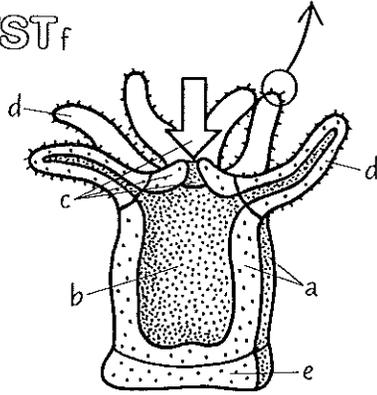
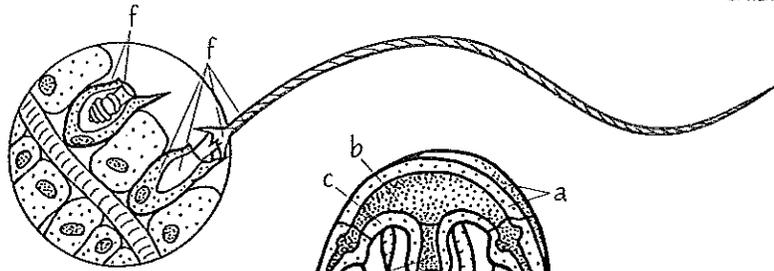
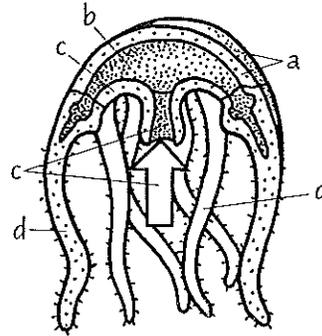


POLYPS

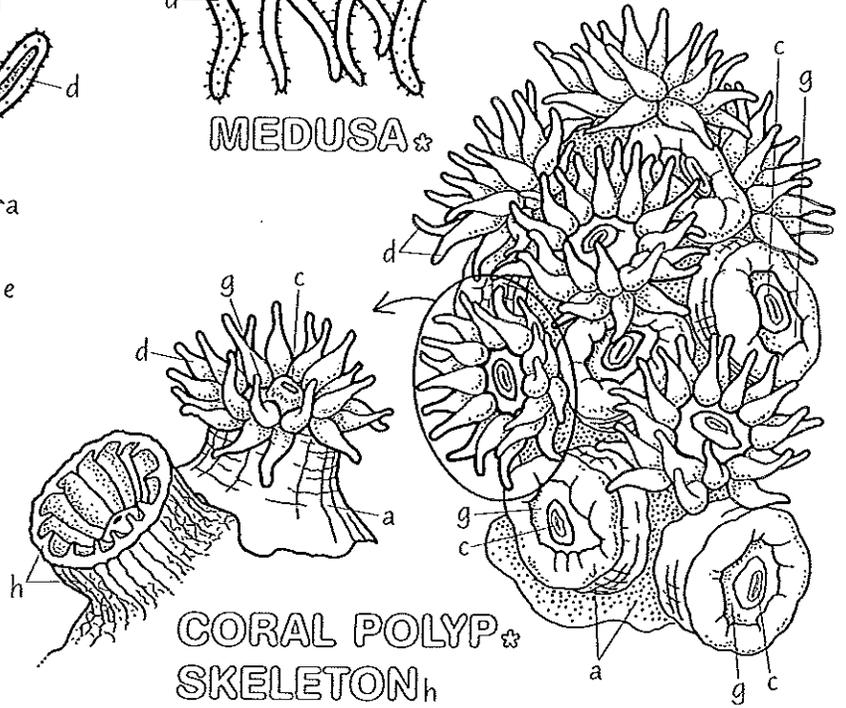
BODY_a
COELENTERON_b
MOUTH_c
TENTACLE_d
PEDAL DISC_e
NEMATOCYST_f



