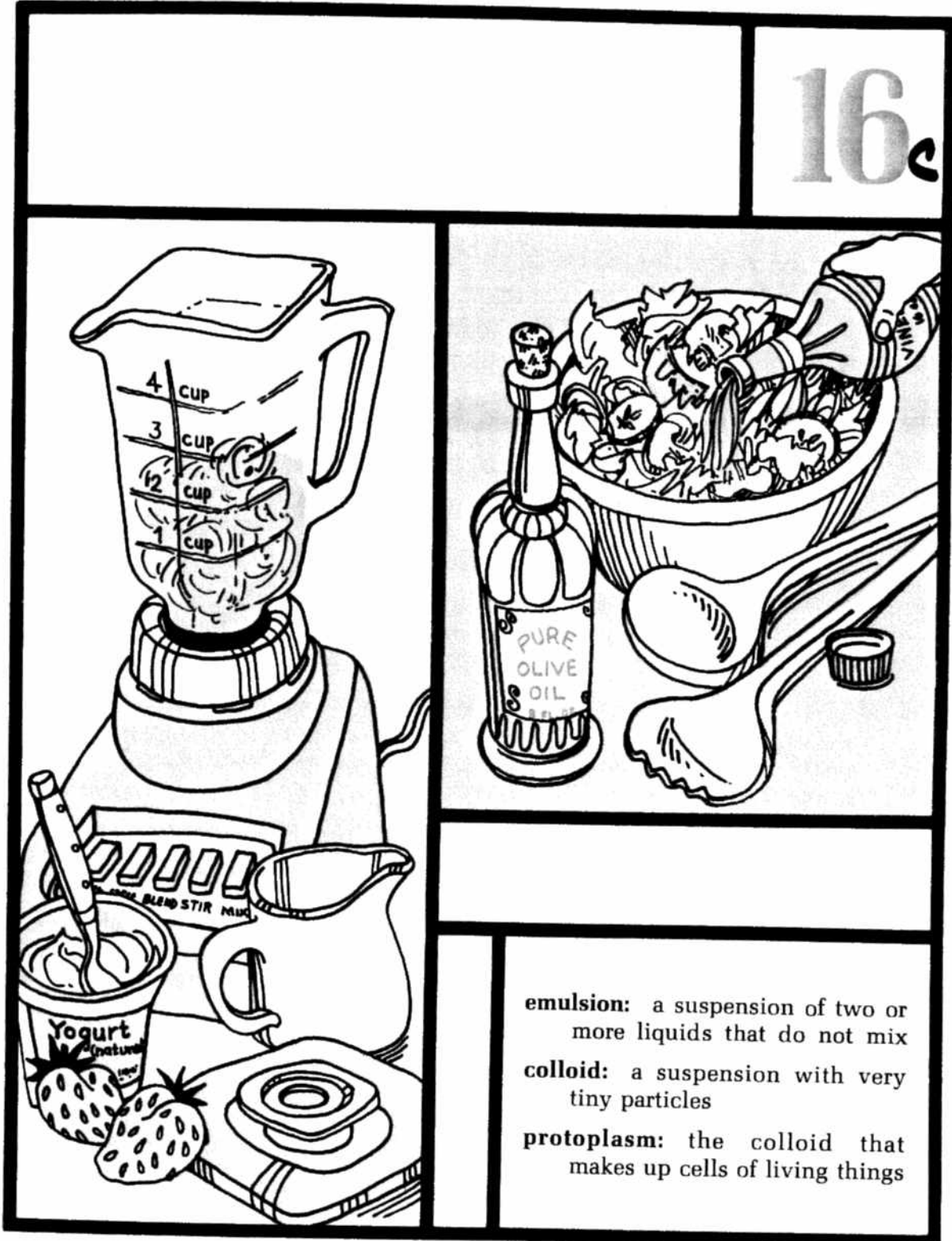


WHAT ARE EMULSIONS AND COLLOIDS?

16c



emulsion: a suspension of two or more liquids that do not mix

colloid: a suspension with very tiny particles

protoplasm: the colloid that makes up cells of living things

AIM | What are emulsions and 16 | colloids?

You have seen muddy water settling out. Muddy water is a suspension of solids in a liquid. But suspensions can also be made up of *all liquids*.

A suspension made of all liquids is called an *emulsion* [i MUL shun].

The liquids of an emulsion do not mix evenly. They are *immiscible*. They separate into layers.

There are many kinds of emulsions. Oil and water form a common emulsion.

