

iophenoxic acid, an agent used to take X-ray pictures of gall bladders. And babies born several years after their mothers had ingested this dye had extremely high levels of protein bound iodine, although they did not have any clinical manifestation of hyperthyroidism.

These agents may lie dormant in fat depots for many years, apparently innocuous but in curious contradiction to the usual tendency of the organism to rid itself of foreign substances.

One might ask what other drugs are stored for prolonged periods. Do they exert adverse effects? One might summarize the complex problem of drug interactions with this final diagram. This is a Venn diagram that I think summarizes the total picture.

It is a little hard to see, but the point can be made.

Here we have drug A at the top, drug B at the bottom. We have an enzyme system as it is involved in the metabolism of drug A and drug B, and finally we have the organ that is going to respond, the organ we are trying to treat with this combination. It is not just a simple matter of two circles, drug A and drug B acting upon the end organ. They are involved quite intimately with each other, with the enzyme system and with the end organ. And one could add on a whole sequence of circles that would intersect at various levels if you wanted to add enzymes B and C which may be involved in the interaction. And all organs of the body are going to be involved. The physician is dealing with this, the middle of this complex situation, and therefore when drugs are being given it is not just a simple matter. It can be a rather complex business.

WHAT DOES ALL THIS MEAN?

Now that we have seen something of the broad introductory area of drug-induced diseases and drug interactions, a logical question might be, what will be the ultimate effect of these new therapeutic endeavors? And the answer must lie somewhere in the interface between philosophy and physiology.

The evolution of man is a continuing source of wonderment to students of physiology. Through the centuries of evolutionary metamorphosis, each challenge thrown at man by his environment was met by gradual genetic modulation that enabled him to survive. The species have arrived at the current state of advanced physiologic capability, admirably adapted to its environment.

We can dig diamonds at 9,000 feet in 123 degree heat and 100 percent humidity; we can spend a lifetime mining tin at 14,900 feet elevation; we can hike across the pole, and we can float weightless for 14 days in space.

But in the past few decades we have devised methods unprecedented in the entire previous experience of the species to challenge the adaptability of the organism. We have designed molecules unique to human physiology and insinuated them into blood and tissue by techniques that are also unique physiologic experiences.

Intravenous, intramuscular and subcutaneous injections, positive pressure inhalation, rectal administration, and agents facilitate passage of molecules through intact skin—all are unfamiliar modes of gaining access to the body.

Add radiation—by X-ray, beta ray, gamma ray and neutron, plus oxygen under greatly increased barometric pressure, and some other