit does not believe  
(as I have here reported) upon it  
it must be that some change  
takes place in transit. or keeping  
in a different climate &c. To guard  
against this as much as possible  
I carefully dried the exhibit for  
some days in a hot sun, &  
selecting the middle of the day  
when it was perceptibly hot from  
exposure to solar action, rolled

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\* For the drops referred to see Exhibit "B" of  
No. 47

up & placing it in a bottle heated over a fire till the hand could scarcely hold it; cooled & waxed it down. <sup>I put it on paper so that there should</sup> be no moisture as when wood is used.

Spohr as I have before remarked mildews & spoils at the slightest damp. I do not know what effect <sup>absolute</sup> alcohol (strong) would have upon it but intend in a day or two to mix the two & after a few days inject it into moussey & note the effect. It may be that sending it in alcohol would preserve its strength unimpaired for you.

I have tried a number of mixtures both acids and alkalis with fresh Spohr & the action of the mixture upon animals in the hope of finding out some antidote or neutralizing agent. My experiments re this are still going on & will be given you later.

25. In the bottle containing the cicutoe (N<sup>o</sup> 38) you will see a mouse's hind leg, with part of a dart inserted beneath.

the skin. Only a third of the  
poisoned end is thus entered &  
only it must be noted. The smaller  
third, where the poison lies in  
much smaller quantity, on the  
fine point, as compared with the  
larger diametered continuation  
toward the shaft, as the bulk of  
the poison as may be seen by  
looking at any part. Is thickly  
applied near the neck or base  
& is very slight at the extreme  
point so as not to interfere with  
its penetration.

The dart was inserted, as  
shown, by hand, by me on a  
small "Litung" monkey, & as you  
will perceive only runs just under  
& along the skin, but it was enough  
to kill. I will refer to this ~~and~~ in  
my forthcoming notes, so send it  
you to show in what manner. I  
insert the poison in a certain class  
of experiments. The poison on the  
dart used for this exhibit was part  
of N<sup>o</sup> 44. & the quantity same as on  
N<sup>o</sup> 43. It was only <sup>from</sup> a young Litung  
& took up but little room, so I selected

d. from others as an exhibit.

\*

6 Armadillo(?), skin. See story of  
"the elephant rolling his trunk  
up" sent herewith so that you  
may know what animal is really  
referred to.

Spoke sap in drops on paper  
"A" is caught from the cut in the  
living tree, on the paper.

"B" is sun dried or exposed, till it  
has coagulated & evaporated, so that  
it is like Buck gum & will barely  
run or spread over the surface by  
a feather or brush. Exhibit No 44  
is laid on in this state in  
successive coatings. The fresh sap  
is like thick milk in consistency  
and color, but is a "Vandyke" brown  
color when in the state ready for  
spreading on the surface upon which  
it is to finally dry. The sun & air  
then darkening its tint to so deep a  
brown as to superficially appear as black

7 A dart, having the same quantity & quality  
of poison on it as Ex. No. 43. was inserted  
The "manis pentadactyla" (manis)?

just under the skin (& along its under  
of or inner) surface for some ~~mm~~ 4 cm  
just as shown in Ex N<sup>o</sup> 45. in the  
hind leg of an adult male "KRA"  
monkey. At the expiration of two  
minutes it was withdrawn, to note  
how much poison had left the dart.  
From the position of the insertion, there  
was very little moisture to dissolve  
the dry coating of poison. If any veins  
were punctured they could only be  
capillary ones. but the monkey died  
in 35 minutes 3 seconds, under the  
influence of this minute quantity of  
poison.

#9. A small quantity of Glob was  
exposed for a day to the sun's  
action, so as to be in the condition  
I employ it for my experiments.  
The Glob was <sup>then</sup> just put in the bottle  
to half fill it. (up to the top of  
the blackened part of the bottle)  
and the bottle was then filled up  
with the best gin procurable. It will  
enable you to see if alcoholic  
admixture has any preservative  
power without destroying or



weakening the poison. Should it  
be successful, any further quantity  
of Spoh you may require for analysis  
or experiment could be sent that way  
without the mildew destroying it. as  
at present it does is very apt to do when  
the dry Spoh is sent. <sup>Let the bottle stand quietly</sup>  
<sup>for a few days, to settle, & the cork</sup>  
will shut in the spirit. see notes <sup>in label n<sup>o</sup> 75</sup>

I wrote you in previous sent notes  
that the Westerns remaining used to kill  
elephants & rhinoceros &c for the Malays  
by means of the bow & poisoned arrow  
(of bamboo, or later of Malay made iron  
points)

Like the Spoh with which the arrow  
point was tipped was mixed  
the fine hairs covering the outer  
surface of <sup>the seed pod of a</sup> climbing vine found  
in the jungles here.

