Politics, Religion & Economics in the Price System

How perceptions are controlled and manipulated and why.



By Skip R. Sievert



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#### **Preface**

In a creation epic written in the early second millennium B.C. mankind is created this way; "Blood I will mass and cause bones to be. I will establish a savage; "man" shall be his name. Verily, savage man I will create. He shall be charged with the service of the gods that they might be at ease! The ways of the gods I will artfully alter. Though alike revered, into two (groups) they shall be divided."

Mankind was created from the blood of a rebel god that the other gods killed to free themselves.

After Ea had created mankind and imposed upon it the service of the gods; these newly created humans said this, "now, O Lord, Thou who hast caused our deliverance, what shall be our homage to thee? Let us build a shrine whose name shall be called 'Lo, a chamber for our nightly rest'; Let us repose in it! Let us build a throne, a recess for his abode! "Like that of lofty Babylon, whose buildings you have requested they set up in it an abode for Marduk, Enlil and Ea. These gods said, "Let our sovereignty be surpassing; having no rival. May we shepherd the black-headed ones, our creatures. To the end of days, without forgetting, let them acclaim our ways. We order the black-headed to revere us. May the subjects ever bear in mind their god, and may they at His word pay heed to the goddess; may food offerings be borne for their gods and goddesses. Without fail let them support their gods! Their lands let them improve, build their shrines. Let the black-headed wait on their gods."

Well, there you have it – the origin of what passes for the most part of western religious tradition.

Earlier in the myth the phrase; "O Lord, spare the life of him who trusts thee, but pour out the life of the god who seized evil."

This tale from the Old Babylonian period was the most significant expression of religious literature of Mesopotamia...

I'll start my book here as I think this is a good beginning place to cast some light on the nature of humans.

This book will deal with the so called "conventional approach" that has been applied so ruthlessly for such a long time. I wish to point out some alternative ways to begin anew.

I mention Technocracy, which was a significant social movement in the mid-twentieth century, throughout my text. As an active member in this organization I wish to bring new attention to the amazingly creative blueprint for a new "type" of society, the original members of this group hoped would come about.

I would like to be known though as not only an apologist for this group to which I belong, but as someone who in my own way was able to find out for myself certain questions which lie at the heart of life.

Just as the leaders of ancient Mesopotamia cleverly tricked their followers to obey them as god's representatives on earth, our current leaders employ the same methods. The creation of the false concepts of Good and Evil was and is the instrument of choice then as now, to shame and control.

This volume contains three pamphlets published as chapters two, three and four. Anyone reading this may copy any of my material and in fact I would encourage they do so, and pass this information on by posting, (net) blogging or E-mailing friends, strangers, or others. Copies can also be put easily under windshield wipers on cars; I know this from experience.

The chapter called "I am the price system" was written originally in the 1940s by a member of Technocracy and altered in various ways by other members, including myself. Its core of ideas has remained the same and as an instrument of "telling the truth". It lays out in detail the false path our society stumbles down.

The chapter on "Adage and Aphorism" is a collection of things that I have saved over the years, mostly they are by Kafka and Gurdjieff with a few things by a certain Dean D. Cameron, a fellow member of Technocracy.

So according to this old myth of creation — one of the first, although it's a toss-up between Egypt and Mesopotamia, when the "first" was committed to writing and circulated. We have a group of gods who turn on one from their group; they then "bound him, holding him before Ea. They imposed on him his guilt and severed his blood vessels. Out of his blood they fashioned mankind. After Ea, the "Wise" had created mankind, He imposed the service and set free the gods.

Much could be said about this myth which was widely held at that time, as being an accurate account. I will suffice it to say that throughout history we have been shamelessly bamboozled by our "Leaders" to believe almost any old non-sense.

Sometimes it would seem that the bigger the lie, the more it entrances and enthralls our sensibilities.

I'll close this preface by saying the ancients also had some good advice for us, as in the epic of Gilgamesh.

Thou, Gilgamesh, Let full be thy belly,
Of each day make thou a feast of rejoicing-,
Day and night dance thou and play!
Let thy garments be sparkling fresh,
Thy head be washed; bathe thou in water.
Pay heed to the little one that holds on to thy hand,
Let thy spouse delight in thy bosom!
For this is the task of mankind!

Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers, and architects that became known in 1920 as the Technical Alliance—a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934 Howard Scott, Director-In-Chief, made his first continental lecture tour which laid the foundation of the present Continent - wide membership organization. Since that time Technocracy has consistently maintained activities which are directed toward bringing its social proposals to the attention of the public.

### **CHAPTER 2**

Peak Oil and M. King
Hubbert
A Co-founder of
Technocracy
An Alternative Culture for
North America

## Peak Oil and M. King Hubbert A Co-founder of Technocracy An Alternative Culture for North America

So-called "Peak Oil "groups are usually "Covers" for what are known as Libertarian groups, a backward bunch of people usually with little regard for the environment. They glorify money as a concept. In the future, they think somehow they can institute some purer form of "Democracy", based on a gold-backed system.

The current crop of these **price system flunkies**, are making waves in Vermont right now. The essayist James Kunstler and Michael Ruppert, involved in the **From The Wilderness Group**, - a so-called non-profit group - are agitating for a break away state. In their mock-heroic way they present themselves as great revolutionaries, warning the public against fascist, socialist, authoritarian corporate rule. The reality of our situation is much different, and these people, and their groups are merely, mostly, unconscious pawns, with virtually no original ideas.

At this point in history with excess population and dwindling resources, there is one group that has addressed our most pressing problems, that group is Technocracy, which advocates the abolition of our current money based – commodity valuation system. Since 1933, we have advocated using energy, the amount of energy (BTUs, therms, kilowatts) as a measurement for doing business. Energy is a real thing, which can be used to measure our remaining resources, whereas "money" a throwback abstraction, to a class, or caste based system, insures our destruction, as it measures

nothing real, only an abstract concept called debt, an excellent method to enslave and control actions of the populace and a guarantee, that the mass of people, leaders included, always make the wrong choices in critical matters, because all choices are based on an expanding economy, or feathering ones nest, with more money. So we're using something unreal to make our most important decisions.

If every citizen of this area had an energy debit card – much like a bank card, minus the money – we would have an energy accounting system, that way we would know realistically what we have to work with – instead of destroying the rest of our environment, for one reason – sadly to make more money. This concept could be put to use fairly easily. Each citizen would get more than adequate allocation of resources. Instead of "buying" something, you would get the important things you need freely. Our political system would give way to a technically based, functional society, using a meritocracy based, business structure, minus the money base of decision making.

Our current system, the "**Price System**" is a barbaric throwback, based on conspicuous consumption, and the status of a class system. Money or lack of it determines most of our actions.

With Technocracy instead of buying something, such as food, shelter, etc., you would be energy debited these things as a right of citizenship. This concept was first introduced in 1933 by a group of scientists, engineers, social scientists, and others known as Technocracy, one of the most creative groups of people ever to band together. One of our founders, M. King Hubbert, the famous geologist/scientist is often quoted by a current crop of know nothings, Matthew Simmons, James Kunstler, Noam Chomsky – all people reputed to have keen intellects, who know about "Peak

Oil" without knowing much about who came up with the concept, and what else, this brilliant man talked about. It's a pity the current crop of "intellectuals" can't do a little research, their nightmare vision of the world under a corporate, one world fascist, socialist collapsed state, doesn't have to come about, if we change our way of doing business.

Now I'll tell you a little secret, Kunstler, Chomsky, Seymore Hearse, From the Wilderness Group, Amy Goodman, Bill Moyers all the darlings of the pseudo- intellectuals are doing what they're doing for money, so the last thing they really want is real change – or change is OK, as long as they maintain their cherished illusions – that is maintain they're bank accounts – and the status and prestige that goes along with being honored in a misinformed brain washed society. So in their own way, these people are merely mouthpieces for the powers that be. They don't get at the core problem that being our **Price System** which makes our caste, or class system, and ensures our decisions are based on money – something that doesn't truly measure anything real.

If you give a person enough money, you can get them to do almost anything you like. This is the sad commentary of where we're at as a culture.

Our system is so entrenched in the populace, that you can say as a culture people don't understand, or can't get at the real issues anymore. You can say accurately in 2006, in North America, that most people are brainwashed, inculcated or hypnotized with a bizarre assortment of lies and myths they believe.

With a system as we have, the real issues are never addressed. How do we go forward without destroying our environment? How do you create a just society, which is creative

and vital and humanitarian? How do we get off the wheel of destruction that money spins? Is real freedom so hard a concept?

Humans work the best in a business structure. There's something in our essence which loves to co-operate, and also tests us competitively in a group. A natural meritocracy, occurs. We admire people who know more, or have an interesting artistic vision. Some people have the ability to explain complex things, their motivation may be simply to improve, and enhance society.

A business structure doesn't have to be tied into a pricesystem. In **Technocracy**, the promise of such a simple thing as recreation is realized. During a 20-year period of work there's lots of time for recreation, also education, pursuing hobbies, etc., work is done by a citizen, with the underlying intent of bettering society, not as now, the intent being to make more money. Wouldn't it be an honor to be useful in a more rational society, where you know the motivation isn't greed; our current motivation.

Many of our jobs we think important now, would no longer exist, Banking, Insurance Companies, Corporations – are no longer needed in a just reasonable society.

Let me make this point again, there is an alternative to our destruction, which is assured, in our current "**Price System**".

Please realize that what is passed off as "Alternative" is not alternative. The reality is this – either we adopt a system that makes sense, or we will destroy ourselves, in a very desultory fashion, in the not too distant future...

Please explore the ideas within Technocracy, Technocracyinc.org

Something other than Technocracy would be fine, as long as it incorporates, the conceptual stance we have taken. We are an Educational/Research group. This article is an introduction, an intimation of our group. Our Mailing Address is:

Continental Head Quarters or C.H.Q., Technocracy Inc. 2475 Harksell Road Ferndale, WA 98248

We publish a quarterly at cost of production. We have free information available if requested.

We don't care if you are a Christian, Muslim, Hindu etc. Your beliefs are your own, atheists included. We are desirous of eliminating some basic flaws from society, the most basic being **The Price System.** Either the so-called alternative press doesn't understand what they are saying or they are ignorantly complicit in the very dangerous predicament, our current society finds itself. Either way **explore** the **Real Alternative**, **Technocracy**.

Contact: C.H.Q.

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We have spokespeople available for media. We are available for Television, Radio Programs, Conferences, etc. You can help. We are looking for new members now. Thank you.

### **CHAPTER 3**

Are we doomed?

### Are we doomed? Hitler, Judaism, Christianity & Bush

Any one reading Mein Kampf will quickly realize that Hitler and his supporters were Christians. His party was called the Christian Democrat Socialist Party. Hitler's speeches were peppered with Christian theology. Hitler's supporters were Catholics and Lutherans. If you know a little history, you know that Christianity is a side branch of Judaism.

The Pharisees and Sadducees of Christ's time decided to have Jesus killed as he was a direct threat to their maintaining power. Jesus himself was a Jewish Rabbi who had zero intention of spreading his philosophy beyond his Jewish brethren. His ideas were rejected among most Jews; they spread out amongst the general population because they contain some anthropological truths and practical wisdom. At the same time, Jesus was obviously deluded; in effect a megalomaniac in the sense that in reality there is no messiah.

He was a leader among men. Legends and myths grew around him in his short life, and then gained momentum after his death. Christians and Jews are bound together in their beliefs, but they parted ways, one branch accepting Jesus as the Jewish messiah. Hence the new "Christians" were made up of a small number of Jews, and an ever growing number of non Jews. There are Jews who are still waiting for their so-called messiah.

For Jews, when you're ever waiting for your messiah, to fill in the blanks for you, it gives you a wide range of choices in behavior, or room for lots of excuses for behavior.

With Christians you can always throw out your trump card of "forgiving" oneself as a behavioral excuse, for almost any thing—mass genocide, or individual murder.

It would seem there is a deep hatred between Jews and Christians, for many reasons, but because both these groups, particularly Christians with their many sects, control large numbers of people, their over-arching desire is to control their "flocks" through brain-washing, to maintain their status, and keep the money flowing to their groups.

So we have a sordid bond between many Jews and Christians. For many Christians, without Judaism Christianity can't exist. For Jews, Christians seem easily tricked, gullible crazies who support their brand of insanity, joyously.

So like any bad relationship, which goes on and on, they began to hate each other. Of course numbers of Christians believe that eventually the Jews will be destroyed as a group and their remnants will convert to Christianity.

The Israelis for their part collect "billions" in foreign aid for Israel, a place without a secular government where if you're not a Jew, you are nothing. This dangerous group would probably destroy everyone, except themselves, in the entire world; and reason that their Lord God would understand if they did so, as they are God's "chosen." Most Jewish scriptures revolve around this; (they were wronged; they got even and lots of people ended up dead, and they triumphed.)

Hitler being a socialist Christian decided in his sick delusional way to get rid of the Jews in Germany and elsewhere. He was trying to bridge a gap in logic by disconnecting once and for all Jews and Christians. Where it turned insane was, as a Christian who Hitler was, you're not supposed to kill one another and you're supposed to forgive almost anything imaginable.

Ultimately Hitler was operating in the philosophical guise of his root religion Judaism. Instead of killing the Jews, he could have escorted them to the border and wished them good luck. Because of the deep-seated hatred of the similar but different belief systems, it seems only tragic endings are possible when they clash. By destroying Judaism and Jews you also destroy the roots and lots of the reasoning and rationale of Christianity. Hence the "bad" relationship is guaranteed until, as many Christians say, Israel is destroyed and then the remnants converted. If you take the rationale a bit further with a Jewish messiah coming and a Jesus supposedly returning, it's apparent that Jews and Christians are doomed to eventually fight some kind of horrible battle. It would be ironic but could well be, that the U.S. or another so-called, mostly "Christian", power, may at some point, destroy Israel as a nation, because of their underlying, eye for an eye, obedience to their God. The Christians then will forgive themselves. It can be said that both groups are at odds, and will remain so until they can figure some of these things out, instead of playing them out.

We are doomed to war, hatred and general brain washing in order to perpetuate the status quo of our price system. Politics really revolves around controlling and molding our conceptual basics. In a political system as ours, controlled by money, choices are made upon worthless "money" or worthless "ideas", meant to control and humiliate the general population. If you are "poor" in this culture, you are looked down on, even though you may be poor, because you don't care for the game-playing required to become "rich". Both concepts of rich and poor are man-made illusions. The Christians and Jews, Muslims, Hindus, etc. control a political machine in whatever country. They inculcate their beliefs, which they call "good".

Is it possible to separate the notions of belief to have a humanitarian secular society where belief is viewed as

unimportant and perhaps may be a little funny or ridiculous at that?

Until we get rid of our political system and price system, man's inhumanity to man cannot change. When the power of opinion and belief is used for critical decision making, the people in power sadistically follow their pointless beliefs to ensure their status and power when they should be thinking about our survival in a creative, thoughtful, free, vital, and honorable society.

The Christians are much like the Pharisees and Sadducees of old. Now they endorse war, they hate people of other cultures; all endorse the concept and usage of money. They believe since the "devil" controls this world, until they are "delivered" by the messiah, all they can do is forgive themselves and others or act as Hitler did or G.W. Bush does by striking out blindly at whatever scapegoats are handy—Jews or Muslims. Maybe it's time to try another approach. We've tried the Jewish/ Christian approach.

Maybe religion should be relegated to the status of a hobby. This could largely be accomplished if "money" were no longer an integral part of religion—if no money could be "made", many religious "leaders" would no doubt drop out of the business of religion and people like Hitler, in the past, and Bush, in the present, would never rise to power, but would instead get a decent secular education—and if they insisted on their "insane" beliefs—would be considered stupid but harmless eccentrics.

They would not rise to power without the machinations of our price system, a system that ensures that our most important decisions are almost always wrongly made.

Explore the Real Alternative Technocracy:

Our mailing address is

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We have spokespeople available for media. We are available for television, radio programs conferences etc. You can help. We are looking for new members, now. Thank you.

### **CHAPTER 4**

Who Really Runs the Show?

#### Who Really Runs the Show?

Part three of a series...

Many people puzzle over the question – who's really in charge? What coterie is pulling the strings behind the scenes to mold, shape, guide, the directions and actions of society and further more, what are their goals, and future plans? Is it one group in particular or a combination of groups working together, with alliances of convenience.

I'd like to tell you a story that a certain G. I. Gurdjieff used to tell. Once there was a Shepherd with a problem. He was losing sheep. Some wandered away on their own, or in small groups. When they were separated from the flock, they were an easy target for other Shepherds or people who were just hungry. Also wolves and other predators are always hunting as is their nature.

The Shepherd knew a magician who for a fee could hypnotize his flock into thinking that they were lions and tigers. The Shepherd then had no further problem with stock loss. In fact, even as the sheep were being led to slaughter, they were proud and confident as they believed themselves lions and tigers. This story presents, in some ways a dim view of society. Unfortunately it is also accurate.

As wanderers grouped together some of their kings thought

that a religious doctrine which played upon the weaknesses in the psyches of their subjects was needed. Certain points struck fear into the populace such as themselves being "watched", the information collected, and reported to a certain "Mister God" who would later "weigh" their actions on the "Day-of-Judgment".

Further, there was no way to conceal this from Mr. God, either any of their doings or any of their thoughts.

In this ingenious "religious doctrine" of the king, it was said that Mr. God had intentionally attached to our "souls", the organs and limbs we have to enable us efficiently and profitably to serve both himself personally; (God) and the great king.

Further it was stated that if a soul has idled or discharged its duties indolently and negligently, that has in short, existed for the gratification of the desires of the parts attached to it or finally, that it has not kept certain "commandments", such a soul would be sent to a place called "Hell". The rivers of this place being of burning pitch; the air stinking like a skunk at bay. All the furniture, carpets, beds, and so on were made of fine needles with their points sticking out.

"Paradise" on the other hand where you went if you obeyed was very different. It was a land of milk and honey, nobody needed to toil or work there, everything necessary for a happy, carefree, and blissful existence was there because everything requisite was supplied there in super abundance. This paradise was full of young and lovely women and each of them belonged for the asking to the "soul" that desired them.

Public squares of that beautiful "heaven" were filled with delectable foods and any "soul" might take as much as they please

any time of the day or night.

There are no diseases there and, of course, none of those mosquitoes or flies that give us no peace here.

Long after the "ingenious" inventor of this "religious doctrine" had passed away, owing once again to the strangeness of the psyche, the suggestibility that humans exhibit, there were hardly any of the inhabitants in said district, that doubted the truth of these peculiar tenets.

It is interesting to remark here that the information that serves to say that a certain place is a "holy" place, is usually due to certain beings called liars. Liars lie consciously and unconsciously. They consciously lie when they can obtain some personal material advantage. They unconsciously lie, when they themselves have been told so many lies which they view as being the Gospel truth, that they are unable to distinguish fact from fiction.

With this latter group particularly, if someone does not share their views or agree to do, as they do, or criticizes their manifestations, they are very indignant and offended, and if they have the power, would order whoever dared not to do as they did or criticized their conduct to be eliminated permanently, or locked up in an out of the way place possibly for their lives. This for them, was referred to as vengeance and later assumed a more flowery term: justice.

There was a long list of do's and don'ts usually revolving around the practice of how to worship their particular God. How to insure the ownership of property, how to punish certain offences with fines of "money", and what punishments were in order for disobedience to any number of things, most being directly or

indirectly connected with a concept called "property". These rules changed dramatically if you belonged to an upper as opposed to lower caste.

