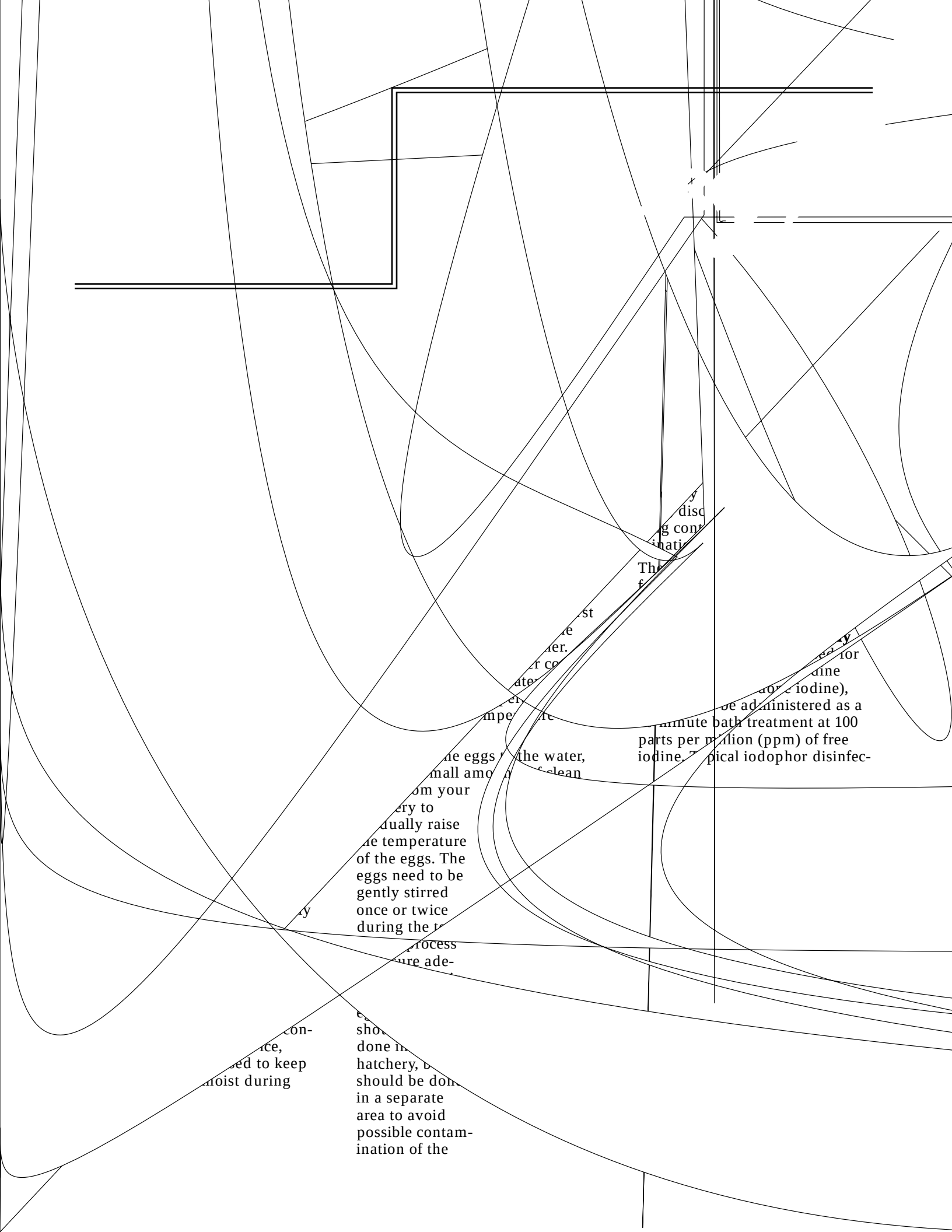

parts per million (ppm) of free iodine. Typical iodophor disinfec-

eggs from your
small amount of clean
hatchery to
gradually raise
the temperature
of the eggs. The
eggs need to be
gently stirred
once or twice
during the process
to ensure ade-

con-
ace,
ed to keep
moist during

done in a separate
hatchery, but
should be done
in a separate
area to avoid
possible contam-
ination of the

tants such as Argentyne® or Betadine® contain 1.0 percent (10,000 ppm) available iodine. A 100 ppm iodine concentration is equivalent to a 1:100 dilution of "jug strength" solution (use 38 milliliters, or 1.28 fluid ounces, or 7.5 teaspoons per gallon of water).

Other iodophors such as Wescodyne® contain 1.6 percent or greater available iodine and require more dilution (use only 23.7 ml, 0.8 fluid ounces, or 4.5 teaspoons per gallon of water). **Be sure of the concentration of the compound you are using.** In poorly buffered (alkalinity < 35 ppm) or acidic waters, you should add sodium bicarbonate at 0.5 grams (approximately 0.5 level teaspoons) per gallon of water to buffer the water before disinfecting. Gently mix eggs and disinfectant to ensure that all egg surfaces are treated. Rinse the eggs with clean water to remove iodine residue before putting them into incubators. The eggs may now be counted and placed in incubators for hatching.

Egg enumeration

Many different methods can be used to count eyed trout eggs, including measuring volume, displacement or weight; counting the number of eggs in a V-trough (Von Bayer method); or using electronic egg counters. Most trout farmers use the displacement method to estimate egg volume because it is relatively fast, simple, accurate, and does not require much equipment. The numbers of eggs per unit of volume can be estimated by counting 50 eggs into 25 ml of water in a 50-ml graduated cylinder or burette, and noting the increase in volume. Repeat the process three to five times and calculate the average displacement. The number of eggs per milliliter or per fluid ounce can then be estimated using Table 1.

Egg incubation

Three types of incubator systems are commonly used: **"California" trays; vertical tray or "Heath" incubators; and upwelling incubators** (Fig. 2). California trays

"Calif1rnia"3.0 6.0 8.

California trays are used primarily when very large numbers of eggs are being incubated and the water supply is not limited. The sac fry and egg shells are difficult to separate in these trays, and eggs are often removed from these trays before hatching begins. California trays are rarely used in the South.

Vertical tray incubators are essentially California trays arranged in stacks. They require relatively little floor space or water to incubate large numbers of eggs. The water is re-aerated as it flows through the stack of trays. The recommended water flow in vertical tray incubators is 4 to 6 gallons per minute (gpm). Vertical tray incubators require that the egg shells be manually removed after hatching, but the sac fry can be kept in the trays until swim-up at about 10 to 14 days after hatching. To prevent smothering, trout eggs should be placed no more than two to three layers deep in vertical incubator trays.

Upwelling incubators maintain adequate circulation by using the water flow to partially suspend the eggs. These incubators should contain no more than two-thirds of the total incubator volume in eggs when operating. The flow rate in upwelling units should be adjusted so that eggs are lifted approximately 50 percent of their static depth (*i.e.*, if eggs are 6 inches deep with water off, they should be approximately 9 inches deep with water on). Upwelling incubators are available in several different models, or can easily be constructed from PVC, fiberglass or other materials. All types of egg incubators should be covered to protect developing embryos from direct light. To accomplish this when using vertical trays, do not put eggs in the top tray.