von dem unteren fast ganz abgeschnürt wird und sich mit dem letzteren nur hinten gleichsam durch eine Brücke verbindet (vgl. Fig. 3). Bei den Corviden stellt die Mundwinkeldrüse eine größere Entwicklung als bei den Gallinaceen oder Columbinen dar, erstreckt sich aber nur bis zur Mitte des Jochbogens oder ein wenig mehr nach hinten.

Was die mikroskopische Structur der Speicheldrüsen anlangt, so kann ich mich im Ganzen der von Batelli und Giacomini gegebenen Darstellung anschließen und will nur noch darauf hinweisen,

Fig. 2.

Fig. 3.

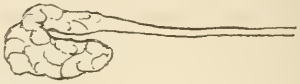


Fig. 2. Glandula angularis oris von *Pinicola enucleator.*
Fig. 3. Glandula angularis oris von *Loxia curvirostra.*

daß gewisse sehr zusammengesetzte Formen der Drüsen (z. B. die Glandula inframaxillaris bei *Loxia*) einen Übergang vom tubulösen zum acinösen Bau darstellen. Einzelne Schläuche, deren Wandung einen zusammengesetzten wabigen Bau zeigt, besitzen hier besondere vom Cylinderepithel ausgekleidete Ausführcanäle, die in größere Ausführungsgänge einmünden.

Dem Character des Secretes nach scheinen sämmtliche Speicheldrüsen der Vögel echte Schleimdrüsen zu sein. Das Secret, welches die Höhle der Drüse ausfüllt, besteht aus lauter schleimig entarteten Zellen.

St. Petersburg, $\frac{26.\ \text{April}}{8.\ \text{Mai}}$ 1892.

II. Mittheilungen aus Museen, Instituten etc.

1. On Some Methods of Arranging Biological Specimens.

By Dr. J. Dewitz.

eingeg. 1. Mai 1892.

When during my service at the Zoological Museum of the University of Berlin a large collection of biological specimens had to be prepared for the sake of public instruction, the department of worms was entrusted to my care. In this connection I devised some novel methods of arranging the specimens in question which I shall describe somewhat detailed in the following paper.

1) Large anatomical specimens or whole animals can usually be preserved without further preparation in large glass jars filled with

alcohol. But if their conspicuity is deemed desirable, they are pasted or attached in some other way to a glass plate which is placed into a square glass jar filled with alcohol.

This method, however, leaves one half of the jar unused, as the plate carrying the specimen passes through the middle of the vessel. Therefore it will be advantageous to find out a method in which the

Fig. 1.

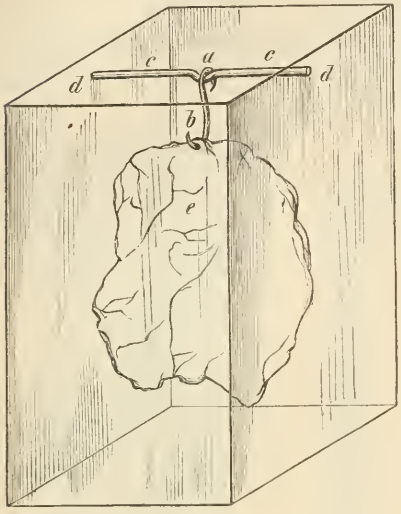
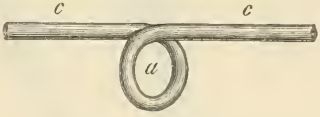


Fig. 2.

Fig. 3.

Fig. 4.



specimen is suspended in the middle of the fluid and the jar is of the same size as the specimen.

This object is readily attained by selecting a vessel exactly proportionate to the size of the specimen (Fig. 1), and suspending the object (Fig. 1 *e*) from a double glass hook (Fig. 2). One end of the

Fig. 5.

Fig. 6.

hook is attached to the anterior part of the object (Fig. 1, 2 *b*), the other (Fig. 1, 2 *a*) to a glass rod (Fig. 1 *c*) arranged as follows:

A glass rod extending from one of the small sides of the jar to the other (Fig. 1 *d*) has in its middle a notch or loop (Fig. 3, 4 *a*) which

is intended to sustain the free end of the double hook (Fig. 1, 2 *a*). In order to attach the rod in its turn to the small sides of the jar (Fig. 1 *d*), a small glass strip (Fig. 6) having a semicircular hole (Fig. 6 *d*) is pasted by silicate of sodium to the interior of either side and the two ends of the rod are put in the holes (Fig. 1 *d*). But we can also attach the ends of the rod by placing them into small grooves which are cut into the interior of the small sides and proceed vertically from the upper edge of the jar (Fig. 5 *d*). Both the hook and the rod can be improvised by the blowpipe.

2) As to the arrangement of compact specimens a glass rod provided with a peculiar arrangement (Fig. 7, 8) is made to pass through

Fig. 7.