The Malays call all seeds  
like beans or peas (in a pod) "CACHANG"  
& from its unpleasant qualities  
give the plant producing the seed  
pod sent herewith: "CACHANG - HARIMAU"  
<sup>pod</sup> <sup>tiger</sup>

The language of the Western  
side, all more or less speak &  
adopt Malay language & customs  
& hence they more often give the

plant its Malayan name, in speaking of it though they have a name "E'ss" for it in their own language.

As only these Western men, at Malau investigation, actively sought to kill the larger animals of the peninsula, they only, of all the Malay Utan use this hair like spines. From the Cochang Hariman for admixture with the *Tob.* in pursuit of the larger game.

The hairs act mechanically only, or at any rate, principally. Though it is possible that there is also some irritant matter like venom in small quantity about them.

It is impossible to touch the Cochang Hariman *Tob.*, or however lightly without getting a number of the finely pointed hairs into the skin, where they work in deeper causing great irritation, pain, & inflammation.

The ~~stick~~<sup>arrow</sup> being coated with poison, is laid while still sticky with the not fully dried *Tob.* upon a *Tob.* & lightly drawn over the hairs which instantly adhere to it & by it

are carried into the wound upon  
the arrow coming into action afterwards.

There is a special reason  
for their use which I shall give at  
length on my paper on the Troch  
poison.

I send two fruits or pods in  
the stage as used, & three <sup>flowers</sup> in  
ones, but this trip I am too late for  
the reason of the plants ~~flourishing~~  
I cannot send any. If there is  
any need of them for <sup>botanical</sup>  
identification, they can be sent  
another time if you let me know.  
The pods are preserved <sup>in water</sup> in gin. in  
this exhibit. See <sup>curator</sup>

7. The dried leaves of the Cakany  
Hariman (Ex N. 50) for assistance  
in botanical identification

82. A pod of Cakany Hariman (50-51)  
dry, in case the spirit steeped (50)  
ones fail to reach in good condition

83. Dry leaves of the "JELATONG GAJAH" (Malay)  
nettle, called "KIB" or "WAP" by the <sup>elephant's</sup> ~~elephant's~~  
As far as I can judge it is identical

the same nettle, as that I sent you samples of, with the exhibits for the Kelantan "black" poison.

Doubtless your botanists can decide if the leaves are the same. They sting in a fresh state, terribly. The plant is a soft wooded one about 4 or 5 metres high generally of tree-like configuration.

There is a reason for their employment, apart from their venomous quality, of which I shall speak later.

54. Pot sap. [an ordinary English beer bottle (reputed pint) <sup>reality 13 oz</sup> full] — boiled in a water surrounded vessel, so as to ensure its not going above boiling point, for two hours.

You have probably seen, when a can of white lead has been mixed for paint, & used at intervals, that on approaching the bottom of the can, there are drops and flakes of hard skin & residue, at the bottom. The Pot sap boiled as this exhibit is exactly

\* Reality 13 fluid ounces English.

The color and appearance of these white lead drops mixed with a little Rain water, milk & water like fluid that pours off from the coagulated part.

This coagulated portion, upon exposure to the sun, dries to a black or deep brown color, as seen in this exhibit.

It is quite impossible to place it upon the dart's point in this condition, & the exhibit is sent to illustrate why the Druggist uses certain mixtures to prevent the spoli, when he boils it, going into this unworkable condition. (of which admixtures, more hereafter)

5. In the Rain fluid spoken of above (54) the Lemany can it will decompose & go bad, but as you may possibly feel interested in finding out what it is composed of, I send it you (made), the bottle holds all that was produced from N<sup>o</sup> 54.\*

6. In the dried skin of the female of N<sup>o</sup> 39. the ~~bird~~ "bird". etc I obtained see notes Exhibit N<sup>o</sup> 57 re this.

it from Malurus, who say it is the female of N. 39. Except in coloring it appears to be so. but it is sent on Malay authority. Doubtless your ornithologists can tell if it is so. as I cannot get it from the Semang themselves. direct. they refusing to catch or kill it. (N. 39, 40)

57. Gtoh poison varies in power when made by different people.

Disentangled from the mysticism which is thrown round the making the reason of the greater power in some poison is the greater concentration of the active principle and its comparative freedom from matters insoluble in the wound. Superiority in these matters means a greater quantity of fatal principle on the limited space of the dart's point and its more instant solution into the blood, before the animal has time to either escape & die unseen, or to recover from the more slowly received, poison.

The base, or actual cause of death is the Gtoh; all other matters