So, who is in charge these days? There is an old saying, "divide and conquer". The many religious and belief systems from one end of the earth to the other compete and co-operate to remain dominate. As has been pointed out, most of the participants called "Leaders of Religion" and "Leaders of Belief Systems" realize that in an age of information, it is increasingly difficult to keep people in the dark, however they do their best. Why? It's almost as if after century and millennia, we, like those hypnotized sheep and the so called "Leaders", have become so bred to act mechanically that many have had their spirits broken, as for such a long time, the sad reality; i.e. hypocrisy, putting on many false faces, and turning one's will over to false "gods", with false ideals, has crippled our ability to perceive reality.

Well, now I will mention to you a great open secret—the power that controls the beautiful and confused world. It is you, the individual. You do not have to be one of the tormentors or the victims. This sadly is easier said than done as many will clutch their deadly beliefs thinking that "they" are intrinsically "in" them which they are not.

In many people today, their brains seem to be hooked-up upside-down and backwards.

In the present, as throughout history there have been many interesting schools of thought usually referred to as Esoteric Schools of Objective Knowledge.

In the past, the real truth of many things was held secret. Part

out of fear, and interestingly because of a general lack of interest from the populace. So it was passed on by initiates of various "schools" – some esoteric Christian, some esoteric Sufi groups and others reported on man's mechanicalness, suggestibility and willingness to act out slavish behavior. Nowadays, the time may finally be at hand to overthrow lots of the outmoded models of earlier societies. The group Technocracy is an example of a thoughtful, realistic precedent shattering approach that could really turn things around as it is not the usual, very cruel and jaded approach we have sadly become used to.

Instead of a carrot & stick approach of a lesser, with a master, it is egalitarian/humanitarian and respectful to our fellow members of society. There is no supernatural or occult aspect to it. It's designed as a practical alternative. It can be said that as a plan devised by some very enlightened people, it would restore some intelligence and dignity to the rather pathetic "culture" we live in now. It's interesting to wonder at the inventiveness and creativity such a society could bring.

At the beginning of this pamphlet, I used the Shepherd's story and a slightly fractured version of Judaism/Christianity and Islam to make certain points as to illuminate some aspects of human behavior.

These three religions also contain some beautiful concepts and stories which people have pondered and been inspired by.

It's interesting that religion, to some measure has revealed some universal truths along with its baser and diabolically clever deceptions meant to order society to the advantage of whomever power possessers had control of it.

For all the terroristic threats and insane jabbering within the context of these religious traditions, there are wonderful gems of thought. One of my favorites is the Genesis Account of the Garden of Eden with its symbology, allegory, thoughts and ideas. Also, the Hebrew belief, as written in the books of Moses, that we come from dust and we will return to dust. This is a profound existential statement which I respect. They did not believe in an after life.

And now a short history of Judaism. The tribes referred to as the "Apiru" in Egyptian texts, also referred to as the "Shasu" which translated to "wanderers" were famous for their lawlessness and their proclivity to make raids; gave rise in Canaanite (and Hebrew) to the denominative verb sasa(h), "to plunder".

One recalls the numerous passages in Biblical tradition that depict Yahweh "coming forth from Se'ir" and originating in Edom. The major component in the later amalgam that constituted Israel, and the one with whom the worship of Yahweh originated, must be looked for among the Shasu of Edom already at the end of the fifteenth century B.C.

While the home land of the Shasu must be located in Moab and Edom, several corridors took these nomads on a seasonal basis for pasturage and brigandage into other parts of the eastern Mediterranean. Thus in the sixty year period, from about 1320 to 1260 B.C. the Shasu are chronicled as continuing to foment trouble in their native habitat of the Steppe and as pressing westward through the Negeb.

About a generation later an entity called "Israel" with all the character of a Shasu enclave makes its appearance.

Dominating the primitive concepts of the community was the

notion of a contract between Yahweh, the god of the group and the human community (Although not the individual. Apart from the community the individual had no rights) Sovereignty resided with Yahweh not the community (Jud. 8:23) and while the latter repeatedly reneged on the contract, Yahweh never did. The rules he laid down, unilaterally in fact, the human party to the contract had no say in the matter-were Draconian in extreme, and the deity's will utterly barbaric. Alien groups whose actions or even presence were deemed in opposition to Israel are consigned to genocidal slaughter at the behest of Yahweh (Exod. 17:14; Num. 31; Sam 15:3) even fraternization with foreigners brings the plague (num. 25:9,18). Anyone who dissents Yahweh burns up (num. 11:1-3; 16:35). Anyone who complains he strikes with plague (num. 11:33; 14:37; 16:49) or sends poisonous snakes after (num. 21:6). Aberrant cultic practices, even though indulged in innocently bring death (Exod. 32:35; num. 15:37-40).

The will of the deity was interpreted and implemented by a leader chosen on an adhoc basis, often because it is sensed that the charisma of Yahweh is upon him.

Membership in the clans of the Shasu was not exclusive: outcasts and ne'er do-wells could gain admittance. Their proclivity for internecine strife drew expressions of contempt from Egypt.

Their conflict with Pharaoh and, to a lesser extent, the latter's surrogates within the Canaanite principalities arose not out of objections to taxation or the draft—Egypt was little able and less interested in so dominating them—but in their well-deserved reputation as robbers and brigands whose code of conduct admitted little mercy on their victims. They lived in tents, in mountainous districts, remote from towns where woods and predators made travel risky. Their principal source of wealth was their cattle, but their life seemed to the Egyptians so spartan that

they contemptuously referred to them as "Living like wild game."

The Shasu settled in the Palestinian highlands, or nascent Israel as we, should undoubtedly call it led a life of rustic simplicity later adopting styles and standards of the lowland Canaanite towns. Economic patterns discernible in the transition to sedentary life were also copied from Canaanite prototypes.

After the defeat at the hands of Ramesses' forces and the appearance after 1200 B.C. of the sea peoples over whelming the coast, the Canaanites as a political force were dead and "Israel" is firmly attested. Egypt then entered a period of decline, it was the end of the New Kingdom. Israel as a political entity post-dated the Ramesside age and took place in an upland remote from Egyptian imperial control.

Because of the nomadic past of these peoples we can now call "Israelis" kinship tended to dominate as the underlying criterion of communal and political identity; and the former god of the tribe gravitated to supreme national deity, sometimes to the exclusion of others. Since their formative stage had witnessed an economy of pastoralism, boundaries meant less to this new group who suddenly had iron age technology and they exhibited a disquieting proclivity for expansion by uprooting neighboring populations and dispossessing them of their former lands.

Only along the coast north of modern Haifa did the original Canaanite population maintain itself, these coastal Canaanites now known by the description "Phoenician", occupied Tyre, Sidon, Beirut, Byblos, and Arvad.

It is ironic that the "Exodus" and an array of other "stories", to which the Hebrews fell heir upon their settlement of the land, and

which, lacking traditions of their own, they appropriated.

One batch of "tales" centered upon an "ancestor" called Abram. Another revolved around the figure of a Canaanite leader Jacob.

Another irony lies in the curious use to which the exodus narrative is put in modern religion, as a symbolic tale of freedom from tyranny. An honest reading of the account of exodus and numbers cannot help but reveal that the tyranny Israel was "freed" from, namely that of Pharaoh was mild indeed in comparison to the tyranny of Yahweh to which they were about to submit themselves. As a story of freedom the Exodus is distasteful in the extreme—and in "our" age when "thinking" men are prepared to shape their prejudice on the basis of 3,000 year old "precedent", it is highly dangerous.

As the sojourn and exodus narratives is an adaptation by Israel of an earlier Canaanite tradition, so the Joseph story is the Hebrew exemplar of a widespread story line much in use in Egypt and the Levant at the time the Pentatuch was being committed to writing. There is no reason to believe it has any basis in fact – the absence of the story from the earlier tradition in the "prophets" speaks against such a belief – and to read it as history is quite wrongheaded.

So, this group originally called the "Apiru" lay slightly beyond the fringe of "polite" Canaanite society of the late bronze age. These were a collection of antisocial renegades, cast-offs from society, who maintained a semi-independent community in the rural districts of the Canaanite states though often in the service of these states the Apiru generally guarded their independence and freedom of movement. Much has been written in speculation on the adverse social conditions within Canaanite society that must

have given rise to such a group; and it is not unlikely that a combination of mismanagement and economic straits may have combined as in the Roman Empire in the third century A.D. to produce a "flight from the land" on the part of a disenfranchised element of the population. Whatever the reason, the Apiru as their name suggest ("dust makers," i.e. people who vacate the premises with speed) display a gypsy like quality and proved difficult for the state authorities to bring under effective control. Their heterogeneous nature is vividly illustrated by census lists from Alalakh, wherein one Apiru band includes an armed thief, two charioteers, two beggars, and even a priest of Istar.

These early "Jews" were viewed as unkept in their carriage and indifferent to civilized ways, their society harbored criminal elements and the down and out; nice people simply did not fraternize with them. An Egyptian text notes this description. "The band of thieves was come into the camp and the horses were loosed in the night, and your clothes were stolen. Your groom was awakened and when he realized what he had done, he took the rest, now he has wholly gone over to a life of evil: he mixes with the tribes of the Shasu having adopted the guise of an Asiatic.

The Canaanites by the way would be assigned the scapegoat role that ancient Israel fabricated to justify its ingress. All the iniquity of the ages is heaped upon the Canaanites who thereby became the most maligned group of people in history.

Oddly it is a commonly accepted view in our contemporary world to view ancient Israel as having perceived history as gods judgment on mankind leading inexorably to universal salvation through god's guidance of Israel. Sadly, these tendencies reflect neither scientific thought nor basic intellectual honesty. What is needed rather is a view of ancient Israel within its true near eastern

context, and one that will neither exaggerate nor denigrate Israel's actual place within that setting.

I hope this writing has disabused those people who hold vague sentimental regard for a certain group of people who have a long history of being famous con-artists to themselves and others.

Perhaps some of you have had a change of heart in your approach to the concepts of religion and belief.

By the way if you would like to read another entertaining myth, I suggest **The Epic of Gilgamesh**. It predates the bible by millennia, and being a secular myth it explores some familiar but different territory. The Hebrews used a number of concepts and symbology to form their "stories" from this entertaining classic from Mesopotamia.

In closing I urge my readers to explore a real alternative for our modern world, **technocracy**.

Our mailing address is

C.H.Q. (Continental Headquarters)
Technocracy Inc.
2475 Harksell Road
Ferndale, WA 98248
Website: technocracyinc.org

We publish a quarterly at cost of production. We have free information available if requested.

We don't care about your religious beliefs—we are nonsectarian. Your beliefs are your own, agnostics and atheists

included. We are desirous of eliminating some basic flaws from society, the most basic being **The Price System**. What passes for the "Alternative" press is usually ignorantly complicit in perpetuating our current, very dangerous predicament of a dysfunctional, aberrant society.

# **Explore The Real Alternative Technocracy**

Contact: C.H.Q.

Phone: 360-366-1012 E-mail: chq111@aol.com

We have spokespeople available for media. We are available for television, radio programs, conferences etc. You can help. We are looking for new members, now. Thank you.

# **CHAPTER 5**

Adage & Aphorism

# Adage & Aphorism

The world is not necessarily just. Being good often does not payoff and there is no compensation for misfortune. You have a responsibility to do your best nonetheless.

Everyone is in their own way, vulnerable. There are no great men.

If you have a hero, look again; you have diminished yourself in someway.

Everyone lies, cheats, pretends (yes, you too, and most certainly I, myself).

Each of us is ultimately alone.

The most important things, each person must do for themselves.

Love is not enough, but it sure helps.

We have only ourselves and one another. That may not be much, but that's all there is. How strange, that so often, it all seems worth it.

We must live within the ambiguity of partial freedom, partial power, and partial knowledge. Yet we are responsible for everything we do. No excuses will be accepted.

It is important to run out of scapegoats.

The only victory lies in surrender to oneself. All of the significant battles are waged within the self.

You are free to do whatever you like; you need only face the consequences. Your freedom stops at the end of your fist, if it makes contact with another.

Nature instilled in all mankind, primary sexual desires and interest to assure the procreation of the species. Nature provides all limitations on human activity. Nature has assured that mankind cannot do that which is unnatural. If it is possible to do, it is natural.

No violation of natural law is possible. The consequences of all human activities are natural. Nature is not ambiguous, nature is not arbitrary.

All theory, philosophy, law, or hypothesis are man-made and thus subject to change at mankind's whims. All facts, found or future, have always existed. Fact is nature's foundation; facts are never repudiated by facts. Opinions are never facts.

People are afraid of freedom and responsibility. So they prefer to hide behind the prison bars which they build around themselves.

Anyone who keeps the ability to see beauty never grows old.

Fear for one's daily bread destroys one's character.

We live in an age which is so possessed by demons, that soon we shall only be able to do kindness and real justice in the deepest

secrecy, as if it were a crime. War and revolution haven't died down. On the contrary, the freezing of our feelings stokes their fires.

All is struggle, effort. Only those deserve love and life who have to conquer them each day.

Many so called scholars transfer the world of the poet to another scholarly plane, and so achieve fame and importance.

Kierkegaard faces the problem, whether to enjoy life aesthetically or to experience it ethically. His famous either/or question. The either/or exists only in the head of Soren Kierkegaard.

Nothing sticks so fast in the mind as a groundless sense of guilt; because since it has no real foundation one cannot eliminate it by any form of repentance or redemption.

Accident is the name one gives to the coincidence of events, of which one does not know the causation; but there is no world without causation; therefore in the world there are no accidents. Accidents only exist in our heads, in our limited perceptions. They are the reflection of the limits of our knowledge.

Only the moment counts. It determines life.

Every fairy story comes from the depths of blood and fear. In this all fairy stories are alike. Only the surface differs.

The species of matter is determined by the number of electrons in the atom. The level of the masses depends on the consciousness of individuals.

Truth, which is one of the few really great and precious things in life, cannot be bought. It is received as a gift, like love or beauty. But a newspaper is a commodity which is bought and sold. Everything, even lies advances the truth. Shadows do not blot out the sun.

The truth has a lively changing face.

The luxury of the rich is paid for by the misery of the poor.

There is a long line of substitute religions, each one a particular form of illusion and superstition.

Deceivers always try to solve difficult problems on the cheap.

One must, with quiet respect for the unknowable, accept the order of everything that is knowable. The smallest thing like the greatest, must be close and precious to one.

Reality is never and nowhere more accessible than in the immediate moment of one's own life.

God can only be comprehended personally. Each person has their own god, their protector and judge. Priests and rituals are only crutches for the crippled life of the soul.

A lie is often an expression of the fear that one may be crushed by the truth.

Love is everything which enhances, widens, and enriches our life.

So called reasonable people are usually those who have been disabled by life. And they are the dominant majority, and do not tolerate examples which reflect unfavorably on themselves.

Life is as infinitely great and profound as the immensity of the stars above us. One can only look at it through the narrow keyhole of one's own personnel existence. But through it one perceives more than one can see. So above all one must keep the keyhole clean.

The best life is the fullest one; rich in health, strength, beauty, passion, means, adventure, and thought.

Prayer, art and scientific research are three different flames that leap up from the same hearth. Man wants to cross the frontier of the possible achievements that lie open to him at any given moment to reach beyond the limitations of his own small self. Art and prayer are only hands outstretched in the dark. People beg to give themselves away.

And Science? It is the same begging hand as prayer. Man throws himself into the dark rainbow which spans dying and living, in order to offer existence a home in the cradle of his little ego. That is what science, art and prayer all do. So that to sink into oneself is not to fall into the unconscious but to raise what is only dimly divined into the bright surface of consciousness.

# **CHAPTER 6**

I am the Price System

# I am the Price System

#### **ALWAYS WITH YOU**

I have existed since the beginning of social life, yet few recognize my fundamental characteristics. Except for some minor civilizations here and there, I am the only type of social system that has ever existed. I was conceived in human toil and scarcity, dedicated to profit and waste. I am the Price System. Before recorded history I laid my foundation in the early tribal life of humankind. In the ancient world they called me Chattel Slavery. During that long night of the human mind called the Dark Ages I was known as Feudalism and Serfdom. In the modern world I am called Capitalism. They even entitle me Democracy in certain nations. Of all my names, the most misleading is Communism. My name has been changed many times, but I have remained essentially the same in all countries and all times, except that my techniques have improved.

For uncounted generations I have held sway over the bodies and minds of people in every nation. Today I exist all over the world in various stages of development, controlling the production and exchange of goods and services, and all the means whereby people live. I am the group expression of humankind's common urge to live and prosper at the expense of fellow humans and the environment. I am the system wherein everyone is forced to give as little to society as possible, and take back as much as they can get.

I am the law of the jungle (eat or be eaten; kill or be killed), projected by mankind into institutional forms. I am the lowest

common denominator of the ability, intelligence and necessities of humankind.

#### HISTORY SPEAKS HIGHLY OF ME

I am the tribal medicine man who charged a fee for exorcising the devils.

#### I AM THE OLIGARCHY WHO POISONED SOCRATES

I am the legions of Rome, who conquered Greece and the fanatics of the Christian Church, who burned the library at Alexandria. I am the inquisition that persecuted Galileo. I am the radicals of Paris who beheaded Lovoisier; "The revolution has no need of chemists." How true, from my point of view. I am Cortes and the Spanish Conquistadores who slaughtered the poorly armed Aztecs in Montezuma's Mexico, and I am the pioneering white settlers who did the same to the tribes of Native Americans.

#### MOOD OF CONFESSION

Early in social life, I discovered that values are determined by human desire and scarcity. Value and Scarcity are my cornerstones. I dressed them up so no one would recognize them, and baptized them Supply and Demand. In this guise they have befuddled people for ages. And now, economists proclaim Supply and Demand to be natural laws that dictate prices. This takes the moral blame off me, the Price System, and creates the impression that nothing can be done about it. Supply and Demand has been a useful myth for me. Behind its cover I have always restricted the Supply and never allowed Demand a free avenue of expression. Actually, there is no ceiling to Supply except the ability to produce, and no limit to Demand except the ability to consume. But I can't afford to let it become widely known that economic laws are not

physical laws, neither measurable nor verifiable. After this initial discovery, I needed more tools, so I invented a promise. I call it "Promise to Pay". Promise To Pay cannot be seen, tested, heard, felt, nor measured. I conjured it out of nothing and planted it into the minds of people where it took root and grew. Promise To Pay was the first of a long list of operating devices that I invented to facilitate my way of functioning. These devices were all conjured out of nothing, with no basis in physical laws; yet they have become the rules of the game under which I operate. Next, so that no one would recognize the insubstantial nature of my promise, I fashioned real tokens to represent it. These I call Money. Money is the token of promise; it is a debt token. It has no reality in itself. It seemed necessary to camouflage the real nature of Money, so I gave it another name: Medium of Exchange. This has a respectable sound, and besides that is actually how Money functions. It is not, however, a medium of distribution, as some of my apologists assert. I, the Price System, am not interested in distribution. I function solely to exchange goods and services for a profit on the basis of scarcity-determined values. Any distribution that results is just a by-product. It became apparent at once that Money functioning as Medium of Exchange has certain useful characteristics. Money is negotiable, transferable, interest-bearing, and it can be saved. All this allows it to be traded, stolen, given or gambled away, and since it is not a measure of anything real or fixed, it can be devalued, revalued, and manipulated in countless ways. This variability is necessary to my existence. In addition, there must be an everpresent scarcity, else values will collapse and there will be no basis for exchange.