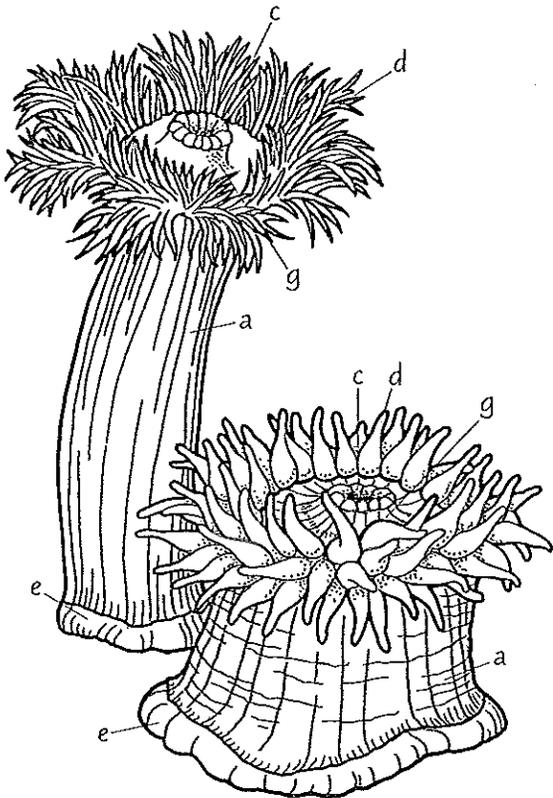
POLYP*



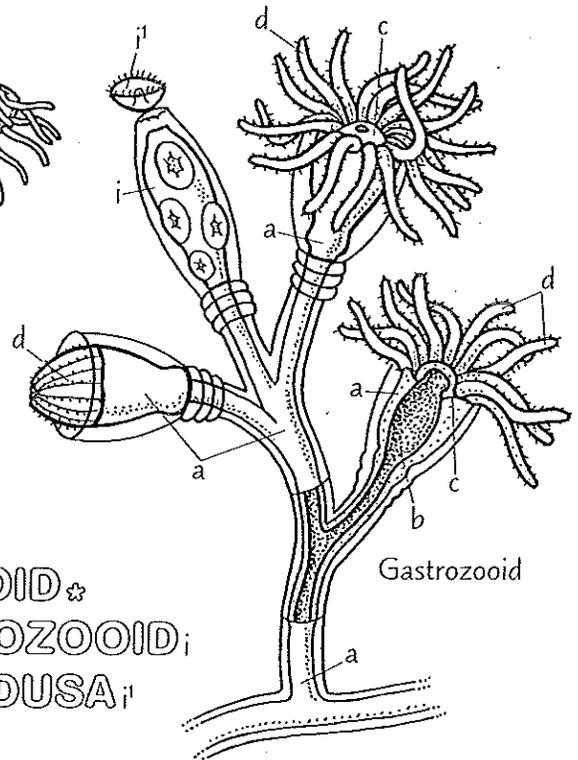
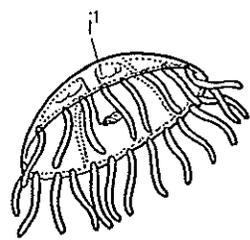
MEDUSA*



CORAL POLYP*
SKELETON_h



SEA ANEMONE*
ORAL DISC_g



HYDROID*
GONOOZOID_i
MEDUSA_i

Gastrozooid

CNIDARIAN DIVERSITY: POLYPS

The phylum Cnidaria is a group of animals with a very simple, functional body structure. The digestive tract of the cnidarians lacks a second, or anal, opening and consists only of a mouth and a saclike cavity (the coelenteron or gastrovascular cavity).

Color the drawings which compare the structure of the polyp and the medusa, using a light color for the body.

There are two basic cnidarian body forms: the free-swimming medusa and the sessile polyp. Both types have a radially symmetrical *body* organization (body units arranged in a circle, Plate 39) with the *coelenteron* located in the center. The basic difference between the polyp and medusa is this: the medusa floats free of the substratum, with its *mouth* and *tentacles* facing downward; the polyp is attached by its *pedal disc* to the substratum, with its mouth and tentacles facing upward.

Now color the enlargement of the nematocysts.

The cnidarian mouth is surrounded by a ring of tentacles where highly specialized cells are located. These cells contain *nematocysts*—small stinging, whiplike structures that are discharged from the cells in response to outside chemical or mechanical stimuli or direct nerve stimulus.

When potential prey make contact with the tentacles of the polyp, the nematocyst-bearing cells are stimulated, causing the nematocyst to rapidly uncoil and, in some cases, penetrate the victim. Many nematocysts contain a venomous liquid that subdues the prey; some types of nematocysts are barbed or sticky, and some types actually wrap around the prey. When the prey is subdued, the tentacles maneuver it into the mouth of the polyp, and it is digested in the coelenteron. Undigested parts are regurgitated back out of the mouth.

Both polyp and medusa are known as passive predators: the polyp waits for prey to wander into its deadly tentacles, and the medusa trails its tentacles in the water as it floats along, catching its food.

Now color the different polyp types, beginning with the sea anemones, then the coral polyp, and finally, the hydroid. The non-living covering around the *Obelia* colony is transparent and should not be colored.

The familiar sea anemone of rocky shores is a large, single polyp. Its body is basically cylindrical in shape, with an *oral disc* at the top end, and a pedal disc anchoring the anemone to a solid substratum at the other end. Some species use special sticky nematocysts, combined with mucous secretions, to ensure a tight seal against the substratum. Sea anemones are generally attached to a solid surface, although some species prefer a burrowing existence in sand or mud, and others attach themselves to the shells of other animals. Anemones vary in size from a few centimeters in diameter to animals whose oral discs are 30 cm (12 in) or more in diameter.

The squat anemone in the illustration is a giant green sea anemone of Pacific coast tidepools. This anemone grows to 25 cm (10 in) or more in diameter, and is capable of compressing its pale green body to just a few centimeters in height. It feeds on nearly any organisms that are washed or swim unaware into its green tentacles.

The long-columned, white-plumed sea anemone in the illustration may reach a height of 30 cm (12 in), and is usually found subtidally in water 20 meters (65 ft) or deeper. Its numerous fine tentacles reach into the current to capture small organisms carried by the moving water.

The coral polyp is similar in structure to the sea anemone but is usually much smaller (less than 1 cm in diameter). The individual polyps of a coral colony are connected by a continuous layer of body tissue. Each coral polyp possesses a calcium carbonate *skeleton* into which the entire polyp can contract. The cup-shaped skeletons are secreted by the polyp's epidermis, and are the basic structural units that form the tropical coral reefs. Reef corals are found in colonies; these can grow to massive sizes in a remarkable variety of colors, shapes, and forms (Plate 12).

The polyps of marine hydroids occur generally in colonies as well, forming branched structures that may be attached to various substrata. An individual polyp is usually quite small, less than a centimeter, and is specialized for a particular function: feeding or reproduction. Illustrated here in the marine hydroid *Obelia* are feeding polyps, called gastrozooids, each of which have a mouth surrounded by tentacles, and reproductive polyps called gonozooids. Small medusae are produced asexually on the gonozooids and then swim away.