A *colloid* [KOLL oid] is still another kind of suspension. The particles suspended in a colloid are very small. They are much smaller than the particles of a regular suspension. But they are larger than molecules.

Colloid particles are very light in weight. They do not settle by themselves. You can make them settle by rapid spinning.

Most colloids look like liquid solutions—transparent and evenly mixed. You cannot see the suspended particles easily. But with a beam of light, the tiny particles show up in the Tyndall test.

Colloids cannot be separated with regular filter paper. The particles are too small.

Glue and gelatin are colloids everyone knows. The most important colloid is *protoplasm* [PRO tuh plazm]. Protoplasm is the living material that makes up cells.

EXPERIMENTING WITH AN EMULSION

TRY THIS!



Figure A

Pour some oil and water into a jar.



Figure B

Shake it very well.

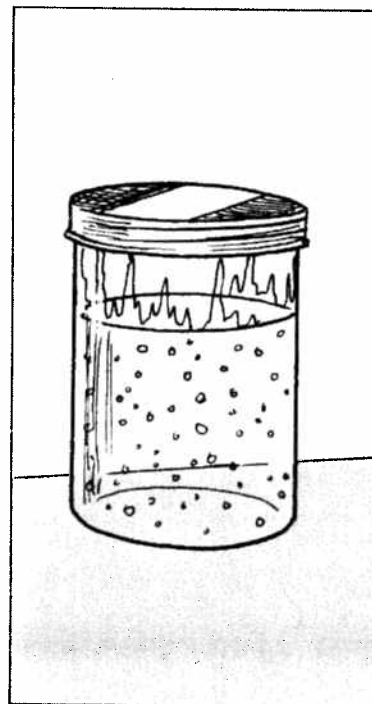
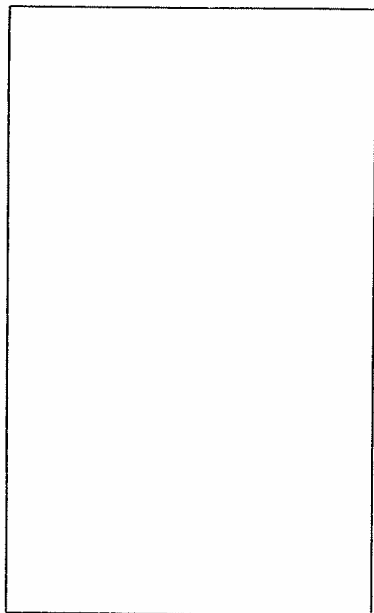


Figure C

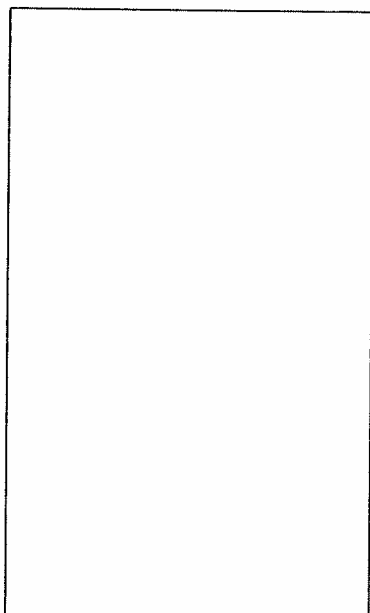
*Put the jar on a table.
Observe what happens.*

Draw pictures of what you see. . .

after 30 seconds



after two minutes



after 10 minutes

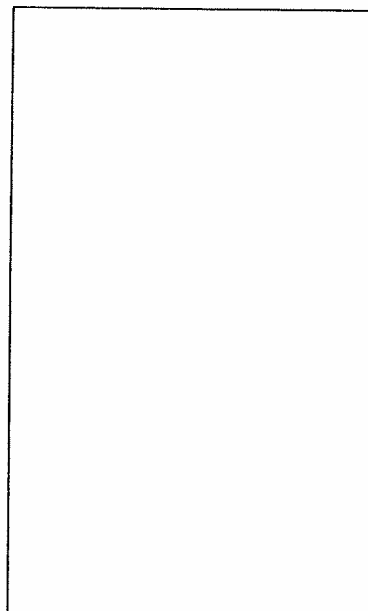


Figure D

1. The oil and water _____ mix evenly.
did, did not
2. The oil and water _____ separate.
did, did not
3. Oil and water _____ miscible.
are, are not
4. Oil and water make a _____.
solution, suspension
5. Oil and water is a special kind of suspension called _____.
a colloid, an emulsion

TRUE OR FALSE Write T on the line next to the number if the sentence is true.
Write F if the sentence is false.