# I HAVE MUCH TO CONFESS

I soon discovered that there must always be a free flow of Medium of Exchange, else the arteries of commerce dry up. The way I am organized, it is compulsory for the individual to accumulate

as many debt tokens as possible or else become a public charge. Because Money constitutes a debt claim against society at large, it can be exchanged for any goods and services available. Money also constitutes a potential "principal" which can be hired out at stipulated rates of increment (stated in terms of itself), thus increasing in size and effectiveness. When used in this way money is called Capital. Once an accumulation of debt tokens has reached the proportions of Capital, it becomes compulsory to keep it invested all the time, or else inflation shrinks it back into the nothing from which it came. It must increase or die. The flow of Medium of Exchange must not stop. Before the invention of Medium of Exchange, my activities had been restricted to direct barter and outright theft. I never outgrew these time-tested methods of lightening the suckers' burden; I merely graduated to improved techniques. However, in hard times when a situation calls for these primitive methods, I always seize the opportunity to keep in practice. There's nothing like having something to fall back on should a rainy day come.

#### I BEGIN TO FEEL MY OATS

During my checkered career I have performed a complexity of manipulations with Medium of Exchange. Dozens of schools of economics have arisen around my antics, each claiming to have the correct theory of Money.

The device of Capital allowed me to put into effect Delayed Exchanges. This opened a whole new world for expansion. I brought Capital and Delayed Exchanges together in wedlock and they begat Debt, Interest, Profits, and Waste. Debt got bigger all the time. His little brother, Interest, accompanied him wherever he went. Every so often Profits got lost among Delayed Exchanges, but Debt and Interest always went out and brought him back. Waste

operated everywhere in expediting the turnover of Delayed Exchanges, thus helping to maintain scarcity.

When Delayed Exchanges seemed to be turning over too slowly, I brought Waste and Profits together in illicit relations. They begat cheap substitutes and shoddy goods. Delayed Exchanges turned over much faster after that and Scarcity became more pronounced. This also kept Medium of Exchange flowing. But alas! Debt turned out to be allergic to a natural enemy called Paid in Full. Every once in a while this pest showed up and I was forced to create New Debt. After some experimentation I devised an improved type of debt called Long-Term Debt. He resisted Paid in Full much better. So with Scarcity, Values, Promise to Pay, Medium of Exchange, Capital, Delayed Exchanges, Interest, Debt, Profits and Waste, I was almost all set for an endlessly successfully career. There remained two things to do, I had to have an institutionalized social structure superimposed upon these characteristics in order to consolidate my gains and maintain law and order. Also, it was necessary for me to assume a camouflage so that people would take me for everything else but what I actually was. Radicals, liberals, moralists, and humanitarians have tinkered with my superimposed social structures for ages without altering or affecting my basic operating characteristics one bit.

To tell the truth, I did not design these social institutions as one job. They grew up naturally over a period of time as a normal corollary of the basic system of trade and commerce underneath.

In the very beginning of social life people came together in groups for the purpose of multiplying their strength against opposing forces of their environment. Thus they obtained individual security more effectively. The paramount concern of the social state is supposed to be the general welfare. How I subverted social

life from that purpose is a story in itself. It runs concurrently with the gradual development of my operating tools for production and exchange of goods and services.

Briefly, those who learned how to chisel according to the opportunities provided within my framework became the ruling oligarchy. Everyone, of course, could not do so. Only a minority. For where there are exploiters, there must be someone or something to exploit. Throughout history I have been operated and controlled by three oligarchies: the oligarchy of organized government to maintain law and order, the oligarchy of the priesthood medicine men who preach submission to me and reward after death, and the oligarchy of the entrepreneurs who operate trade and commerce. These three have either controlled separately or together in all countries. I name them Political State, Ecclesiasticism, and Private Enterprise. Their role today is the same as it has always been. Since the first concern of any government is to maintain itself, it protects its own. Private Enterprise functions, to exploit the natural resources of the land and people for all the profit the traffic will bear. It is easy to see how the interests of the three oligarchies tie together.

#### SUCH STUFF AS DREAMS ARE MADE OF

The last factor that adds to my strength and resistance to change is the set of sugar-coated Abstract Concepts that has been woven into it by philosophers, historians and clergy. I conjured most of these empty ideas out of nothing and gave them names. The readiness of people to become enamored by visionary conceptions is truly amazing. Abstract Concepts are composed of words, symbols in the mind, that are not reflections of real things in the physical world. The minds of humans, in addition to being able to contain real concepts, can also entertain an apparently limitless number of empty symbols that represent nothing in the

physical world at all. This fact is one of my main props. Over a period of time, philosophers have invented thousands of Abstract Concepts to intrigue the minds of humans. Among these are Liberty, Freedom, Equality, Fraternity, Justice, Natural Rights, Survival of the Fittest, Right, Wrong, Morals, Ethics, and Sin. People keep busy ever seeking to gain or avoid them, often ignoring the physical world. Try to perform an operation to prove the existence of any of these concepts in the physical world and see how far you get. I love these Abstract Concepts because, not being physical entities, they can be and are clothed in ever-shifting definitions. The intensity of their hold upon the mind is so great, however, that people will face blazing machine guns in defense of them even though they don't exist. Whether people will go so far in the furtherance of REAL concepts remains to be seen.

Abstract Concepts help to conceal my real nature. You can see that in physical operations to produce goods and services, I conform to physical laws, but in the distribution of this physical wealth for debt tokens, I ignore physical laws. The control is carried on by Abstract Concepts. No wonder it jams up so much. As I look back now I can see that my worst troubles began in 1782 A.D.

The first practical double-acting steam engine was developed then. That application of extraneous energy began an increase in the time-rate of doing work, which was to become a threat to the very scarcity on which I depend. Oh! If only I had known then what I know now! I would have been more ruthless in my persecution of science. But once rekindled, scientific knowledge grew and flourished.

#### I AM OUTFLANKED

By the time the 18<sup>th</sup> Century rolled around, this growing body of knowledge had spawned the "witches' brew" of science—the

scientific method and the scientific attitude. Inventions were made. Machinery came into being, crude and cumbersome at first, but more efficient than my age-old methods of human toil and hand tools. Some unknown enemy of mine discovered that any motion that is repetitive can be performed better by machinery than by human hands. Then the factory system of production was born and my arch enemy, Technology, entered the picture. Coincident with these developments came a greatly increased use of power derived from sources outside the human body, such as coal, oil, gas, wind, and falling water. Without this development, technology would not have attained its present state. The use of non-muscular energy was new and revolutionary. Throughout history the only source of power available had been the human body supplemented by crude wind and water wheels and work animals. The only way to produce more was to employ more workers or to work longer hours. Now, the steam engine developed many times the power of one person. The Industrial Revolution began, and I poor fool, welcomed all this.

Humankind has become dependent upon the machine. The best I can hope for now is to revert to some intermediate stage of development and freeze there. In fact, I have been staging an attempt in that direction lately. I call it

"Small is Beautiful." It is my only hope against extinction.

#### MY UPHOLDERS ARE LEGION:

I am the aesthetes who revel in the delicacies of life that are beyond the reach of the great majority.

I am the privileged few who are free to enjoy the fresh air, sunshine, green meadows, streams and mountains of North America—the ones that are left, that is.

I am the whalers and the poachers who kill rare, endangered species for profit.

I am the hunters who slaughter baby Harp Seals in the name of fashion, vanity, and profit.

I am the developers who see condominiums where others see open meadows and oak trees.

I am the bleak, filthy slums, where minds and bodies are dulled by incessant poverty.

I am all the "nice", kind people of North America who want to hang homosexuals and legislate pseudo-Christian morality.

I am the wealthy landowners and multinational corporate minds who make conditions in Mexico and Central America ripe for revolution. I am the revolutionaries who gain power and then continue the miseries of my system.

I am the farmer who throws milk in the gutter or leaves crops to rot in the fields when the price is too low.

I am the housewife in a constant dither to keep up with the Joneses, who hums an advertising jingle when she passes a product in the store.

I am the father and mother who enslave their beloved children to their own narrow horizons in the sacred name of parenthood.

My voice is heard plainly in schools and colleges throughout the land, and my schools help the parents enslave children to my Abstract Concepts.

#### ABSTRACT CONCEPTS

I am the administrator who resists innovations in curriculum, and the educator who knocks creativity of children. I am the teacher who complains about low pay and poor classroom conditions, but who does not understand how people learn. I am the law at the end of the police officer's nightstick, the politician who tells him how far to go in enforcing the law, the hired gunman and thug, and the stool-pigeon who puts the finger on my scapegoats. I operate the court systems that inveigle "Justice" over to the side with the most money. I am the cash-register concept of social values of the smart business person.

I am all the commercial escapisms of modern society from the moronic TV shows to the equally moronic advertising industry that support them.

I am the carefully controlled and orchestrated news media and the advertisers who pay for it and censor it.

I am the sap who believes everything on TV.

I am the millions of adults and children in this country who cannot read and write.

I am the miseducated, smart fool who knows all the wrong answers.

I am the banker who never knew anything about my commodity except how to take a dollar and lend it out at the highest possible interest rate.

I am the white-collar snobs, the vice-presidents and honorable stooges who snub those in more plebeian walks of life, and the peasant psychology of the underdog who looks up to society instead of around at it.

I am the myriad of non-producing personnel in all industries who thrive on the institutionalized red tape of my system.

I am the class hatred of the ideologists of dialectic materialism.

I am all the minority pressure groups, rich and poor, seeking preferential advantage at the expense of everyone else. I am the people's representatives who cater to these groups.

#### I GO ON A LONG SPREE

In the beginning of the Industrial Revolution, I enjoyed expansion as never before. I spread to the farthest corners of the earth. I modernized my operating characteristics and added refinements unknown in simpler agrarian, handicraft ages. Any debt merchant or economist can reel off the list. They study the pathology of my operating devices (which you will remember were conjured out of nothing) without ever questioning their reality.

When industrial expansion began, I saw at once that Private Enterprise needed a few more Abstract Concepts to assist it. So I conjured up: Competition is the Life of Trade, Rugged

Individualism, Social Darwinism, Law of Diminishing Returns and Free Enterprise.

They sound beautiful and have furthered the confusion on which I depend; but I can assure you, they are as hollow as puff balls.

As Political State saw Private Enterprise expanding into corporate enterprise, it had to modernize too. So I added a set of Abstract Concepts to it also, such as: Political Democracy, Voice of the People is the Voice of God, Government of Laws and Not of Men, Equality Before the Law, Freedom of the Press, Freedom from Want, and Freedom from Fear. Any politician can reel off the list. They're always spouting these Abstract Concepts.

These latter-day Abstract Concepts came in with the Industrial Revolution. They are now part and parcel of my operating tools. You will see, however, that they cannot be worn as clothes to keep out the cold, nor can they be eaten to nourish the body. They are in all respects negotiable the same as Money. They can be and are bought, sold, and traded on the open political market.

#### MALTHUSIANISM OUTWITTED

One of the first effects of the Industrial Revolution was an upsurge in population. It was possible with the new power and technology to produce more . So it was possible for more people to stay alive. This trend has continued. For the first hundred years or so it didn't matter. Industry was expanding. Jobs and incomes were available. The birth rate of new jobs was greater than the rate at which old jobs were eliminated by technology. The general welfare has not kept up with the exploding population. The birth rate of new jobs has long since dropped below the death rate of old jobs. Widespread hunger and suffering have resulted. Most of

the world is still in the first or second stages of the Industrial Revolution. So it shouldn't be too hard for me to retard social change there. I, the Price System, can still operate according to the old formula in most countries. Political State in every country is armed with a useful Abstract Concept called Nationalism to oppose any unification of nations based on location of natural resources (a logical physical criteria.) The juju of my Abstract Concept is captivating even if they themselves are not real.

#### LOOK DOWN THAT LONESOME ROAD

As I survey the world today, I find that in North America I am in extreme danger of liquidating myself in the future. There, technology and energy have advanced further than anywhere else. The operating devices that worked so well for so long in North America don't' seem to work any more. No political ideologies nor economic utopian nostrums can alter my basic operating characteristics one bit. Their proponents make good scapegoats, but my real enemy is the fact that I, the Price System, cannot adjust myself today in North America to the impact of technology and energy. In the past when things got tough for me, I could start a war and channel social change into homicidal conflict. Today, corporate enterprise particularly benefits greatly in time of war. Prices rise, business booms and profits mount higher. Political State, too, has an opportunity to expand its sphere of influence and prerogatives. Ecclesiasticism, of course, functions on both sides. As a general rule, the same can be said for Corporate Enterprise in these days of international bankers, cartel agreements and multinational corporations. Technology, however, has made war too expensive for me. Not that I mind the killing, but the financial problems are a headache. Worst of all, modern wars are waged with the tools of technology, and (woe is me) the tools of technology are the tools of social change. In America today the more

technology and energy that are introduced, the more insoluble my problem becomes. They defeat my cornerstone purpose of maintaining Scarcity and Values. The installation of ever more new and efficient technology in North America also dries up the free flow of Medium of Exchange. You see, as more efficient mechanisms are introduced, jobs become automated. This spells disemployment of labor and decline of total purchasing power. In other words, more people get laid off and thus have less Money to spend. This means Private Enterprise produces less and sells less. As Private Enterprise produces less, more people lose their jobs and their spending money. It's a vicious circle. So it becomes necessary to create ever more New Debt to pay for the installation of still more efficient mechanisms to cut the costs of production and grab a share of the dwindling market.

#### I HAVE TO EXPAND OR CONTRACT

I have my economists tell people that growth of production is the only way to cope with the situation. However, new technology increases Profits, but it makes it ever more difficult to reinvest Profits. This takes place despite by best efforts at Monopoly Control, Restricted Production, High Prices, Shoddy Goods, Buried Patents, Cartel Agreements, and Financial and Political Interference. Private Enterprise very easily out-produces its ability to sell the goods it makes. Reinvestment in new industry becomes ever more necessary and ever more difficult.

From 1860 to 1914 in North America my Debt was always healthy. Since 1914 the reverse has been the case. Physical production has been leveling off, but Debt is going straight up into the high heavens.

About 1932, Private Enterprise gave up the struggle to create New Debt and passed that responsibility over to Political State. This lieutenant of mine, strong as he is, now barely staggers along under the growing load. With all the people being disemployed by technology, Political State has become the largest single employer and dispenser of Medium of Exchange. It had to employ people by providing, jobs that do nothing productive, so as not to compete with Private Enterprise. Many jobs are in the military arms race, or Political State simply hands out Money. To pay for all this, Political State has to increase taxes and create New Debt.

Since Private Enterprise dumped its Debt-creating prerogative onto Political State, the curve of industrial production has been following the curve of government spending. It's not a problem of finance: it's a problem of how to maintain physical production at a high level so as to create jobs and maintain purchasing power and the free flow of Medium of Exchange. If I allow physical production to be maintained at a high level, I destroy Scarcity, I dry up the flow of Medium of Exchange and have to create more New Debt. No matter which way I turn in North America there is an impasse. Oh, riddle of riddles! What can I do?

Perhaps I can solve that one particular problem at least. Debt, if you remember, is created out of nothing. It can also be dissolved back into nothing. It's called hyper-inflation. Political State increased the amount of Money in circulation until it became dirt cheap. So the debtor takes this legally inflated Money to his creditor and pays off his Debts at a fraction of their former worth. It's a legal swindle, but so what! I told you, Debt is conjured out of nothing, didn't I? Well, when inflation gets out of control, Private Enterprise performs hara kiri for the good of all (it's called a depression), and then I start all over again with a brand new Private Enterprise. In North America the problem of production is solved.

The new technology is already installed and can do the job of distributing goods and services for everyone whenever my interference controls are removed. My problem is to stall this off as long as possible and to devise ways and means to freeze social change on a low level. I don't care if it does involve killing off 50 percent to 75 percent of the population of North America. What is that compared to my beloved oligarchies: Private Enterprise, Political State, and Ecclesiastics?

#### THE END JUSTIFIES THE MEANS

Since I was conceived in Scarcity and dedicated to Waste, I am utterly without scruples. I know very well that the prosperity I have been enjoying now in North America is only transitory. I know that it has been bought at the terrific risk of installing a greatly expanded technology.

I know that scientists and engineers have been analyzing my operating characteristics and have pointed out every flaw. I know, too, that a more efficient social system has been designed that will distribute a high standard of living and security to everyone. But even though I know the handwriting is on the wall, I have not lost hope. My collapse and the victory of technology is not inevitable.

If I cannot rule, I can always ruin. If I go down, I may be able to arrange things so as to carry all civilization in North America with me. But even if chaos results, I will not disappear. Out of the chaos I will rise again like the Phoenix from its own ashes. For I have been with you a long time and have learned many tricks. There is only one thing that can liquidate me permanently. That is the replacement of my Price System methods of control by a system

of technological controls devised out of the Reality of physical laws. But it has never been done before. How difficult this is going to be, a glance at my record will reveal. I loathe peace. As I look into the immediate future I can gather strength from the realization that I am not alone. For I have many able allies who work unceasingly in my interests.

Some of them have been with me a long time.

## YES...I AM THE PRICE SYSTEM

I am the social system and institutions designed to fit the agrarian, handicraft cultures of other lands, imported from across the ocean and superimposed upon the great advanced technology of North America. I am the folklore and the hoary traditions of over 7,000 years of human toil, hand tools and Scarcity. I am the seminar leader who helps people overcome their personal inadequacies so they can deal with me more effectively, people who never envision a society without my operating characteristics. I am the avant-garde physicist who questions Newton's clockwork mechanistic view of matter and energy, but who fails to question the reality of my Abstract Concepts.

I am all the "return-to-the-land" folks who glorify human toil and think the path to a new age can be paved without modern technology, leaving me free to continue to diminish the quality of life. I can't afford to let them know the difference between my methods and the method of science. As long as people confuse science and technology with Price System methods, they will be able allies should I need to destroy the technology.

I am the "common sense" of the ignorant crowd, and all the superstitions of the unknown. I am the incalculable inertia of the

great mass of people who never do anything about anything unless they are driven to it. I am every chiseler looking for a sucker, and every sucker who would like to be a chiseler.

I am all those who know better but who do nothing about it.

I am you reading this article. What have you ever done that conflicts with my interests?

With such able allies, it will not be easy for technology to effect my collapse.

I am the Price System!

# **CHAPTER 7**

What is Technocracy?

Concept and Organization

This is it, where it all started, the Technocracy Study Course. Published in book form in the 1930's it is the culmination of a number of great minds working on honorable and practical solutions for a just and vital society. It is arguably the most important non-fiction book of the 20th century. As relevant now as when it first appeared, it is the complete outline for the understanding and practice of Technocracy. Accept no substitute. This classic is brilliant in its scope and unafraid in its honesty.

Since the topics dealt with in the Technocracy Study Course have been withheld from the public in an unofficial but pointed way, it is very difficult even for interested parties to uncover the complex web of lies we refer to as our 'culture'.

To request a copy of the original Technocracy Study Course contact:

Technocracy, Inc. Telephone (360) 366-1012

Email Address: C.H.Q.111@aol.com

Fax: (360) 366-1409

The following are verbatim excerpts from the study course, which is recommended reading to any who wish a more complete understanding of the world we live in.

# THE PRICE SYSTEM

In the foregoing lessons we have discussed at some length the basic matter and energy relationships to which all events upon the earth, both organic and inorganic, must conform. We have learned in this manner that out of all conceivable things we might imagine to happen upon the earth, only those are possible for which the total matter involved is neither increased nor decreased, and for which the energy transformations are of such a nature that the occurrence does not amount to one kind or another of a perpetual-motion mechanism.