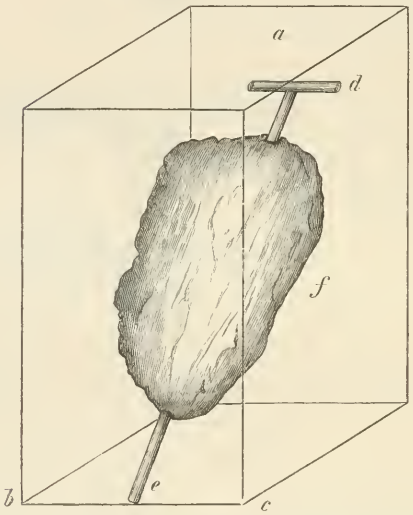
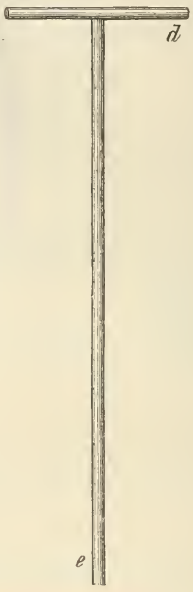


Fig. 8.



the object (*f*). The anterior end of the rod (*d*) possesses a small vertical beam and the entire arrangement represents the figure of a Greek T or of a crutch. This T-shaped rod must be placed into a square jar of a corresponding size. The posterior end (*e*) is fixed to one of the interior borders (*bc*) of the vessel, while the anterior end or the vertical beam mentioned resting on the opposite wall (*a*) is pasted to this point. After fixing the T-shaped rod, the vessel is filled with alcohol.

This rod can also be made by the blowpipe.

3) Minute animals, such as polypes, small kinds of worms, etc. kept in alcohol, can by this arrangement be brought into a most favorable representation in a collection destined for public instruction.

A small glass tube (Fig. 9) is pasted to a narrow glass plate having the exact dimensions of a cylindrical glass jar. The animal in question is put into the tube and the glass plate is placed into the jar and the latter filled with alcohol. The jar is now closed by a glass stopper.

Such cylindrical vessels are sold by Warmbrunn, Quilitz & Co., manufacturers of glass, Berlin, Germany, C., Rosenthalerstraße 40.

In such cases in which we have to deal with animals of very minute size, it may be well to bring them into a thin glass tube of proportionate size (Fig. 10). Both ends of the tube drawn out by a low

Fig. 9.

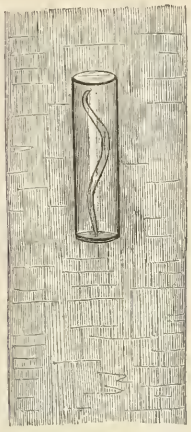


Fig. 10.

Fig. 11.

blowpipe flame are broken off so as to measure just a few millimeters. In order to attach the tube prepared is this manner to a narrow glass plate, we paste a small and narrow strip of parchment paper over either end of the tube. But we can also use fine sheats of gelatin, cut off a tiny strip of this substance and place it in damp condition across either end of the tube. After some minutes the gelatin solidifies and the glass plate carrying the tube can be placed into a cylindrical jar. As the ends of the tube are open, the alcohol is forced to penetrate the interior of the tube and fills the latter completely.

4) Animals of a middle size are usually pasted to a glass plate. In specimens of great value, however, this method is ineligible, because the animals thus arranged might become injured and unfit to serve the cause of instruction. In order to avoid this risk I prepared by means of the blowpipe small arches (Fig. 12) from a glass rod of

a vertical section of about 1 or 2 mm. The ends of these arches are cut off as far as necessary by a file or sharp steel-knife and the arches being put across the body of the animal at different points (Fig. 11 *s*) are pasted, on their ends (Fig. 12 *a*), to a glass plate.

The arrangement can be made fare more elegant by boring corresponding holes into the surface of the plate and putting the ends of the arches into them. Besides it would be very advantageous to heat the ends of the arches in a flame and to press them when melted against a plate of iron, in consequence of which the ends of the arches become flat (Fig. 13 *a*) and every arch has two feet. The latter can easier be pasted to the glass plate than the ends when not enlarged. Finally we could take thin glass rings (Fig. 14) of different sizes which are

Fig. 12.

Fig. 13.

Fig. 14.

ground off on one side (Fig. 14 *a*). The rings thus arranged are designed to be put on different parts of the body of the animal and the plained sides of the rings are to be pasted to the glass plate.

5) In conclusion I shall add a method of arranging specimens without alcohol or any other preservative fluid.

Many specimens are of such small a size as to be visible to the naked eye only in close proximity. If these specimens, therefore, are placed into glass cases, they preclude inspection. Hence the object is dyed to saturation by carmine and treated afterwards like an ordinary microscopical specimen, t. i., it is brought seriatim in absolute alcohol, xylol or turpentine, and finally closed permanently by Canada balsam. But instead of a glas strip intended to serve as the object glass we have to take a large plate of milky glass. The specimen thus prepared can be seen from a larger distance, as red and white are good contrasts. This arrangement allows even the inspection of the minute trichina taken from the intestines.

The plate of milky glass can be placed on an easel into a glass case.

Paris, April 15th, 1892.

2. Zoological Society of London.

14th June, 1892. — The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, 1892,