-
1. _____ An emulsion is a mixture.
 2. _____ An emulsion is a suspension.
 3. _____ An emulsion has solid particles.
 4. _____ An emulsion has only liquids.
 5. _____ The liquids of an emulsion are miscible.
 6. _____ Colloid particles are the size of molecules.
 7. _____ Colloid particles settle by themselves.
 8. _____ Colloids look like solutions.
 9. _____ Colloid particles show the Tyndall effect.
 10. _____ Colloid particles pass through regular filter paper.

COLLOID OR SOLUTION?

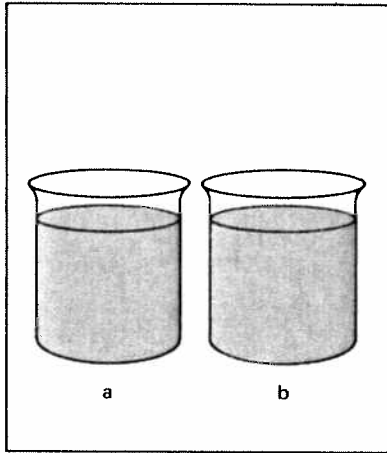


Figure E

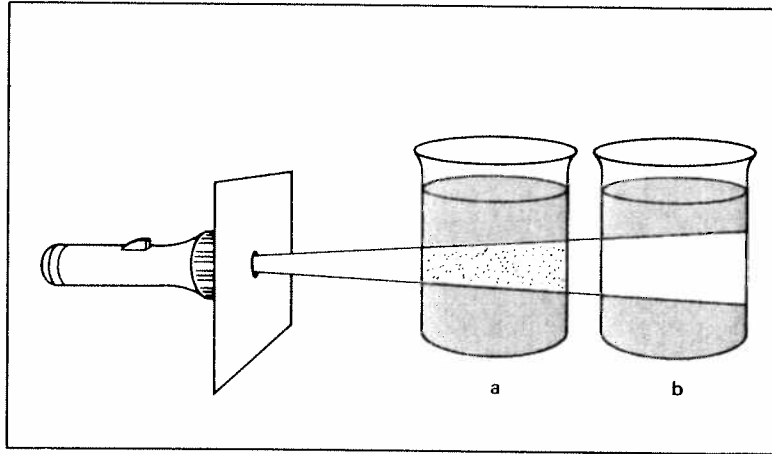


Figure F

One of these mixtures is a liquid solution. The other is a colloid.

They both look the same until we shine a beam of light through them.

1. Beaker _____ shows the Tyndall effect.
a, b
2. Beaker _____ does not show the Tyndall effect.
a, b
3. The liquid solution is in beaker _____.
a, b
4. The colloid is in beaker _____.
a, b
5. _____ particles are the size of molecules.
Colloid, Liquid solution
6. _____ particles are larger than molecules.
Colloid, Liquid solution
7. Which particles will settle by themselves?
a) colloid b) liquid solution c) neither _____
8. Which particles will settle by spinning?
a) colloid b) liquid solution c) neither _____
9. Which particles can be separated with regular filter paper?
a) colloid b) liquid solution c) neither _____
10. A colloid looks like a _____.
liquid solution, suspension

MATCHING Match the two lists. Write the correct letter on the line next to each number.

- | | |
|---------------------------------|-------------------------------------|
| 1. _____ colloid | a) liquids that separate |
| 2. _____ emulsion | b) have parts the size of molecules |
| 3. _____ colloids and emulsions | c) shows Tyndall effect |
| 4. _____ liquid solutions | d) cannot separate colloids |
| 5. _____ regular filter paper | e) suspensions |

THROW ONE OUT In each of the following sets of terms, one of the terms does not belong. Circle that term.

- miscible immiscible emulsion
- oil and water emulsion salt water
- oil and water liquid solution suspension
- only liquids colloid Tyndall effect
- colloid size of molecules glue

FIND THE HIDDEN WORD *COLLOID* has a total of seven letters. If we take parts of this word or move some of the letters around, they make up other words. Some of the words you have learned in this book. How many of these hidden words in *COLLOID* can you find.

COLLOID

- cover to a jar (3 letters) _____
- having very little heat (4 letters) _____
- not warm, but not too cold (4 letters) _____
- liquid that does not mix with water (3 letters) _____
- sick (3 letters) _____