While this kind of analysis has long been fundamental in engineering when dealing with simple, small-scale problems, it has not been extensively recognized that the same technique is applicable and of fundamental importance to the far more intricate problems of the operation of a human social complex. In engineering, for example, it has long been known that if a steam engine be operated between a boiler at the absolute temperature  $T_1$  and a condenser at the temperature  $T_2$ , the maximum possible fraction of the heat  $Q_1$  taken from the boiler that can be converted into work is given by  $[(T_1 - T_2)/T_1]Q_1$ . This fact establishes an objective standard of performance. If the performance of the engine is much poorer than this, then it is known that a better engine can be built, and how much better.

A similar analysis may be made with regard to a human society operating within a given geographical area. When the material and energy resources available to that society are known the maximum rate of operation of a social mechanism in that area can be established to a reasonable approximation. If the observed

operation be at a greatly inferior level to that which in this manner is known to be possible, then we know that there is room for substantial improvement. Furthermore, as in the case of the steam engine, faulty operation implies faulty design of the operating mechanism which can be corrected only by an improved design in which the faulty characteristics have been omitted.

In our brief review of world resources it appeared that many areas of the globe are so deficient in material and energy resources essential to a large-scale industry that their populations are effectually doomed to a low-energy standard of living-at least so unless and until technological advances render presently unknown re-sources available. We learned, however, that the Continent of North America is not so handicapped but with regard to climate, soil, biological, mineralogical, and energy resources is the most richly endowed continent on earth. In fact it has the resources and the manpower and the technological knowledge necessary to provide every human inhabitant with an optimum physical standard of living at a small and continuously decreasing labor requirement per individual. Yet if we consider the widespread poverty and squalor that is allowed to exist, the wastage and destruction of resources, the destruction of products and maintenance of enforced scarcity both by government and by private industry, and the wholesale unemployment we are obliged to conclude that the actual operation of our social mechanism is vastly inferior to its presently known potentialities.

Hence, we have a clear case of a mechanism whose actual operation is so far below that which is possible as to constitute both a social and technological scandal. That this should be so need not be surprising when it is considered that the fundamental elements of design and operation of our social structure grew up thousands of years ago to meet the needs of an agrarian economy,

whereas the transition from such an economy to our present state of technological advance has occurred principally within the last century, and predominantly, so far as growth is concerned, since the year 1900. It is inconceivable that the institutions and customs which evolved to meet the needs of a society composed of hunters, peasants, sheep-herders, warriors, priests, petty merchants, and usurers should be adequate for the needs of a society operating a billion horsepower of prime movers with its consequent array of high-speed transportation, communication, and productive equipment.

A high energy civilization has needs peculiar to itself which must be explicitly recognized in any adequate design. Before we consider that problem, however, let us first examine critically some of the existing customs and folkways handed down to us from an agrarian antiquity, since it is in these that the principal faults of our present mechanism may be expected to lie.

The Concept of Property. One of the most deeply rooted of all these ancient concepts is that of *property*. So firmly fixed is this concept that ordinarily it is taken to be axiomatic; rarely does it ever occur to one to examine critically into its meaning. One speaks of 'my horse,"my dog,"my house,"my automobile,' with never a thought of just what constitutes the difference between a house that belongs, say, to Jones, and the same house if it belonged to Smith.

To make this even more clear, let us suppose that the house formerly belonged to Jones, and that he afterward sold it to Smith. Should a stranger, knowing neither Jones nor Smith, have observed the house from day to day, before and after the transaction, he would probably have been unaware that any such change had occurred. He might have noted that up until a certain date,

Jones lived in the house, and that after that date Jones moved out and Smith moved in. The stranger would have observed only that there had been a change of occupancy of the house. Such change of occupancy, however, might have occurred with no change of ownership at all, as in the case of the change of tenants in a house that is rented.

What then constitutes property in a house? A little reflection will show that ownership of, or property in, a house consists entirely in what society will allow an individual to do with regard to the house. If the property in the house is Jones', that merely means that Jones is allowed by society to live in the house, to rent the house to someone else, to leave it vacant, or to tear it down. Jones may transfer parts of these privileges to other people for a consideration, as in the case of rental, or he may dispense with the privileges altogether, by sale, by gift, or by forfeiture. In these latter cases, though the house remains, the right of property in the house is transferred to some other person.

The same line of reasoning applies to any other property. Thus, it becomes evident, as Lawrence T. Frank, of the Rockefeller Institute, has aptly remarked, that property consists not in a physical object, but is a mode of behavior with respect to a physical object.

The significance of this will be, perhaps, even more clearly understood if one should consider the difference between the ownership of an automobile in the middle of a 10-acre field and the ownership of the same automobile in the middle of Fifth Avenue at 2 o'clock on a busy afternoon. It would be the same automobile in either case with the same owner, but what society would allow the owner to do with his automobile in the middle of a 10-acre

field is vastly different from what it would allow him to do with it on Fifth Avenue.

A similar type of thing occurs in the ownership of land. Suppose one owned a tract of land in the middle of an uninhabited wilderness. In such a case, the rights of property with regard to this land would be absolute, since, by hypothesis, there would be no society in such an instance to limit or curtail one's freedom of action; it follows that such freedom of action would be limited only by one's physical ability. He could cut or burn off the timber, cultivate or not as he saw fit, and build wherever it should please him. Suppose that some generations later a thriving city should spring up on this same tract of land. Then, if the original tract were large, it would doubtless be subdivided among many owners and into small tracts. Under these circumstances it becomes immediately obvious that the right of property in the same land would be totally different from the right of property when the area was a wilderness. Even though it were his own land, society would permit the owner only a very limited range of operations in this latter case; it would dictate to him that he could build only residence, industrial, or business structures on his land, according to the city zone in which the land happened to be located. What is more, society would tell him within what specifications the wiring, the fire prevention equipment, the water supply and sanitation equipment must be built.

Property then, or more strictly, the rights of property, are quite relative, and are by no means the fixed and rigid privileges that in a more agrarian society they have been, or that is still unthinkingly implied when one occasionally becomes concerned over the possible discontinuance of private property.

In spite of this relative nature it still remains that almost every

item of physical equipment that can be monopolized is at the present time considered to be the private property of individuals or groups of individuals. The land is owned, mineral resources are owned, in short, everything that is necessary for human existence and that can be so monopolized, has been taken over and monopolized by individuals or groups. The only reason that one does not pay a public utility charge on the air one breathes is that there has not been found a way of enforcing a monopoly.

**Trade**. As a corollary to the concept of ownership, and to the fact that every monopolizable thing is owned by some person or other, come concepts of *trade* and of value.

The simplest form of trade is that wherein one exchanges, say, ten sheep for one cow, a pound of butter for one dozen eggs, or in general, one kind of commodity or goods for another kind of commodity or goods. Such an exchange is called *barter*, and represents one of the most primitive forms of trade.

While, casually, barter would be thought of purely and simply as an exchange of goods, a little consideration will show that what actually is exchanged is the property rights in these goods. If Jones trades Smith ten sheep for one cow, the property rights that society allows Jones with respect to the sheep are transferred to Smith, and vice versa with respect to the cow. Since there are numerous kinds of transfer of physical goods which are *not trade*, it is important that one keep this distinction in mind. For example, if one goes into a restaurant and orders himself a meal which he pays for with money, he is engaging in trade. If he has ample money he may seek a very expensive restaurant and dine in style. If he has very little money he may seek a lunch wagon and content himself with a ham sandwich and a cup of coffee. A similar circumstance holds with regard to clothing. His choice of an

expensive or a cheap suit of clothing may likewise be determined by his supply of ready cash. Both of these instances are examples of trade.

In an army, however, one is clothed and one is fed. In this case clothing passes from the quartermaster corps to the individual. While there is a transfer of custody of the clothing from the hands of the quartermaster corps to the hands of the soldier who is to use it, this clothing in both cases, before and after, is the property of the United States Army, and no trade is involved. What the soldier actually does is to sign an equipment sheet showing that he has received such and such equipment-this for the purpose of record. Here we have a transfer of goods from the custody of one person to the use of another without a trade having taken place in any sense of the word. A similar relation is true as regards a soldier's rations and housing.

Trade, then, consists in those exchanges, and those only, in which there is an exchange of property rights. In the case of the army when the quartermaster corps obtains its supplies from the manufacturer, this is accomplished by means of trade; when the quartermaster corps distributes these same goods to the soldiers for use or consumption, this latter distribution can in no sense of the word be construed as trade.

The Concept of Value. Intimately associated with the concept of trade is that of *value*. To consider the simple cases of trade represented by barter, as mentioned previously, it is evident that the number of sheep that would be traded for one cow would depend, among other things, upon the *relative abundance* in the particular locality wherein the trade was effected of cows and sheep. If sheep were very abundant and cows relatively rare, this ratio might be as high as 50 sheep for one cow; if the inverse

relation were true this exchange might be effected for as few as one sheep for one cow. A similar relation holds between butter and eggs, between cotton and wheat, or between any other pair of exchangeable commodities.

It is this variable relationship between the amount of one commodity that is exchangeable for another that is the basis of the concept of value. Value is fundamentally subjective, but is always expressed in the market place by the relative amount of one commodity that is exchangeable for another. The amount of one commodity that is exchangeable for another in different times, and in different places, varies widely. In general, the value of a product, that is to say, the amount of other products which is exchangeable for it, increases as that product becomes scarcer.

Thus, the value of diamonds at the present time is high only because diamonds occur but rarely, and are monopolized by the diamond syndicate, which allows them on the market at a very limited rate. Should a process be developed whereby diamonds could be manufactured for a cent or less per carat, their value would rapidly decline. In other words, it is only when a product is scarce that large amounts of other products need be offered in exchange for it.

The value of a thing has no relation to its social importance; for example, both air and water are completely indispensable for the maintenance of life. Air is so abundant that one need not exchange any commodity for its use. It is accordingly without value. Since the relative abundance of water varies from place to place, its value varies also. In a region of heavy rainfall and abundant water supply, both for the purpose of drinking and of irrigation, water has no value; it cannot be bought or sold. In arid regions, however, water both for drinking purposes and for irrigation, due

to its scarcity, is bought and sold or traded in, and accordingly has value.

The Concept of Debt. Suppose that in an agrarian system of barter a horse is exchangeable for eight pairs of shoes. Suppose that the shoemaker wishes to buy a horse, and that a farmer who has a horse to sell needs a pair of shoes; then if the farmer should trade the shoemaker his horse and accept only one pair of shoes, the shoemaker would still owe the farmer seven pairs of shoes. These seven pairs of shoes which the shoemaker owes to the farmer are said to be the *debt* of the shoemaker to the farmer; the farmer is called the *creditor*, and the shoemaker the *debtor*.

In such a situation as this, there are two alternatives. The debt may be discharged gradually by (a) the farmer taking the seven remaining pairs of shoes one at a time in succession over an extended period of time, or (b) the shoemaker may give to the farmer at the time of the trade a written statement to the effect that he owes, and will pay, seven pairs of shoes. Such a statement constitutes a certificate of debt. The farmer may then take this certificate of debt to a merchant and trade it in exchange for other goods which he now needs. In this latter case, the shoe-maker's debt of seven pair of shoes will be transferred from the farmer to the merchant.

Suppose that instead of the shoemaker having given the farmer a debt certificate, stated in terms of shoes, it had been in the form of tokens, which, by common agreement of the community were acceptable, not only in payment for shoes, but also in exchange for all other goods of the community; then this latter token would constitute money. Money then constitutes a form of generalized debt certificate which is exchangeable not merely for a specific product, but for any purchasable product, which the community affords. It is expressed in denominations of value.

Assuming monetary tokens to be already in existence in a given community, one acquires them in exchange for goods or for services rendered. They therefore represent a deferred payment. The holder thereof may exchange them with other members of the community at some future time and receive goods or services in return. Money is, therefore, stated in denominations of value, and is exchangeable for goods or services of an equivalent value. Thus if two different commodities are exchangeable on a barter basis for each other, the two are said to be of equivalent value, and each is exchangeable for the same amount of money.

It cannot be too strongly emphasized that money, as such, is not a commodity, but is instead mere tokens which by common social agreement represent debt owed by the community at large to their holders.

The substances used for money have varied widely from time to time, and from place to place. The North American Indians used wampum; some of the ancients used coins of copper, bronze, tin, and iron. Some of the South Sea Islanders have used dog's teeth. Modern countries employ as their monetary standard chiefly the metals silver and gold.

It is true that in the early stages of the evolution of money a particular commodity was frequently chosen as a medium of exchange for other commodities. In these early stages this commodity fulfilled the dual purpose of a usable commodity and a certificate of debt payable in terms of other commodities on demand. In more modern times, this duality has been eliminated by the process of coinage. In the United States of America, copper is both a commodity and the material for a certain coin. In the

form of a coin, copper represents merely a certificate of debt, and is usable accordingly. The value of a copper coin as a certificate of debt is very much greater than the value of the equivalent copper as a commodity.

It is customary among modern nations to adopt a particular metal, usually gold, as the base of the monetary system, in which case the value of gold as coin is taken to be equal to the value of an equivalent amount of gold as a commodity. That this relationship is purely arbitrary may be seen by the fact that nations have of late gone on or off the gold standard at will, and may by edict define the unit of value to be equivalent to any arbitrary amount of gold.

In a monetary economy, the amount of money exchangeable for a given unit commodity is said to be its *price*. The person who exchanges the commodity for money is said to *sell* the commodity; the person paying the money is said to *buy* the commodity.

**Definition of a Price System.** The foregoing discussion forms the basis for a definition of what is meant by a *Price System*. The fundamentals of any Price System are the mechanics of exchange and distribution effected by the creation of debt claims or the exchange of property rights on the basis of commodity valuation irrespective of whether property in that system is individually or collectively owned. Hence any social system whatsoever that effects its distribution of goods and services by means of a system of trade or commerce based on commodity valuation and employing any form of debt tokens, or money, constitutes a Price System. It may be added in passing that unless it be in some very remote and primitive community, none other than Price Systems exist at the present time.

#### References:

A Primer of Money, Woodward and Rose.

Wealth, Virtual Wealth, and Debt, Soddy (Chaps. 1-5).

# RULES OF THE GAME OF THE PRICE SYSTEM

The foregoing discussion of the concepts of ownership, of trade, of value, and of money, has enabled us to define what Technocracy means by the term *Price System*.

It has already been shown that money had its origin as an expression of debt or of deferred payment, and, since by common social agreement it is universally acceptable, a given amount of money represents a general debt of society to the holder, with neither the particular debtor nor the commodity which is owed being specified. That is to say, that money constitutes a debt claim of a certain value against any individual, and for any commodity having an equivalent value.

**Negotiability of Debt**. Other forms of certificates of debt of a less general nature are likewise in common usage. If one person sells another his property rights in some object, say an automobile, he may not receive goods in exchange, or even money. He may, instead, receive an IOU, stating that there is owing to him a given sum of money which will be paid at the expiration of a given period of time. Such an IOU constitutes another form of debt certificate. In this case, the certificate is more specific than in the case of money, in that it states that a particular person is the debtor. The holder of the debt certificate, however, may trade it to a third party in exchange either for goods or for money, in which case the debt is now owed to the third party.

Thus, certificates of debt, whether in the form of money, of

promissory notes, or personal IOU's, are negotiable, and can be bought and sold or traded in, in exactly the same manner as property rights in physical equipment.

Other forms of debt certificates are bonds, mortgages, bank deposits, insurance policies, and bank notes.

Certificates of Ownership. Besides certificates of debt, another of the more common types of certification employed in the more advanced stages of Price Systems, are *certificates of ownership*. In a more primitive society, ownership of physical property is maintained largely by unwritten social agreement or by the physical prowess of the owner. In the more advanced stages, however, ownership in larger items of property is attested by some form of legal document stating that a particular person or corporation has the rights of property with regard to some particular thing. This may be an area of land, an automobile, a building, a book, an invention, a franchise, etc.

Certificates of ownership are of different kinds, depending upon the type of thing owned. Ownership in real estate is certified by title deed, in an automobile by bill of sale, in a consignment of goods by bill of lading, in the right to publish a book by copyright, and in the right to manufacture an invention by patent.

With the increase in size, complexity, and rate of operation of the physical equipment of the Western World in consequence of the transition from a low-energy to a high-energy state of industrial development, there has occurred a corresponding change in the form in which ownership has been exercised. It has already been remarked that in an agrarian society ownership was largely individualistic; that is to say, that a particular individual possessed complete property rights in a particular thing. In the eighteenth

century and earlier, with the growth of commerce and of industry, groups of men found it convenient to form partnerships, as for example, the partnership of Bolten and Watt. At the same time, trading companies were organized for the purpose of conducting large scale commerce.

These partnerships and trading companies, especially in the United States, have, chiefly in the period since the Civil War, been largely metamorphosed over into a form known as a *corporation*. A corporation is defined legally as a fictitious individual; that is, it can conduct business and own property exactly as an individual while at the same time being owned by individuals without these owners being in any manner liable for the corporation. An exception to this statement occurs in the case of certain *double liability* corporations such as national banks. In these the owner is liable for the debts of the corporation to an amount equal to his nominal monetary ownership in the corporation.

Ownership, in the case of corporations, is expressed in two stages. In the first place, the corporation owns title deeds, patents, copyrights, franchises, etc., in exactly the same manner as an individual; in the second place, the corporation itself is owned by individuals who are known as *stock holders*, the certificate of ownership in the latter case being the corporation *stock*. The ownership of a corporation stock conveys to the holder the right to participate in the corporation profits when these are distributed in the form of *dividends*.

**Wealth.** Another Price System term that needs to be considered here is that of *wealth*. The term, wealth, is taken to signify the *monetary value* of physical assets of all sorts and kinds, including land, mineral resources, live stock, as well as man-made equipment. The total wealth of the United States, according to the

Statistical Abstract of the U. S., was, in the year 1922, 321 billion dollars. By 1929 this reached a peak of 385 billion dollars, and then declined by 1933 to approximately 300 billion.

This does not necessarily mean that there was more physical equipment in 1929 than in 1922 or 1933, because wealth is not a *measure* of physical equipment. It is, instead, a statement of the contemporary monetary value of that physical equipment, and, as we have pointed out previously, there is no fixed relationship between any physical object and its value. *In other words, value does not, and cannot, constitute a measure of anything.* 

Wealth in the foregoing sense may more properly be considered to be *national* wealth, as contrasted with *individual* wealth. Individual wealth consists in actual certificates of ownership of physical wealth in the sense defined above, or else in certificates of debt stating that the individual has a claim upon a certain value equivalent. Thus, it is immaterial to the individual whether his wealth be in the form of certificates of ownership in, say, land, General Motors stocks, A. T. & T. bonds, or U. S. currency, so long as that wealth is readily convertible in value from one of these forms to the other. Hence, from the point of view of the actual mechanism of the Price System, there is no important distinction in an individual's wealth between ownership of debt claims and the ownership of physical equipment.

Since debt claims are, in general, the more readily negotiable, it is simple to see how our present money-mindedness has arisen. It has become customary, not only for the layman, but for the business man, the financier and the professional economist, to think almost exclusively in terms of money or debt while taking only vaguely into account the fact that somewhere in the background, physical equipment exists and operates; that upon this operation

the entire social structure depends; and that but for this, the entire debt and financial structure would fall like a house of cards.

Creation of Debt. Individual wealth, as we have seen, consists largely in *debt claims*-money, bank deposits, bonds, etc.-and when not in these forms is expressed in equivalent units of value, which now have come to mean the amount of debt claims that could be acquired or exchanged for rights in physical property. Since debt claims constitute a claim for property rights in physical equipment, and have the same validity as actual ownership, it becomes manifestly of some importance to inquire into the mode of origin of these claims.

