

the alimentary canal into
nd in the second place,
ugh the walls of the
The digestive changes
breaking down of the
of the raw food ma-
simple chemical su-
e taken up by the cells
into complex protoplas-
hich can not escape
membrane until they are
n into simpler forms.

The salivary glands of the head (Sys-
tem No. 2 of Cheshire, postcerebral glands
of Bordas) lie against the posterior walls
of the cranium. In the worker each con-
sists of a loosely arranged mass of pear-
shaped follicles or *âcini* whose individual
ducts unite irregularly with one another
and eventually form a common duct on
each side. Their two ducts unite with the
median duct from the thoracic glands just
before the bases of the mesocephalic pil-
chales from the spiracles. In the drone these glands have a
quite different appearance from those of
the female, each consisting of a compact
mass of very small follicles connected by
minute ducts and flattened against the
posterior walls of the head. A large lobe
of this gland in the drone extends for-
ward on each side against the face, fe-
terary canal, whence the compound eye and the clypeus,
with the faeces from the

brought about by sub-
enzymes which are con-
arious liquids mixed with
alimentary canal. These
ted by the salivary glands
lar walls of the stomach

Salivary Glands

of the salivary duct of
proboscis has already been
a true salivary glands,
iding with the salivary
r insects, are arranged
situated within the head
within the thorax. They
te into one median tube
he base of the labium and

in the queen and are represented by a
few follicles in the worker.

Bordas describes the follicles of the
postcerebral glands in the worker as hol-
low sacs, each having a large lumen lined
with a chitinous intima. Their secretion,
he says, is a thin viscid liquid, pale yel-
low in color and having a slightly alkali-
ne reaction. According to Schiemenz
(1883) each gland is developed as an out-
growth from the common duct of the thor-
acic glands.

The salivary glands of the thorax in the
bee (System No. 3 of Cheshire, thoracic
salivary glands of Bordas) are the ones
that correspond with the ordinary saliv-
ary glands of other insects. They are
described by Schiemenz (1883) as being
formed inside of the outer covering
(*tunica propria*) of the first part of the
larval silk glands. But it is of common
occurrence in insects that the salivary
glands are temporarily specialized as silk-
producing organs in the larva. In the
adult worker these glands lie in the vent-
ral part of the anterior half of the thorax.
The two are widely separated anteriorly,
but their posterior ends are contiguous.
Each consists of a mass of small, many-
branched, glandular tubes opening into
several collecting ducts which empty into a
sac near the anterior end of the
gland. From each of these reservoirs,
then, a duct runs forward and fuses with
the one from the opposite side just within
the foramen magnum of the head. The
common duct thus formed turns downward
within the head, receiving the two ducts
of the postcerebral salivary glands and
then enters the base of the mentum, to
open as already described on the upper
side of the ligula at the root of the glossa
and between the bases of the two para-
glossæ. The secretion of the thoracic
glands is said also to be weakly alkaline.
Therefore the entire salivary fluid poured
out upon the labium is alkaline, and it
must be designed to act especially upon
the food taken through the proboscis.