Debt always signifies a promise to pay at some future date. Thus any incomplete barter-that is, a case where goods are delivered with the understanding that the goods in exchange will be received at some future date-constitutes a creation of debt. Similarly, if a corporation issues bonds, these bonds are purchased for money, and since money already constitutes a debt claim, and the bonds represent a new creation of debt, it follows that debt, unlike physical substance, can be created out of nothing. In other words, the process of floating a bond issue does not of itself involve any change in the amount of physical equipment, either before or after. A similar line of reasoning applies to mortgages on real estate, promissory notes, and IOU's.

Banking and Credit. By far the largest single type of debt in the United States is bank debt, and banks are, accordingly, the largest creators of debt. Since this is true, and since banking forms the central nervous system of our entire debt structure, which, in turn, controls the operation of the physical equipment, it becomes a matter of some importance that the mechanism of banking be examined critically. There are many misapprehensions of the

mechanism of banking, ranging from the popular misconception of a bank as merely a repository for the safekeeping of money, to the conception of a bank as an institution that takes in money from depositors, lends it to other people, and acquires its profits by receiving a higher rate of interest on the money it lends than it pays on that which it borrows. All of this, as H. D. McLeod in *Theory of Banking and Credit* makes abundantly clear, is totally erroneous.

The essential mechanism of banking is as follows: A banker is a human being or corporation with a ledger and a vault for the safekeeping of money and other debt certificates. A depositor brings money to the banker. The banker accepts the money, and records in his ledger a bank credit or deposit in favor of the customer equal in amount to the money brought by the customer. This credit or deposit entered in the banker's books is a statement of the debt of the banker to the customer. It is a statement, in effect, that the banker is obligated to pay the customer on demand or at the end of a certain period of time, depending upon whether the deposit is a demand or a time deposit, an amount of money up to the full amount of the deposit. Contrary to the commonly accepted notion, a bank deposit does not signify money, but signifies, instead, a debt due by the banker to the customer.

Now suppose that another customer calls on the banker and brings, instead of money, a promissory note from a reliable firm, payable 6 months from date. Suppose the amount of the promissory note was \$1,000, and the prevailing rate of interest on paper of this sort was 5 percent per annum. In this case the banker would *buy* the promissory note from the customer after deducting or *discounting* the interest due 6 months hence at 5 percent per annum, amounting in this case to \$25. He would not, however, pay money for this debt. He would, instead, enter upon his books a credit or deposit for the amount of \$975, in favor of the customer,

with no money whatsoever being involved.

This bank deposit of the second customer would be in no respect different from that of the first customer who brought money to the bank. Each deposit merely represents the legal right of the respective customers to demand money from the bank up to the amounts of their respective deposits.

The money in the bank does not belong to the depositors, but is the property of the bank to do with as the banker sees fit within his legal limitations. Thus, in bank records, the cash on hand represents always a part of the banker's assets because it is his property. The deposits, on the other hand, are among the banker's liabilities, representing his debt to others.

The banker knows from experience that under ordinary circumstances only a few of the depositors demand cash payment over a short time-period, and that this is approximately balanced by other customers who deposit cash. By far the greater part of the payments made by the customers of the bank are made by check. If this check is written to another customer of the same bank it ordinarily is returned for deposit to the latter customer's account. This still involves no money but only the bookkeeping procedure of transferring a credit from the account of the first customer to that of the latter.

In case the receiver of the check is a customer of a second bank the procedure is only slightly more complicated in that it involves a transfer of credit through the medium of a clearing house from the first bank to the second.

Thus, bankers have found that if customers have delivered to the bank \$100.000 in cash the bank can then enter upon its

books not only the deposits of these customers to the amount of \$100,000, but it can also enter upon its books other credits, or deposits, to the amount of approximately \$1,000,000, or ten times the amount of cash on hand to the credit of other customers in exchange for the debt certificates the bank has purchased from these latter.

Thus, we see that the real business of banking is that of the buying and selling of debts. The banker buys a debt from his customer, and out of thin air, so to speak, creates for this customer a bank deposit which is another debt, or as McLeod has stated it in **Theory of Banking and Credit:** At the present time credit is the most gigantic species of property in this country, and the trade in debts is beyond all comparison the most colossal branch of commerce. The subject of credit is one of the most extensive and intricate branches of mercantile law. The merchants who trade in debts-namely, the bankers-are now the rulers and regulators of commerce; they almost control the fortunes of states. As there are shops for dealing in bread, in furniture, in clothes and other species of property, so there are shops-some of the most palatial structures of modern times-for the express purpose of dealing in debts; and these shops are called banks.

And, as there are corn markets and fish markets, and many other sorts of markets, so there is a market for buying and selling foreign debts, which is called the Royal Exchange. Thus, banks are nothing but debt shops, and the Royal Exchange is the great debt market of Europe.

Consequently, when the deposits of a given bank are many times greater than the cash on hand, that bank is doing a thriving business, but when the deposits are equal to the cash on hand, the bank is doing no business at all, and has become merely a

repository for money with a state of complete liquidity-a state that many of our larger banks at the present time are approaching.

The Compound Interest Property of Debt. Not only is debt, as we have seen, created out of thin air, but it has another property, according to the present rules of the game of the Price System, which is described by the term *interest*. According to this latter property, debt is expected to generate more debt, or to increase at a certain increment of itself per annum. This annual amount of increment expressed as a percent of the original amount, or *principal*, *is* called the *interest rate*. A conservative interest rate on investments has been considered of late to be around 5 percent per annum.

**Growth of Debt.** It is to be expected as a consequence of this property of spontaneous generation of debt out of nothing, that the total debt structure of a Price System would tend to increase indefinitely. This we find to be, indeed, the case.

In a study, *The Internal Debts of the United States* (1933), edited by Evans Clark, it is shown that in 1933 the long-term, or funded debts of the United States, amounted to *134* billion dollars. The short-term debts at the same time were *104* billions, giving a total internal debt of *238* billion dollars. This total of 134 billion dollars of long-term debts, as Clark points out, represents an increase of *96* billion dollars from the pre-war figure, which was only *38* billion dollars: 'Of this increase, *37* billion dollars came before the post-war depression *(1921-22)*, 51 billion more came between 1921-22 and 1929, and *8* billion dollars developed during the current depression. In other words, long-term debts about doubled between 1913-14 and 1921-22; increased about *68* percent more between *1921-22* and 1929; and expanded a further 6 percent in the past *4* years, so that for every \$1.00 of debts we carried before the war, we carry \$3.53

today.'

It becomes especially significant now to consider what was pointed out in a previous lesson: That the physical expansion of industry was, in a period from the Civil War to the World War, a straight compound interest rate of growth at about 7 percent per annum. During that period, the debt structure was also extending at a similar rate of increment. Since the World War, as we have already seen, the rate of physical expansion has been declining, and physical production has been progressively levelling off. Thus, for the period prior to the World War there was a close correspondence between the rate of growth of the debt structure, and of the physical industrial structure. Since the World War, while the physical structure has been levelling off in its growth, the debt structure, not being subject to the laws of physics and chemistry, has continued to expand until now the total long- and short-term debts are only slightly less than the entire wealth, or monetary value of all the physical equipment. As time progresses this discrepancy between the rate of growth of the physical equipment and that of debt must become greater, instead of less. The implications of this will be interesting to consider.

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# THE FLOW OF MONEY

We have already shown that money, bank deposits, bonds, and various other forms of negotiable paper are all generically the same, namely, debt. While in 1933 the total long- and short-term debts of the United States were estimated at 238 billion dollars, only about 9 billion dollars of this were represented by actual money in the form of gold, coins of various metals, U. S. currency, and various kinds of bank notes. Consequently in what follows we shall use the term 'money' merely to signify a circulating medium indiscriminately as to whether this medium be coin, currency, bank checks, or any other form of negotiable paper.

For our purposes the significant thing about money in this broader sense is that while it has the property of being created out of nothing or contracted into nothing in a manner quite unlike the physical operation of our industrial apparatus, it constitutes *the mechanism of control* over the latter. The first aspect of money, or debt, we have already discussed; it remains now to consider the manner in which it operates as an industrial control device.

The Flow of Goods. This latter aspect can be seen very simply when one considers the manner in which goods are made to move from the productive processes into consumption. All consumable goods have their original source in the earth. From the earth matter is moved by mining, by agriculture, or by some other process into some form of manufacture. From the factory the finished product moves to the wholesaler, thence to the retailer, and finally to the consumer.

After consumption, the matter of which the 'consumed' goods are composed is returned in part to the earth in the form of gar-

bage, ash, and other waste products; and in some cases it is salvaged and returned to the factory as scrap metal, rags, and waste paper, to be used over again.

**The Mechanism.** Consider how these finished products move from the retailer to the consumer. This is where money enters the picture. The consumer hands the retailer, say, a five dollar bill, and receives from the retailer a pair of shoes. This illustrates the process. In every form of consumable goods and services the consumer hands money to the retailer, and goods and services, dollar for dollar, move to or are placed at the service of the consumer.

If the consumers spend in this manner 1 billion dollars per week, then 1 billion dollars worth of goods and services are moved to the consumers, and if this rate be maintained the factories must produce goods at this rate, and industry booms. If, on the other hand, the consumers spend only 100 million dollars per week, or one-tenth of the previous amount, assuming prices to be the same in both cases, industrial production will be only one-tenth of what it was before, or by comparison, almost a complete shutdown.

This simple mechanism under a Price System method of industrial control, determines completely what industry shall do. If the money flows freely from the hands of the consumer to the hands of the retailer, goods *flow* freely in the opposite direction, and industry operates; if the money merely trickles from the hands of the consumer to the hands of the retailer, goods move in the opposite direction at a correspondingly small rate and industry shuts down. It remains to be seen what determines this rate of monetary *flow*.

The Process. First, let us consider what happens to the

money after the retailer gets it. The retailer must pay his help and a part of the money is used for this. He must also pay his rent, and a part goes for this. He has, besides, to meet his light bill, telephone bill, and various other miscellaneous charges. He may have borrowed money from the bank or sold some bonds to obtain the capital with which to conduct his business, in which case a part of what he receives would have to be used to pay the interest. Finally, he must buy goods from the wholesaler to replace those he sold, and a greater part of the money which he receives goes for this. If, after these bills are paid, any money is left over this constitutes profit, and goes to augment his personal income if the retailer be an individual; or, if the retailer be a corporation, these profits may be disbursed as dividends to the stockholders.

Exactly the same relationship that we have described between the consumer and the retailer exists between the retailer and the wholesaler, and between the wholesaler and the manufacturer. In each of these cases goods move from the wholesaler to the retailer when, and only when, money in the broader sense that we have defined moves from the retailer to the wholesaler, and from the wholesaler to the manufacturer. Like the retailer, the wholesaler must pay his help, his landlord, his interest, light, telephone, and miscellaneous bills. Any surplus above these can be disbursed as profits. The manufacturer must do a similar thing, for he must pay all these bills, as well as purchase his raw materials. The raw materials, as we have pointed out, are derived originally from the earth, so that the last payment made in this series is that which goes to the farmer for his produce, or, as royalties, to the owners of mineral resources.

Now, let us review this whole process. Goods move in one direction, from the earth to the consumer and back to the earth again; money moves from the consumer to the retailer, the whole-

saler, the manufacturer, and finally the landowner. But this monetary stream is being tapped at each section of its length, and being fed back as wages, rent, interest, profits, etc., and becomes the income of various individuals, who are themselves consumers. By the time this monetary stream reaches the ultimate land-owner, who is the last person in the physical flow line, every cent that was originally paid to the retailer has been in this manner accounted for. Thus, if a million dollars passes from the consumer to the retailer, a million dollars worth of goods will be produced and consumed, and this same million dollars in the form of wages and salaries, rent, interest, profits, royalties, etc., will be paid out to individuals who are consumers, and will accordingly augment their incomes by the amount of one million dollars. Thus the sale of one million dollars worth of goods in this manner ultimately provides consumers with one million dollars with which to buy another million dollars worth of goods. That is, provided that none of the million dollars originally spent is retained in any manner.

**Saving.** Let us suppose, however, that somewhere along the route a part of this money passes into the hands of corporations, and that these corporations are making a profit, only part of which they pay out as dividends, the remainder being held as corporation surplus. If, in this manner, out of each million dollars paid in by the consumer, 100,000 dollars was held out by the corporation as surplus, then only 900,000 dollars would be returned to the consumer. Consequently, the second time around, the consumer would be able to buy only nine-tenths as much goods as he bought the first time. Industrial operations would, accordingly, only be nine-tenths as great. This process would continue with industry shutting down one-tenth of its previous production for each time the money made its complete circuit until ultimately complete industrial paralysis would result. This, of course, assumes that the money which was saved by corporations was locked up in a vault or

hoarded.

The same result would occur if individuals, thinking that they might need some money for illness or old age, instead of spending all they received, should decide to lock a part of it up and keep it. To the extent that this was done goods would not be bought, and industry would not operate. Thus we come to the conclusion that if prices remain the same, and if either corporations or individuals save by withholding from circulation a part of the money which they receive, the ultimate result will be industrial paralysis.

We must consider, however, the fact that there are various ways other than hoarding by which corporations and individuals can save. If a corporation wishes to manufacture and sell more goods than the current purchasing power is able to buy, it may do so by extending credit to its purchasers, or selling on the installment plan. In this manner they may pay out all the money in the form of cash which they receive and still show a book profit in the form of accounts receivable.

Investment. Another way a corporation can save without hoarding is to take the profits which are not disbursed as dividends and build a new plant. In this manner all the money otherwise withheld is fed back through the various channels of wages, salaries, etc., and the corporation is the possessor of a new plant. In an exactly similar manner individuals may invest their savings in corporate stock, and thus help build new plants, or they may put them in savings banks or take out life insurance, in which case these latter agencies invest the funds in new productive equipment. Thus we see that if savings, whether corporate or individual, are reinvested in physical equipment they ultimately return to become the purchasing power of individuals, but in the process the country's capacity to produce has been increased.

That this is an endless process can be seen when it is considered that in the following year the new equipment will begin to produce, and then the purchasing power which heretofore has been sufficient to buy only the products of the existing plant will be inadequate to purchase the combined output of the old plus the new plant if prices remain the same. This difficulty can only be met (provided prices are not lowered) if the savings continue to be reinvested in new equipment-so that at all times the money which is being paid out to consumers through the construction of new plants is sufficient to make up the deficit in consumer purchasing power caused by money being held out by individual and corporate savings.

Results of the Process. This, it will readily be seen, is a compound interest type of thing. Under the hazards that exist in a Price System it is imperative that both individuals and corporations save. If they save by hoarding they shut the existing plant down; if they save by building new plants they have a process which can only work provided the plant be continuously expanded and at an accelerating rate. That the latter policy is impossible to continue indefinitely simple physical considerations will show. As we have pointed out previously, no physical process can continue to grow at a compound interest rate for more than a limited period of time. The limitations of our natural resources on one hand and of our physical ability to consume on the other both require that this be so.

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# WHY THE PURCHASING POWER IS NOT MAINTAINED

We have seen how, under a Price System, the rate of flow of money from the consumer to the retailer of goods and services acts as an industrial control mechanism. We have found that if individuals and corporations be allowed to save, the requisite purchasing power to buy the existing products of industry can only be maintained provided money is being paid back to the consumer through the construction of new plant or other capital goods, at a rate equal to that at which money is being lifted from the purchasing power for consumers' goods through individual and corporate savings.

The Inevitable Inflection Point. At first thought, from this simple consideration, it would appear that our physical production should expand indefinitely until blocked either by a physical limitation of the ability to produce or by a saturation of our ability to consume. The fact remains, however, that the inflection point of our industrial growth curve occurred some time around 1915, and since that time, as we have pointed out elsewhere, industrial production has been levelling off. That this levelling-off was not due to an inability to increase production is to be seen when one considers the fact that in 1929, the year of an all-time peak of physical production, little of our productive equipment operated with a *load factor* of more than 33 1/3 percent.

What we mean by load factor is the ratio of the actual production divided by productive capacity at continuous 24 hour-perday full load operation.

Among the most continuously operated parts of our industrial equipment are the electric power system and the telephone system. The load factor on the power system in any but special branches rarely exceeds 40 percent of its productive capacity. The load factor on telephones is much lower than this. Most of our other industrial equipment in 1929 operated only one or two shifts per day for a limited number of days per year.

It has become customary in discussing present rates of industrial operation to compare them with the 1929 rate, and refer to the latter as being our 'industrial capacity.' Consideration of load factors shows quite conclusively that such was far from the case, the Brookings Institution and other professional apologists for our status quo notwithstanding.

Attempts to Maintain Production. The increasing deficiency of purchasing power for the purpose of buying our potential production is brought out by other corroborative facts. During the World War for the first time we found, ourselves playing a significant role in world trade. This was affected through the mechanism of loans to foreign countries enabling them to buy our surplus products without our having to accept a corresponding amount of theirs in return. Due to the fact that our domestic purchasing power after the war was not sufficient to buy goods at the rate we were able to produce them, we tried to continue this method of getting rid of surplus goods by making still further foreign loans, and by preventing our own people from buying from abroad by building a tariff barrier so high as to make importation of foreign goods practically impossible.

The fact that these loans could never be repaid while maintaining a 'favorable balance of trade' and that this amounts to a net

physical loss to the country is, of course, well known. Yet such practices are not only in accord with the canons of 'good business'; they are dictated by the necessities of business expediency.

The significant aspect of this is that America's capacity to produce during all this period was in excess of the American public's capacity to buy, so that a surplus margin of production was maintained by promoting what amounted to installment selling abroad.

According to Mr. George W. Peek, in his report of May 23, 1934, to the President, the net increase of this debt owed to us by foreign countries for the period *July* 1914 to July 1922, was \$19,305,000,000. For the period from July 1923 to July 1929, this debt was further increased by an amount of \$2,572,000,000.

Since the American productive capacity was still in excess of the ability of the American public to buy, plus the installment selling abroad, a further increase of production was achieved through the mechanism of installment selling at home. In this process the debt built up by installment buying during the period from 1924 to 1929 amounted to \$9,000,000,000, or approximately \$2,000,000,000 per annum net increase.

The significance of this is that effective purchasing power, that is to say, purchasing power that was actually being used to purchase goods and services, and hence to keep industry operating, was falling further and further behind the ability to produce. Therefore the rate of operation actually was maintained through the device of selling abroad some 22 billion dollars worth of goods more than could be paid for, while at home in the latter part of this period at least 9 billion dollars worth of goods in excess of current purchasing power were sold. Had this not been done our industrial

production would, of course, have levelled off faster than it did.

The Financial Structure. The question that all this leads us to is, why was not the effective purchasing power sufficient? Why did it not keep pace with productive capacity? If savings are used to build new plants, do they not then become wages and salaries of the workmen, and hence feed right back into the effective purchasing power? This would have been true a century ago in the days of hard money; today, however, money no longer conforms to this simple picture. The total amount of hard money in existence in the United States in 1931 was only about 5 billion dollars. The amount of money represented by gold bullion, metallic coins, bank notes, and United States currency totalled only a little over 9 billion dollars. When it is considered that in 1933 the total of all long- and short-term debts, including money, amounted to 238 billion dollars, it becomes immediately evident how relatively insignificant the small amount of actual cash in existence is in such a picture.

The Process of Investment. The simple fact is that when individuals and corporations save through the process of reinvesting, these savings are not, as naively supposed above, spent, except in a small part in further plant construction. The greater part of all investments in this country since the year 1900 have gone into pure paper, without there having been a plant expansion commensurate with the amount of money invested.

The history of almost any great American corporation will bear this out. Most American industrial establishments which have since grown into positions of national consequence began in a small way under individual or partnership ownership; or else, like some of the earlier railroads as joint stock companies, the shares of which were sold directly to the public without their having been

even listed on the Stock Exchange. Profits were plowed back into the business, and the plant expanded under its own savings. Debts were contracted, if at all, usually by short-term loans from the banks. Except in the case of the joint stock companies, ownership was maintained by a single family or by a small number of partners. In these formative stages securities speculation was a practice little indulged in, and the money obtained from the sale of securities was practically all used to expand the plant.

It has been the usual history in such cases that after the industry in question was well established, bankers and promoters became interested. Through their services reorganizations or mergers have been effected. Bonds and preferred stocks have been issued to the former owners and to banking groups interested in the reorganization, usually in amounts greatly in excess of the original capital investment. Over and above this, common stock has been issued, usually in an amount similar to that of the bonds and preferred stocks. These common stocks, however, have not been in general marketed by the corporation for the purpose of raising additional capital funds. They have, instead, been given away in the form of bonuses to bankers, promoters, and other interested insiders, or else issued as stock dividends for no monetary consideration whatsoever, and hence no addition to the plant. These stocks are in turn fed into the Stock Exchange by these interested insiders until they are finally bought up by the investing American public. It is to be emphasized that the proceeds of such sales of common stock go to the insiders, and not to the corporations or into new plant.

A similar paper manipulation has been carried on in bonds and mortgages through the mechanism of the holding company. In this manner the paper of an operating company is used as security for issuing other paper of, say, a holding company, and this in turn re-hypothecated until several generations of stocks and

bonds are issued and sold to an unsuspecting investing public, all with no backing whatsoever other than that of the original inadequate plant on which the first stocks and bonds were issued. In many cases such bonds are still in existence long after the equipment securing them has ceased to exist.

When one considers that such manipulations as these are the accepted methods of sound finance it begins to be evident why the money reinvested in industry does not become available in a corresponding amount as further purchasing power.

If it happens that new plant is built at a sufficient rate to supply the deficit in purchasing power all is well and good, but there is no necessary reason why this should be so. The great bulk of savings, both individual and corporate, are reinvested. Investment, we now see, consists in buying pieces of paper labelled usually as stocks or bonds. If the money spent for these pieces of paper were used to build a new plant this money would, in the manner we have already indicated, be largely paid out to workmen, and hence become effective purchasing power. If, however, the securities purchased represent, as is usually the case, merely paper floated by interested insiders upon a plant already in existence, this does not increase the productive plant, and thereby augment small incomes; it becomes, instead, the medium of debt creation held by the bankers and promoters, and its interest or dividends go to increase further a small number of individual incomes which, in most cases, are already overwhelmingly large.

**Income.** The net result of this kind of procedure is to produce an ever-increasing disparity in the distribution of the national income. This disparity is well brought out by the Brookings Institution Report on *America's Capacity to Consume*, published in 1934. According to this report, in 1929 there were 27,474,000

families in the United States receiving an aggregate income of \$77,116,000,000. Of these, 24,000,000 families, or 87 percent of the total number of families received incomes of less than \$4,000 per annum, constituting only 51 percent of the total income. According to this report:

'Nearly 6 million families, or more than 21 percent of the total, had incomes less than \$1,000.

'Only a little over 12 million families, or 42 percent, had incomes less than \$1,500.

'Nearly 20 million families, or 71 percent, had incomes less than \$2,500.

'Only a little over 2 million families, or 8 percent, had in-comes in excess of \$5,000.

'About 600,000 families, or 2.3 percent, had incomes in excess of \$10,000.'

And further:

'The 11,653,000 families with incomes of less than \$1,500 received a total of about 10 billion dollars. At the other extreme, the 36,000 families having incomes in excess of \$75,000 possessed an aggregate income of 9.8 billion dollars. Thus, it appears that 0.1 percent of the families at the top received practically as much as 42 percent of the families at the bottom of the scale.'

These facts clearly show that the great bulk of the families receive incomes far below their physical capacity to consume, while a large part of the income goes to only a handful of people, and in an amount far in excess of their ability to consume. Bearing in mind that consumption is a physical operation, and that there are definite physical limits to how much food, clothing, etc... a single individual can consume, it follows that the great bulk of the consuming must, because of preponderance in numbers, be, done

by those people with small incomes. The small number of people with the large incomes can account for only a small fraction of the total physical consumption. It is true that they build expensive houses in the suburbs, purchase rare and therefore expensive painting, and indulge in various forms of conspicuous consumption. Still the fact remains that the amount of coal, gasoline, food, clothing, etc., that is actually consumed by a family with a million dollar per year income is not at all commensurable with the magnitude of the income. While it is true that such families may employ a large coterie of servants, we must not lose sight of the fact that the money paid to these servants is their income, and that the consumption for which they are responsible cannot be credited to the millionaire family which employs them. Due to the impossibility of spending even in conspicuous consumption the total of such large incomes, it follows that it is these which are likely to be the source of the greatest savings. This presumption is verified again by the Brookings Institution Report, according to which the aggregate saving of families of 1929 amounted to \$15,139,000,000. Of this, 34 percent was derived from the 24,000 incomes above \$100,000; 67 percent of these aggregate savings was accounted for from the 631,000 families with incomes above \$10,000 per year.

In other words, the bulk of the consuming is done by people having less income than \$10,000 per year; the bulk of the saving by those having incomes greater than \$10,000 per year.

What is significant about all this is that industry, as we have remarked before, is geared to the rate at which people spend money for consumable goods. Now, it becomes evident that almost all of this money that is spent for consumable goods is accounted for by those people whose incomes are far below their physical capacity to consume. These small incomes are in turn derived

almost entirely from wages and salaries or from agriculture. The wages and salaries paid by industry are determined on a value basis in which human beings compete with machines.

Profits, Technology, and Purchasing Power. An individual business man is in business for the purpose of making money. If his particular business happens to be the operation of, say, a factory, he finds that there are two principal ways by which his profits can be increased. Other things being considered for the moment constant, he finds that his total profits can be increased by increasing his sales and hence the production of his product. The other way in which profits can be increased is by the lowering of the internal cost of production. It is a simple physical fact that a human being at his best can only do work at the rate of about onetenth of a horsepower (one-tenth h.p. equals one-thirteenth kw.) Human beings at the lowest sweatshop rates cannot be paid much less than 25c per hour. Mechanical power, on the other hand, is produced at the rate of 1 kilowatt-hour per pound and a half of coal, and can be retailed at an industrial rate of about 1 cent per kw.-hr. Thus it will readily be seen that when man-hours sell at 25c or more each, while kilowatt-hours can be purchased at an industrial rate of 1 or a few cents each, and when it is further considered that the kilowatt-hour will do 13 to 100 times as much work as a man-hour, and do it faster and better without any attendant labor troubles, it becomes evident that man-hours have slight chance to survive. Thus, one of the most effective ways of reducing internal costs is to substitute kilowatt-hours for man-hours.

We now see that almost the complete controlling mechanism of industrial production is the rate of expenditure of small wages and salaries. If the sum of small wages and salaries in a given year is 50 billion dollars, then industrial production for that year is only slightly more than 50 billion dollars, because small wages

and salaries are almost entirely spent for goods and services, and the large incomes accrue to such a small percent of the total population that they account for a relatively unimportant fraction of the total consumption.

Since one of the fundamental rules of the Price System is that only through the acquisition of purchasing power can the individual subsist, it follows that as the only means of acquisition open to the majority is employment, then he who does not work does not eat. Collectively speaking, salaries and wages are directly proportional to the total man-hours required to operate the social system. Employment, as we have seen elsewhere, depends both upon the quantity of production and upon the man-hours required per unit produced. This process, we know already, is one in which total production is levelling off and the man-hours per unit produced are continually falling.

In the earlier stages of such a process, production, while still increasing, falls further and further behind the plant's capacity to produce, because the wages and small salaries form a declining fraction of the retail price of the goods produced. This curtailment of production below the capacity of the existing plant tends to discourage the building of new plant. If, for instance, the capacity of existing shoe factories were 900 million pairs of shoes per year when the public was only buying shoes at the rate of 400 million pairs per year, this would lead to a curtailment in the rate of building new shoe factories. This same sort of thing is true for any other branch of productive industry. Since a large part of the wages and small salaries are derived from the construction of new plant, this curtailment of the capital industry results in a further reduction of wages and salaries, and leads to a corresponding decline of purchasing, and hence of the production of consumers' goods. Once this decline sets in, it is self-accelerating downward unless

counteracted by means more or less foreign to the industrial process itself.

**New Industry.** Of the factors which are *supposed* to counteract the process we have just described, one is the growth of new industry. Let us consider such a case. Specifically what we wantto know is, if present industry is not providing enough purchasing power to enable the public to buy its products when running at capacity, will a new industry make the situation better or worse?

Suppose that a plant manufacturing a completely new product is built. Suppose the plant cost \$1,000,000. Most of this \$1,000,000 goes to wages and salaries of the people who built it, and thus increases purchasing power with which to buy the products of the existing plant. Now let the new plant start operation, and let the retail value of its products be \$10,000,000 per year. Suppose that only \$4,000,000 per annum of this is spent for wages and small salaries. Then one would have a situation where \$10,000,000 worth of new products are added to those which the public is expected to buy per year, but the consuming public-those receiving wages and small salaries-will have been given only \$4,000,000 with which to buy the products. The other \$6,000,000, if the product is sold, will all accrue to a small number of people in the large income brackets. If production is to be balanced, this small number of people must consume the \$6,000,000 worth of products. The observed fact is that in general they do not, and cannot. If, therefore, the whole production is to be disposed of, the money to buy it must be derived in part from the already deficient purchasing power accruing from the older branches of industry.

This sort of relationship was not true in the earlier days of industry, because at that time employment was increasing as production increased, and small incomes comprised the greater part

of the cost of production. This enabled the public to buy back the goods produced and yielded a purchasing power which expanded as the productive capacity expanded. The same technological factors that have enabled us to produce more goods with fewer men, have at the same time rendered it impossible to sell the goods after they are produced. In the earlier days, new industry provided the deficit in purchasing power for current production, and at that time we could look forward to industrial growth with a corresponding prosperity; today we can look forward to neither.

**Debt Creation.** We have already mentioned that this growing disparity between effective purchasing power and plant capacity leads first to a decline in the rate of increase of production, and next to an absolute peak followed by a decline in production. It follows that the only way this trend of events can be temporarily retarded is through the process of *debt creation*. When the public has not the requisite purchasing power, we grant it a fictitious purchasing power through the mechanism of installment buying. We find also that by a similar device applied abroad we can promote foreign trade, and can ship away our goods and receive debts in exchange. Also, through the mechanism of securities speculation and other forms of paper manipulations, we have multiplied our millionaires. They, in turn, allow a small part of their incomes to trickle back to the market place through the medium of servants and other forms of ostentatious living.

Simple considerations will show that the debt process of balancing our national economy cannot long endure, for the fundamental property of debt, upon the validity of which all our financial institutions-banks, insurance companies, endowed institutions, etc. rest, is that the debt structure is expected to expand at a compound rate of increment per annum. To maintain a 5 percent per annum rate of expansion on our debt structure, and have it

bear any fixed relation to physical production, or, in other words, to maintain a constant price level in the meantime, would require that industry expand at a corresponding rate.

As we have seen, during the period from the Civil War till the World War, American industry did expand at such a rate as to double its production every 12 years-a rate of growth of 7 percent per annum. During that period the monetary interest rate remained approximately stationary at about 7 percent per annum and our financial institutions were 'sound.' Since the decade of the World War industrial production has been levelling off and its rate of growth declining. In this situation the debt structure can do either of two things (or a combination of the two): (1) The interest rate can be kept constant, in which case the debt structure will expand faster than the industrial production and the ratio between debt and physical goods will continuously increase. This is pure paper inflation and leads to a corresponding increase in the price level or to a continuous decline in the amount of physical goods that can be purchased each year from the return of each dollar invested, which is, in effect, a decline in the interest rate. (2) The price level may remain stationary. In this case inflation is precluded so that the rate of increase of the debt structure must be held approximately equal to the mean secular rate of growth of production. This leads directly to a decline in the nominal rate of interest.

These deductions concerning the decline of the interest rate that must accompany the decline in the rate of industrial expansion are amply confirmed by the events since the year 1920. During that time the mean secular rate in industrial growth has been steadily decreasing. Accompanying this the interest rate throughout that period has also been declining continuously until today the interest rates are the lowest in the last hundred years.

Since there is no reason to expect more than temporary periods of future industrial expansion, there is no reason to expect any other than temporary reversals of this downward trend of the interest rate. Yet an interest rate approaching zero undermines completely our complex of financial institutions, because these depend upon a finite interest rate for their existence.

All of this series of events which we have been discussing more or less hypothetically is what has actually been happening in the United States since the World War. From the World War to the stock market crash in 1929, the deficit of purchasing power that had to be met to maintain an increasing industrial production was derived largely through the mechanism of private debt expansion at home and abroad. After the stock market crash, with the resulting standing army of 15 to 17 million unemployed, and an industrial production of approximately 50 percent of that of 1929, it became necessary, in order to maintain the Price System, for the government to assume the debt creation function.

This is being accomplished by the Federal Government's borrowing about 4 billion dollars per annum more than its current income, and donating this under one pretense or another to the public to make up, partially, the deficit resulting from so-called normal business activity. A similar, though perhaps smaller, debt expansion is being carried on by state and local governments, many of which are dangerously near bankruptcy at the present time. In the meantime the banks belonging to the Federal Reserve System are reported in the newspapers as holding the highest surplus in history, and the United States Government itself has become the most profitable field for investment.

Thus, America finds herself today in the position where private corporate enterprise has practically ceased to exercise the

prerogative of creating debt and has voluntarily surrendered this prerogative to the Federal Government of these United States; so much so that the Federal Government has at this time become practically the sole creator of debt claims in large volumes for the sole purpose of sustaining the debt structure of this Price System by further Federal debt creation for the benefit of the majority holders of debt claims, chiefly of private enteprise. Or, as Howard Scott has aptly remarked, 'When American business men find it no longer profitable to indulge in further debt creation it is only just and meet that their government should do it for them.'

In spite of all this so-called 'priming of the pump' by government expenditures, industrial production is still only slightly above the lowest point reached since 1929, unemployment is still variously estimated at from 10 to 12 million, relief figures are rapidly mounting to where, according to Relief Administrator Hopkins, there are now 19,500,000 people on Federal relief alone. Playing the game by the Price System rules, there is no prospect in the future for the situation to do anything but get worse rather than better. And all this in the midst of potential plenty!

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Propaganda. Among the most powerful devices in social control at the present time are the radio and the press. Just how powerful the press has been in the past can be seen when we review the propaganda which we were fed during the late World War. At the beginning of the World War we were a nation at peace with the world, and the great majority of the American people were almost oblivious of the fact that Europe existed. Finally, the House of Morgan became dangerously overloaded with debts of the Allies and succeeded in involving, in some measure, a large number of American business men besides. Then, only a few weeks before our declaration of war, our Ambassador, Page, to England, cabled President Wilson that in order to maintain our preeminence in world trade, and to save Morgan, it would be necessary for the United States to enter the war on the side of the Allies. We entered, and, in the light of this, our entry into the World War 'to make the world safe for democracy' and the events that followed are extremely interesting.

The American public as a whole had little knowledge of, and little interest in European affairs, and, least of all, had they a hatred of the Germans or a love for the French. Consequently, to make it a successful war such a love and a hate had to be created synthetically. To this end the best liars and ballyhoo artists that could be obtained were set to work grinding out lies about the atrocities of the Huns and disseminating them from the lecture platform and the press to the American public. The results were those desired: America entered the war, large profits were made, and the gullible public swallowed it, hook, line and sinker.

The same devices that were used then with regard to the war have subsequently been used with regard to political and economic matters. Most of the major newspapers and magazines of wide circulation, such as the *Saturday Evening Post*, are chiefly organs

of propaganda for favored business interests. While the control may be quite impersonal, it is none the less positive, because all of these papers depend very largely upon the goodwill of business interests for their advertising which is a highly essential part of their financing program. If they print the right stuff, advertising and prosperity is theirs; if they don't, they stand a good chance of going out of business.

A very interesting example of such control of a journal was manifested in the case of *The American Mercury*. The *Mercury* had adopted a militant editorial policy and had opened fire with a very significant article upon the activities of the American Red Cross, showing conclusively that the latter had become almost entirely a tool of financial interests, and was engaged in enterprises of highly questionable merit. Other articles from a like point of view were to follow. Almost immediately the bankers of Alfred A. Knopf, the publisher, brought pressure to bear, and *The American Mercury was* promptly sold, to proceed henceforth under a new and doubtlessly less belligerent editorship.

Examples such as the foregoing, in every sphere of operation under a Price System, could be cited almost indefinitely. Under the Price System at its best there is not a single field of endeavor where the best technical standards are allowed to prevail. In other words, poverty, waste, crime, poor public health, bad living conditions, enforced scarcity, and low load-factors, are every one the direct and necessary consequences of the Price System. Let it be emphasized, however, that while certain individuals may be somewhat worse offenders than others, individuals are not to be blamed. The system being what it is, if one is to hold political office he will almost without exception find it necessary to indulge in the usual political practices. If one is to become a successful business man, he will do so only by engaging in those practices which characterize

the activities of other successful business men. The fundamental law of survival under the Price System is that one must create debt claims against others faster than debt claims are created against him, or else he does not remain in business.

#### **Summary**

What we have tried to make clear is that it is the Price System itself, and not the individual human being, which is at fault. Granted the system, the human beings are obliged to act in accordance with its dictates, with the rather sorry results we have enumerated above. Consequently, no amount of doctoring of symptoms while leaving the fundamental causes of the disease intact will be of any appreciable avail. One does not eliminate bootlegging while prohibition in conjunction with a thirsty public exists; bootleggers are created thereby. Abolish prohibition and bootleggers largely disappear. One does not abolish or prevent war by pacifistic speeches, or by other means either, so long as foreign trade and the manufacture of munitions of war remain profitable. Neither does one abolish disease while poverty, malnutrition and other disease-breeding conditions continue unaltered, nor so long as the economic well-being of the medical profession depends upon the prevalence of disease in profitable amounts. Nor is crime ever abolished, either by coercive measures administered by officials whose activities are only slightly, if any, less socially objectionable than those which it is sought to suppress, or by any amount of moralistic railing or inculcation of doctrines of 'brotherly love,' so long as there continues to be offered a standing reward to all those who will 'gyp' society successfully. Granted the offer of the reward, socially objectionable activities follow as a consequence; withdraw the reward and these activities automatically disappear. It is the Price System itself-the rules whereby the game is playedand not the individual human being which is at fault

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# THE NATURE OF THE HUMAN ANIMAL

In Lessons 1 through 14 it was our endeavor to present the fundamentals of the scientific basis of the phenomena that make up our complex social activities. In Lessons 15 through 19 we analyzed the existing social habits comprising our Price System mode of control. We have shown on the one hand that there are no physical barriers, aside from human beings themselves, to the attainment on this Continent of an average physical standard of living which would be the highest we have ever known, and very much higher than that of 1929. We have shown likewise that our social activities, as controlled by existing social habits which we have termed 'the rules of the game of the Price System,' are rapidly forcing us to an impasse, due to the fact that these habits were largely acquired during a stage of relatively primitive technological development which was characterized by low-energy rates of operation and scarcity in general. In the presence of a technological mechanism which has evolved to a high-energy operation with-for the first time in human history-the potentialities of plenty, the Price System rules of enforced scarcity are found to be no longer adequate.

Since it is human beings and their habits with which we are now obliged to deal, it is well that before proceeding further we inquire somewhat more deeply than heretofore into the nature of this human animal.

There is probably no field of scientific investigation in which more resistance has been encountered than in those domains which have affected the superstitions men have entertained about themselves. The history of science is littered with burnings at the

stake, heresy trials, imprisonment of scientists whose works have contradicted, or otherwise cast doubt upon, popular superstitions.

The Solar System. Before the time of Copernicus the universe was regarded by the inhabitants of Western Europe as consisting of the earth at the center, with the sun, the moon and the stars revolving around it. A terrific furor was created when Copernicus had the audacity to suggest that it would greatly simplify matters if the sun were regarded as fixed at the center of the solar system, while the earth and the other planets revolved around it in circular orbits. The former system of thought, having the earth as the fixed center, has come to be known as the *geocentric* system; the latter, propounded by Copernicus, is known as the *heliocentric* system.

All this seems rational enough to us now, and one may be inclined to ask what all the shooting was about. What earthly difference does it make whether one regards the earth as revolving around the sun, or the sun as revolving around the earth? That it evidently did make some difference is attested by the fact that, while Copernicus avoided the trouble by dying before his famous paper was published, his illustrious successor, Galileo, was imprisoned for defending it, and his health broken so badly that he died in consequence.

When one goes a little deeper into the matter, the reason for all this becomes evident. According to the prevalent superstitions, or folkways, backed up by all the authority of the Church, God had created man in his own image, and had created the earth as man's place of abode. Such being the case, God could not have done less than to place man, his most perfect and important creation, in the center of his universe, with all the parts of lesser importance revolving around. Now, if the sun were to be regarded as the center of the solar system, with the planets revolving

around, the earth would be relegated to a position merely of one of the planets, and a lesser one at that. Consequently such a heretical doctrine constituted, should it be allowed to prevail, an undermining of the faith, not to mention an insult to God himself, and hence was under no circumstances to be tolerated.

In spite of all this the heretical doctrine did prevail and, while it may have been a blow to man's egotism to be removed from the center of the universe and to be condemned to an abode on a lesser planet, human beings seem to have been able to adjust themselves to this change, and to have got along for better or for worse subsequently.

The Age of the Earth. The next great blow to human egotism and superstition came when the geologists and biologists began to make certain significant observations about the rocks of the earth's surface. Late in the eighteenth century a Scotsman by the name of John Hutton made extensive studies of the stream valleys and canyons in the Scottish Highlands. Hutton, after long and careful study, arrived at the then astounding conclusion that the canyons in which the streams flow were cut into solid rock by the streams themselves. Again the fight was on. The whole thing was ridiculous and preposterous, men said, for was it not known already from the scriptures that the earth was created in the year 4004 B.C.? Since the canyons had not been visibly deepened during historic time, and since the earth was only a little less than 6,000 years old, was it not obvious that such canyons could not have been produced by running water in so short a time, and hence must have been present when the earth was created?

In this case, as before, scientific observation and induction had produced results squarely in contradiction to the inherited folkways. Hutton was attacked, not on the basis of the facts

themselves, but on the basis of what men thought they knew already. It had not occurred to these critics that possibly their own source of information, having been handed down from a primitive and ignorant people of the remote past, may itself have been erroneous. In so square a contradiction as this somebody had to be wrong, and the more the evidence was examined, the more firmly was the Hutton theory established, and it gradually dawned upon the learned world that the earth was ancient beyond all comprehension, contrary to biblical tradition.

The implications of the studies of Hutton and his followers to subsequent human thought have been very great, indeed, for if the history of the earth was not in accordance with biblical tradition, was there not a suspicion that possibly the remote history of the human species might be somewhat at variance with the same account?

The next great step in this progression came from the biologists. Even before the time of Galileo, Leonardo da Vinci had observed the presence of sea shells in the rocks of Italy, in high mountains at great distances from the sea. To da Vinci this seemed to indicate that these rocks had once formed a part of the sea bottom or seashore, and that when the shellfish had died, their shells had been buried in the sands and muds which were subsequently lifted up into dry land and consolidated into rocks.

By his contemporaries these ideas of da Vinci's were accounted as being little less than insane, and were paid no particular attention. By the late eighteenth and early nineteenth centuries, however, other men began the study of the sea shells contained in rocks, and found themselves obliged to come to essentially the same conclusion reached previously by da Vinci. It was then discovered that the same strata or layers of rock over

extensive areas always contained the same shells, but that the shells contained in different strata were different. Finally, it was reasoned that if these rocks were sediments deposited in a sea, the older rocks should be those at the bottom of a series, and the successively younger rocks should be successively higher, one above the other like the layers in a layer cake. Then it was observed that in certain regions of England and France, the nearer one got to the present seashore, the successively higher and therefore younger beds contained shells that more and more closely resembled those contained in the present ocean.

Besides sea shells there were now beginning to be dug up here and there whole skeletons of large animals, the like of which do not exist on the earth today.

This was, indeed, a puzzle. Men were obliged to come to the conclusion that the earth was extremely ancient, and that regions which are now dry land had been repeatedly under the ocean in times past. Not only this, but the animals in times past had been different kinds of animals from those living at the present time. Still clinging as best they could to their folklore and theological doctrines, the men in the early nineteenth century had to revamp their ideas to include these new facts. This they did by deciding that instead of one divine creation there must have been several. God had evidently created the heavens and earth at some time in the extremely remote past, and, being an amateur at the art of creating, he had peopled it with some low forms of life. These, evidently, did not turn out to his liking, and in the meantime he developed some new ideas, so in order to try out his new ideas, he produced a great cataclysm, and wiped out all the forms he had previously created, and then repopulated the earth with a new set of creatures of somewhat improved design. This process was repeated-so men at that time thought-until at last perfection

was reached when God created man in his own image, together with the lowly beasts of the fields to do him service.

This beautiful picture was soon upset when the English geologist, Charles Lyell, issued in 1831 his famous textbook, *Principles of Geology*, wherein it was shown that no evidence of a great worldwide cataclysm or catastrophe existed, and that the making of the mightiest mountains was probably accompanied by no more drastic phenomena than occasional earthquakes and volcanoes such as occur today.

Supernaturalism of Man. At about this same time new seeds of heresy were being sown by investigations in the fields of chemistry and medicine. The chemists were discovering that all matter on the face of the earth is composed of a small number of elementary substances which they called the chemical elements. With this knowledge came the ability to analyze chemically various substances and to determine of what elements they were composed. As a consequence it was soon discovered that the human body, instead of being something mysterious or supernatural, was composed of identically the same chemical elements as are found in air, water, rocks, and other common substances. In addition to all this, the German physician, Robert Mayer, discovered that the energy released inside the body by food eaten is the same amount as would be obtained were the same amount of food burned outside the body.

The picture of the supernaturalism of man and the special creations received a final thrust when, in 1859, Charles Darwin issued his book *Origin of Species*. In this book Darwin showed that instead of species being separately created, animal and plant life undergoes gradual and very slow change, and by this evolutionary process, given a sufficient amount of time, entirely new life

forms develop from primitive stock. Thus, life on earth according to this new notion of Darwin, must have begun at some time so remote that no record of it is available, and from these simple primitive forms all of the diverse species of plant and animal life, including *man*, *himself*, must have arisen.

This was too much, and the theologians were up in arms again. Dogs, horses, cows, and monkeys may have evolved from lower life forms, but man-never! Man, after all, had a soul and a conscience. He could reason and could discern the difference between right and wrong. He was something above and apart from the brute beasts of the field. While this fight lasted for a period of 30 to 40 years, as usual the facts won out against tradition, and human beings, much as it hurt their egotism to have to do so, were so far removed from the pedestal upon which they had originally imagined themselves to be, that at last they were obliged to admit blood kinship with the other members of the animal kingdom.

But traditional ways of thinking are persistent and not easily outlived, and, even though it was granted that the human species is merely one out of many species of animals which had had a common evolutionary origin, still the notion prevailed that there was somehow or other an aura of the supernatural that differentiated man from the rest of the animal kingdom. Man, so it was thought, had a 'mind' and a 'conscience,' and even the vestige of a 'soul.' Also there were 'spiritual values' which still kept the human species in a slightly elevated position. Then, too, men had 'wills' whereby they could decide what to do and what not to do.

The developments in the fields of physiology, biochemistry and biophysics, chiefly since 1900, are at last bringing us down to earth. Attention has already been called to the fact that the human body is composed chemically of the ordinary substances of which

rocks are made. So are dogs, horses, and pigs. In an earlier lesson, while discussing the 'human engine,' we pointed out that the human body obeys the same basic laws of energy transformation as a steam engine. This also is true of dogs, horses, and pigs. These facts 'might lead one to suspect that human beings are very far removed from the semi-supernatural creatures they have heretofore supposed themselves to be.

Objective Viewpoint. There was still, however, the age-old puzzle of human behavior and of what we called 'thinking.' It might be remarked that the most minute anatomical dissection had never revealed anything that corresponded to a 'mind' or a 'conscience' or a 'will.' The reason for this is not difficult to find when one considers that all of these terms were inherited from an ignorant. barbarian past, and had never been subjected to scientific scrutiny. Let us remember that real scientific progress is at all times based upon the correlation of objectively observable (see, feel, hear, taste, smell etc.) phenomena. When we subject such concepts as the human 'mind' to this sort of test they rapidly fade out of existence. When we observe a human being we merely perceive an object which makes a certain variety of motions and noises. The same is true, however, when we observe a dog or a Ford car. Only the form is different in each case, and the particular pattern of motions and noises is different. We observe, likewise, certain cause and effect relationships. If, for instance, we press the horn button on the Ford car, the Ford produces a honk; if we step on the dog's tail the dog yelps. Thus, we can say in the case of these two mechanisms, the dog and the car, that:

Pressing horn button produces honk. Stepping on tail produces yelp.

We see, therefore, that when we begin to correlate what we

actually observe, without introducing any of our inherited preconceptions, we can treat a dog with the same dispassionate objectivity which we are accustomed to use when dealing with Ford cars or radio sets.

Stimulus and Response. It was with exactly this point of view that the famous Russian scientist, Pavlov, began a series of experiments which have already resulted in some of the most profound changes in human knowledge, and in what human beings think about themselves. Early in the present century Pavlov began the study of dogs in the manner we have described. He observed, for instance, that when beefsteak was shown to a dog, the dog's mouth began to water and to drip saliva. This, mind you is just the kind of observation that one makes with a Ford.

With the car-one pushes the button; horn sounds. In the case of the dog - one shows beefsteak; saliva flows.

In the case of the car we know that the horn is connected to the push button by an electric circuit, and that if this circuit is broken the pressing of the button will no longer cause the horn to sound. Likewise, in the case of the dog, Pavlov knew that there are nerves leading from the eyes and the nose of the dog through the brain to the glands which secrete saliva. Thus, the sight and smell of a beefsteak in the case of the dog is just as mechanistic a process as the pressing of the button is in the case of the Ford car. Should these nerves be severed by operation, as has been done in Pavlov's laboratory, the saliva is no longer secreted in the presence of the beefsteak.

This cause and effect relationship between the beefsteak and saliva flow, and other similar reactions occurring in animals, are called *reflexes*. If one should use the same terminology in the

case of the automobile, he would say that the sounding of the horn is a reflex action occurring in consequence of the button having been pressed. The pressing of the button is called the *stimulus;* the sounding of the horn is called the *response.* In the case of the dog the stimulus is the sight and smell of the beefsteak, the response is the flow of saliva.

Now, in order to observe and measure this flow of saliva more accurately, Pavlov performed a slight operation on the dog's face, bringing the salivary duct out and grafting it to the outside of the dog's face, so that the saliva flowed outside where it could be caught in a measuring device and accurately measured.

The dog was then put into a carefully shielded room, from which he could not see the outside, and into which no sounds from the outside could penetrate. A mechanical device was installed whereby the dog could be shown beefsteak without his seeing or hearing the operator. A metronome was also installed. The operator sounded the metronome, and no saliva flowed. Hence the stimulus, or the sound of the metronome, produced no response in the flow of saliva. Now the dog was shown beefsteak and the metronome sounded simultaneously. This was repeated 30 to 40 times, then the metronome was sounded alone. This time the saliva flowed upon the sounding of the metronome. That is, the stimulus, *sound of metronome*, then produced the response, flow of saliva. In other words, the repetition of the sound of the metronome, together with the showing of beefsteak, somehow produced in the dog's brain a nervous connection between the nerves of the ear and the salivary glands which did not previously exist. That this is so Pavlov demonstrated by removing that part of the dog's brain containing that particular connection, and, just as when one cuts the wire between the button and the horn on a car no honk can be induced, saliva no longer flowed at the sound of

the metronome.

Now, let us see what this means. If the dog were able to talk and to describe his experience, he would doubtless say that he had heard the metronome so often, together with seeing and smelling beefsteak that finally every time he heard the metronome it made him 'think' of beefsteak. But we have been able to observe that what actually happened inside the dog was a series of very slight nervous and muscular reactions, producing the secretion of saliva. Stated conversely then, this series of slight nervous and muscular reactions, including the secretion of saliva, is what 'thinking of beefsteak' consists of. It should have been stated that the amount of saliva flowing at the sound of the metronome was somewhat less than the amount flowing when beefsteak itself was present. Thus the reactions which take place in the dog when he 'thinks' of beefsteak are the same as those which occur when he actually sees and smells beefsteak, except for somewhat diminished intensity.

A response that is thus made to follow a stimulus for which no reflex previously existed Pavlov called a conditioned response. The new reflex set up in this manner he called a conditioned reflex. An almost endless variety of experiments of the same sort have since been performed on dogs, monkeys, human beings, and all sorts of lower animals, even to snails. It has been found that conditioned reflexes of second and higher orders can be set up. For instance, if a black square is shown the dog, no saliva flows, but if the black square is shown 30 or 40 times, 15 seconds before the metronome is sounded, and then the black square is shown alone, saliva flows. This latter is called a conditioned reflex of the second order. In certain cases third order reflexes, but no higher orders, were established in dogs.

**Thinking, Speaking, Writing.** Experiments with human beings have given the same kinds of results, with the exception that the human being requires a smaller number of repetitions to establish a conditioned reflex than a dog, and he can sustain a higher number of orders of conditioned reflexes than a dog can. It is of this that a superior intellect largely consists.

We have already remarked that the series of nervous and muscular twitchings involving the secretion of saliva, which takes place at the sound of a bell or other conditioned stimuli in the absence of beefsteak, is of what 'thinking of beefsteak' consists. It is now incontrovertibly demonstrated that all thinking is of this sort. If a certain object is placed in front of a human being and at the same time a certain sound is uttered, and this process is repeated a number of times, then if the sound is uttered without the object being present, the human being 'thinks' of the object, which means that inside him the same muscular and nervous reactions occur which were originally evoked only by the object itself. *This is the basis of all language*.

Suppose the object be a familiar tool used for digging soil, and that the sound emitted in connection with it is the word 'spade.' If these two are repeated together to a human being who never before saw such an object, or heard such a word, he is soon conditioned to a stage where the sound of the word 'spade' evokes in him a conditioned response essentially similar to that produced originally only by the object itself.

Now carrying this to the second order, suppose that the word 'spade' is spoken, and simultaneously the individual is shown a certain configuration of black marks on paper. After a few repetitions this particular configuration of marks will evoke the same response, only to a slightly lesser intensity, than was formerly

evoked only by the word 'spade,' or by the spade itself. *This is the physiological basis of writing.* 

Conversely, no conditioned response to a given stimulus can ever occur unless the subject has been previously through the conditioning experience involving this stimulus and the corresponding response. Thus, suppose that you are asked to think of 'rideck,' and you think just as hard as you can. Nothing happens. The reason nothing happens is that no conditioned reflex has ever been set up in your experience between the word 'rideck' and some unconditioned response due to some other cause. If, however, you hear the word 'rideck' tomorrow, in all probability you will have a response similar to, only somewhat less distinct than the one you are having now. Tomorrow the sound of the word 'rideck' will make you 'think' of this lesson.

Suppose, likewise, that the word 'London' is sounded. If you have never been to London this stimulus will evoke in you responses from a multitude of your past experiences with regard to the word. These responses will be those evoked originally by certain motion pictures that you have seen, geography textbooks, newspaper pictures and articles, and probably certain books that you have read. What is more, the responses probably will be more or less vague and indistinct and certainly different from those that would be evoked had you ever been to London yourself. Like-wise the following black marks on paper, 'Franklin Delano Roosevelt,' will cause you to utter certain sounds, and will evoke within you responses reminiscent of certain pictures you have seen in the newspapers and the newsreels and a certain voice you have heard on the radio. The effect would be just the same to you, assuming that to be the limit of your experience, if the whole business were a hoax, and the pictures and the voice were of somebody else entirely, and merely put out for your illusion.

This latter type of thing, as a matter of fact, is what was done during the first World War, when we were told in the magazines and the newspapers about the Germans cutting off the hands of Belgian children. All we saw were certain black marks on paper, and we saw and heard certain people talking. Then we went out and acted as if Belgian children had actually had their hands cut off; which was exactly what was intended that we should do. However, no one has ever seen, then or subsequently, any of the Belgian children who were supposed to have suffered this misfortune. In other words, it was a pack of deliberate lies, and we, the uninformed public, were the unsuspecting and helpless victims thereof.

**Suppression of Responses.** Another thing that Pavlov discovered in his experiments on dogs was that, not only could responses be produced by conditioned stimuli, but they could also be suppressed or *inhibited*. In one case the dog's foot was given an electric shock. This produced a defense reaction. When, however, the shock was applied, together with giving the dog food for a number of times, the defense reaction was inhibited, and thereafter the electric shock caused a flow of saliva.

It was found that temporary inhibitions to the conditioned responses were always set up when stimuli foreign to the experiment were allowed to act upon the dog. Thus an unusual noise or the sight of a cat would completely inhibit the conditioned responses such as the flow of saliva. In general, strange stimuli always produced strong inhibitions of the ordinary conditioned responses, though they might or might not produce positive responses of other sorts.

In the case of human beings, striking examples of this type of temporary inhibition are to be found in such instances as stage

fright (partial paralysis in the presence of an audience), microphone fright, the inability of one not accustomed to doing so to dictate to a stenographer, and the inability to move freely while at great heights.

In the case of the dog, a particularly disturbing factor, if repeated often enough, loses its power to inhibit. Likewise with human beings, all of the above forms of temporary inhibition diminish rapidly with frequent repetition. The way to overcome stage fright is to appear before an audience frequently. The disappearance of the inhibition of movement at great heights is evidenced by the indifferent manner and freedom with which structural steel workers move about in skyscraper frameworks.

Another type of inhibition was produced in the dog by repeatedly sounding the metronome without presenting any food. On successive repetitions the conditioned response gradually diminished until it finally disappeared entirely. This is a fact that is well appreciated by farmers and ranchmen. The farmer sets up a conditioned reflex in his hogs by sounding a certain call at feeding time. By daily repetition of this, within a few weeks the hogs become so conditioned that the sound of this call alone will cause them to come in from distances as great as the sound can be heard. If, however, the hogs are called repeatedly without being fed, the conditioned response will soon become inhibited and disappear, and the hogs will no longer respond to the call. A human example of this same type of inhibition is contained in the familiar story of *The Boy Who Cried Wolf*.

Likewise, a farm boy when brought to the city for the first time, is confused by literally thousands of simultaneous stimuli which are impinging upon him. He allows little to go unnoticed. He sees the flashing of the electric signboards, the automobiles,

the people, the street cars, and the elevated trains, all simultaneously, and so strong and uninhibited are his responses to these various stimuli that his motions are likely to be irregular in consequence. It is only after weeks of city experiences that he can walk along a busy street and pay no particular attention to anything. In other words, it takes some weeks to inhibit his responses to irrelevant stimuli such as electric signboards.

Involuntary Process. To summarize, Pavlov, by working experimentally with dogs, was able to demonstrate that there are certain inborn reflexes which are just as mechanical in their performance as is the relation between the pushing of the horn button and the sounding of the horn in an automobile. In addition to this, he demonstrated that there is some nervous mechanism in the dog, whereby, through a process of repetition or conditioning, formerly irrelevant stimuli can be made to set off any of these inborn reflexes. He also found that it is possible to remove, by operation, the upper part of the dog's brain, the cerebral cortex, without killing the dog or impairing the inborn reflexes. After this operation the dog could still walk, and if food were put into his mouth he would eat it, but the sight or the smell of food would have no effect upon him whatever. Consequently, after this operation, if not cared for, the dog would soon die, because he was completely unable to take care of himself. The reason that the sight and smell of food no longer affected him was that the nervous connection for the conditioned reflex between the sight and smell of food and eating was situated, at least in part, in the cerebral cortex which had been removed.

Thus a dog is a mechanism with certain inborn responses and an ability to set up, depending purely upon his individual experiences, an almost infinite variety of responses to new stimuli. This process is automatic and mechanical. The dog has no power what-

ever, when being subjected to a given experience, to refrain from having the conditioned reflex established which occurs as a consequence of that experience.

We have dwelled at length upon Pavlov's experiment on dogs, merely because it is simpler to follow Pavlov in his classical experiments without danger of losing our objective point of view. We have digressed from time to time to point out equivalent cases in the behavior of human beings. Other workers both here and abroad have found that everything which Pavlov found to be true in the dog is true also in human beings. All habit formation, all language, all 'thinking' is nothing more or less than the human being's response to miscellaneous stimuli, internal and external, in accordance with his existing conditioned reflexes. The human being differs from the dog principally in this respect-that he can acquire a conditioned reflex after fewer repetitions than the dog, and that he can sustain a higher number of orders of conditioned reflexes than the dog.

**Control of Behavior.** Practically all social control is effected through the mechanism of the conditioned reflex. The driver of an automobile, for instance, sees a red light ahead and immediately throws in the clutch and the brake, and stops. This behavior is no whit different from that of a dog which hears a metronome and secretes saliva.

Of no less importance in social control are the conditioned inhibitions. If they are taken young enough, human beings can be conditioned *not to do* almost anything under the sun. They can be conditioned not to use certain language, not to eat certain foods on certain days, not to work on certain days, not to mate in the absence of certain ceremonial words spoken over them, not to break into a grocery store for food even though they may not

have eaten for days. Of course, the human being rationalizes all this by saying that it is 'wrong,' or that his 'conscience' would bother him, but the interesting thing about 'wrong doing' and 'guilty consciences' is that they are involved only in those cases where one's past training has rigorously inhibited him from performing the actions in question.

It is interesting to observe a man with a 'conscience.' Suppose that he is put into circumstances where he is forced to do the things which he has been taught not to do. Suppose, further, that these forbidden actions are themselves pleasurable, that is to say, of themselves they set off no reactive or defense reflexes. The first few times the person is obliged to do the forbidden thing he does so with great hesitancy, and shows considerable signs of uneasiness. If, in that stage, he discusses the matter, he is likely to protest that 'it just isn't right.' If the action is repeated a number of times, however, and no ill consequences occur, the signs of uneasiness begin to disappear, and finally the action is taken with no hesitancy whatsoever. If, at this stage, the person comments upon his action, he is likely to remark upon how silly he must have been formerly to have been so diffident with regard to so harmless a matter.

If one observes a dog he will find an exactly equivalent mode of behavior. Suppose the dog is a farm dog which has been taught since he was a puppy that he may stay on the porch, but must never come into the house. Suppose further, that on a cold winter day someone takes compassion on the dog, and decides to invite him in to warm before a big log fire in the fire place. The door is opened and the dog is invited in, but he does not come; he takes a step or two in the doorway, looks uneasy as if he expects someone to hit him with a broom, and backs out. Finally he is taken by the collar and persuaded somewhat more forcibly to come in by

the fire. While the fire is a delightful contrast to the cold out of doors, the dog still sits uneasily and appears ready to run at the slightest false gesture. After warming a while the dog is sent back to the porch. The second time he is asked in he comes but still with considerable hesitancy. After that he is likely to hang around the door in anticipation of a third invitation. Soon he sneaks in without being invited, and thereafter it becomes almost impossible to keep him away from the fire on a cold day.

These two cases, the man with a 'conscience' and the dog which has been taught to stay out of the house, are identical in all essential particulars. Both are conditioned inhibitions, and only signify that the animal in question (man or dog) has been subjected to an inhibiting influence in his earlier training.

One sees the same type of thing among farm animals. Most farm fences are of the nature of the red light in traffic, in that the farm animals, but for an inhibition to the contrary, would be physically able to jump them or tear them down if they tried. Wild horses, cattle or hogs, for instance, will jump over or tear down fences which hold the more domesticated members of the same species quite effectively. What is the reason for this? Can it be that the domesticated individuals are not physically as strong as their wild relatives? This is usually answered to the contrary among farm animals by the familiar barnyard rebel-horse, cow, or hogwhich discovers how to jump or climb over fences and how to open gates and barn doors. The author knows of one hog which, when it was young, was given a slight encouragement in learning how to climb into a grain crib. This early experience seems to have removed the pig's inhibitions concerning fences and barns, for thereafter with no further encouragement or training this pig learned how to open barn doors and how to climb over every field fence on the farm. Finally when he had grown and was placed in the pen with the fattening hogs, he climbed right out again. This

was repeated until a pen was finally built of bridge timbers nearly five feet high and tapered inward, so that it became physically impossible for him to climb out. The interesting thing about this is that every other hog on the farm could have done the same thing but for its carefully cultivated inhibitions to the contrary.

In this connection it is extremely instructive to observe a miscellaneous cross section of the human beings in any community. A certain small number of individuals always enjoys a greater freedom of action than the great majority of their fellows. These few are forever doing a great variety of things that the others dare not do. This difference is largely a difference in inhibitions. To carry the contrast to an extreme, consider a person raised entirely on a farm to be placed for the first time in a large city. While this person in general will not be without a quiet self-confidence, he will be extremely shy and loath to ask questions of strangers about means of getting about. If placed in social circles of unfamiliar dress and customs, his actions will be almost completely inhibited. By way of contrast the city-bred person, when placed in rural surroundings, is likely to be quite at ease with people, but almost helpless in case he is completely alone and there is no one to ask what to do.

A question frequently arises regarding the extremes toward which human beings can be driven in their conditioned actions. No better test in answer to this question is to be found than that provided by military service. In this case millions of adult men can be regimented and put through a conditioning process consisting of the familiar 'squads right, squads left' of the military drill, practice in handling firearms, and conditioning in assuming the proper attitude of deference toward the insignia of higher rank than those on the uniform of the particular soldier in question. Let it be emphasized that the attitude of deference and obedience on the part of a solider to a superior officer is a case of pure conditioning

with regard to the uniform the officer wears and not with regard to the man himself. Place a man in the uniform of a buck private and he will evoke the response on the part of his fellows which they have been conditioned to give in the presence of the uniform of a buck private. Place the same man in the uniform of a general, and he will be accorded all the respect and deference to which a general is accustomed.

So strong are these conditioned responses on the part of the soldier to such stimuli as spoken commands, bugle calls, sleeve stripes, flags, etc., that when these stimuli are manipulated, the soldiers can be made to face even machine-gun fire and shrapnel.

Glandular Types. So far we have been talking about the reaction of a given organism to its external environment, and we have found that there is a great similarity in response, not only of human beings among themselves, but of other animals as well, to external stimuli. It has long been recognized, however, that there is a very fundamental difference in patterns of behavior in response to similar external circumstances by various human beings of the same sex, and an even more marked difference of response between members of opposite sexes. Even Shakespeare recognized this difference as shown by the remark of Julius Caesar:

'Let me have men about me that are fat, Sleek-headed men and such as sleep o'nights: Yond Cassius has a lean and hungry look

He thinks too much: such men are dangerous.'

It is a matter of commonplace observation that fat men are likely to be jolly and good natured, whereas the lean and hungry

type are more likely to be caustic, nervous, jittery, and, as Shakespeare expressed it, dangerous. It is only recently, however, that physiological knowledge has advanced to the point where it is now known that being fat and jolly or lean and dangerous is almost exclusively a matter of difference in internal secretions of certain of the endocrine glands of the body. If a certain combination of secretions from these various glands takes place a person becomes fat and jolly; if a certain other combination of, secretions occurs the person becomes lean and has a pattern of behavior of the type that is more commonly observed in lean people.

These fundamental differences of behavior are even more marked between the opposite sexes. In the mammals and many other animals the male is commonly larger than the female, and is inclined to be belligerent and stubborn. The male hog, for instance, not only is larger than the female, but also has long protruding tusks on each side of his mouth. The male deer has antlers. The male chicken has a large comb, long tail and neck feathers, and fighting spurs. The female not only is different in appearance from the male in most species, but also has a distinctly different mode of behavior. Besides, this mode of behavior varies widely from time to time, as in the case of the setting hen or a hen with chicks as contrasted with the same hen at other times; or as in the case of a mammalian mother with young, as contrasted with the mode of behavior of the same female at other times.

The Endocrine Glands. In the past we have been content to obscure these distinct modes of behavior behind such expressions as 'mother love' and other terms equally meaningless. What is now being learned is that these distinct modes of behavior, as well as bodily differences of form, are due very largely to a difference of internal secretions of the *endocrine glands* in the various cases.

Farmers have long known that castration of male farm animals produces a marked physiological change as well as a change in the mode of behavior. A bull, for instance, has a deep-throated bellow, is squarely built, is stubborn to the extreme, and is inclined to be dangerous. Castration changes this almost immediately. The castrated animal becomes docile and easily manageable; he also loses all interest in the opposite sex. He loses his square-built shape and tends to become taller and more rotund. Similar changes are noticed in the males of other species. It follows, therefore, that some very potent secretion must be present in the uncastrated male which is no longer present after castration. This secretion has been called the *male hormone*.

There is a similar type of thing with regard to the female ovaries. Just as in the case of the male, where castration produces a metamorphosis to a form which is intermediate between that of the distinctly male and the distinctly female characteristics, so the removal of the ovaries of the female causes the disappearance of the distinctly female characteristics. If, for instance, the ovaries are removed from a chicken hen, she develops longer tail and neck feathers and other external features intermediate to those of a hen and a rooster and resembling those of a capon.

There is a case on record where a prize laying-hen, on which accurate records had been kept, finally quit laying and began to develop a large comb, long tail and neck feathers, and fighting spurs like a rooster. Not only did the hen begin to *look* like a rooster, but she also began to *act* like a rooster. She developed the male tendency to fight, and also developed the male sexual behavior. The result was that this former prize laying-hen actually began to produce fertilization. Thus we have a case of a single chicken which during the course of its lifetime was successively both the

mother and the father of offspring.

Principally within the last decade or two, various ones of these internal secretions have been isolated chemically and, in some cases, produced synthetically. It is found simply that very minute amounts of highly potent chemical substances, such as *adrenaline*, which is produced by the *adrenal medulla*, thyroxin by the thyroid gland, pituitary extract by one of the pituitary glands, female hormone by the ovaries, male hormone by the testes, and various other internal secretions by the other endocrine glands, are injected into the blood stream, and that to a very great extent the state of health, shape of the body, and fundamental modes of behavior are thereby profoundly affected. If these substances are injected into the body from the outside they produce the same effect that would be produced were they secreted by the body itself.

We have already mentioned the metamorphosis in the physiological processes, body shape, and modes of behavior of animals which have been artificially deprived of certain of these secretions, the male or the female hormones. Both of these hormones are now being obtained in concentrated form, and experimental investigation of their effects upon animals is proceeding apace.

Some years back experiments, which have since become classical, were performed upon chickens. From a normal chicken hen, for instance, the ovaries were removed. This deprived the hen of the female hormone, and she developed the capon-like features already described. Then she was injected daily with a concentrated solution of male hormone, obtained in this case from bull testes. Under this treatment, the comb, neck wattles, neck and tail feathers began to grow, and within a few weeks the former hen became metamorphosed in all outward appearance into a

rooster-a slightly squatty rooster to be sure, but a rooster, nevertheless. Now, when the injection of male hormone was discontinued these features gradually subsided, and the squatty rooster became a capon again.

Similar experiments have been performed with guinea pigs. A normal young male guinea pig was castrated and allowed time enough to reach a stage of sexually neutral equilibrium in the absence of the male hormone. Ovaries were then transplanted into his body, which began the secretion of female hormone. Under this influence the guinea pig developed enlarged mammary glands and a general body contour resembling that of a female guinea pig. Finally, after this metamorphosis had taken place, the guinea pig was given injections of an extract obtained from the anterior pituitary gland. It might be remarked that it is the secretion from the anterior pituitary gland which sets off the milk-producing function of the mammary glands. After the injection of the pituitary extract lactation was produced, and this formerly male guinea pig actually nursed a litter of young when they were given to him. The experiment ended there. It is entirely likely that there are still other hormones, possibly those from the posterior pituitary, which, had the guinea pig been injected with them also, would have produced in him a full-fledged case of 'mother love.'

While the foregoing experiments have been principally with regard to animal species other than the human, this is largely because these other animals are more amenable to experimentation than are human beings. Clinical data, however, indicate that essentially the same phenomena that have been observed with regard to dogs, cats, guinea pigs, and farm animals generally, are equally true for human beings. Over-secretion or under-secretion of any of these endocrine glands in the case of the human being produce pathological states that affect the whole body and mode

of behavior in varying degrees. Diseased ovaries, for instance, causing insufficient secretion of female hormone, frequently cause the development of a coarse, masculine voice and other masculine characteristics including the growth of beard. These pathological conditions have been, in some cases, successfully treated by an operation involving the removal of the tumor or other disturbing factor, or else by continuous injections of the hormone in which the patient was otherwise deficient.

Results on Behavior. It is very important that one distinguish the difference between modes of behavior resulting from external conditioning and those occurring as a result of glandular and similar differences which are frequently inherited. These differences are excellently shown in the case of farm animals. Different varieties of farm animals of the same species are frequently quite different in their fundamental modes of behavior, even though their external conditioning is practically identical.

Hogs afford an excellent illustration. A razorback pig can be raised along with a litter of Poland-China pigs of the same age. The whole litter can be subjected to practically the same sort of conditioning, but still when they are grown, the razorback will be lean and wild, and will fight furiously at very slight provocation to protect its young. The Poland-China pigs, if well fed, will incline to fatness; and will be tame, stolid, and unexcitable. Even if crossbred with Poland-Chinas, the wild and excitable characteristics of the razorback will persist for several generations.

A similar thing is true of cattle. In the pioneer days the range cattle and the razorback hogs, as well as the mustang pony, were breeds which evolved from ordinary domestic stock imported from Europe. Under wild environmental conditions this formerly domestic stock underwent a rapid evolution, with the development of those characteristics best suited to survival under such

conditions. Among the outstanding characteristics thus accentuated were wildness, tendency to fight for young, and ability to endure on little feed. It is precisely these characteristics which differentiate this stock from its domestic counterpart which is biologically inferior. The old range cow, like the razorback hog, was not only wild, she was also a fighter. If a range cow with a calf were corralled, any person molesting the calf would do so at his own risk, and there was a high probability that he would be put up a tree or over the fence. The tendency of the range cattle to stampede when collected in herds is now famous in song and story.

No amount of domestication of the range cattle ever more than slightly altered those inherent modes of behavior. During the transition period while the range cattle were being replaced with white-faced Herefords, it was not uncommon for a range calf to be raised among Herefords. This more genteel (if one prefers) environment had little effect on the fundamental tendencies of the range stock. The range calf would grow up lean, wild, and with a propensity for fighting.

A similar thing has been observed in turkeys. The present domestic breed of turkeys has been evolved since the settlement of America by Europeans, from the native wild stock indigenous to this Continent. The evolutionary process here is in the opposite direction from that of the razorback hog and the range cow. In the case of turkeys, a part of the original wild stock has been gradually domesticated, leaving another part of the original wild stock as a biological control for comparison.

There have been cases where the eggs of wild turkeys have been found and hatched by a domestic turkey along with a number of eggs laid by domestic turkeys. Here, again, is a case where the young wild and domestic turkeys are brought up under identi-

cal environmental conditions from the date of hatching. As this flock of young turkeys grew up the wild members were easily detected by the difference between their mode of behavior and that of domestic turkeys. At any slight barnyard commotion, such as the barking of dogs, for instance, the domestic turkeys would fly to the top of nearby fences, while the wild turkeys would fly to the top of the tallest pecan trees in the vicinity.

What we are getting at here is that, granted all the similarity in the basic physiological structure of different individuals of the same species, there are also inherent individual differences which are probably in part glandular, and which no amount of conditioning or training can iron out. Certain individuals are excitable. They flare into a rage on short notice and from slight provocation, and cool down equally quickly. Others are long-suffering and are slow to anger, but having become angry may require days or weeks to subside to normal.

The basal metabolisms of some varieties of the human species have, through some evolutionary process, become peculiarly adapted to the tropics. Others have in like manner become adjusted to temperate, and still others to Arctic climates. All this has nothing to do one way or the other with the superiority or inferiority of one variety or race of human beings with respect to another. It is merely an observation that human beings differ, both individually and racially, and that such differences are fundamental.

**Peck-Rights.** Much light in recent years has been thrown on the problem of individual differences by observations made on various sorts of animals. It is a common observation, for instance, around any barnyard that certain individuals for no apparent reason assume priority and take precedence over other members of the same species. In a dairy herd, for example, coming from the

pasture to the barnyard, a certain cow always goes through the gate first, and the others follow in their proper order. Or, between two cows, it is observed that one will hook the other without the second one fighting back. If a strange cow is introduced into the herd there may be a bit of fighting until she establishes her proper rank, but after that rank is once established it remains fixed.

Within recent years a German biologist has made extensive studies of similar relations among chickens. He found that in a given flock of chickens there existed a fixed system of what he called 'peck-rights'-which chicken pecked which. He found, for instance, that between A and B, say, A would peck B, but B would not peck A. Hence, A was said to have a 'peck-right' over B. This man studied the peck-rights between every pair of chickens in a given group, and he found the system, though complicated, to be quite rigid. Sometimes the peck-right system would form a closed chain. That is, A would peck B, B would peck C, C would peck D, and D would peck A.

According to press reports a series of similar experiments has recently been made at the University of Wisconsin, using apes. According to this report, pairs of strange apes of like sexes were placed in a cage together and allowed to remain there until they established a state of mutual tolerance. It was found in each case that there was no such thing as equality between the two members of the pair. There might be quarrelling in the earlier stages, but once equilibrium was established, one of them always assumed priority over the other thereafter; one was definitely No. 1, and the other was No. 2. No. 2 in one pair might be No. 1 in another pair, but in any given pair there was nothing that corresponded to the concept of equality.

One sees this same type of thing among any group of children on a playground, or among any group of workmen of the same

rank on a job. Certain individuals dominate, and the others take orders. These dominant ones need not be, and frequently are not, large in stature, but they dominate just as effectively as if they were.

In the Declaration of Independence there occurs the familiar line: 'We hold these truths to be self-evident, that all men are created equal ...' This concept is philosophic in origin and, as we have seen, has no basis in biologic fact. Upon biologic fact, theories of democracy go to pieces.

Functional Priority. the greatest stability in a social organization would be obtained where the individuals were placed as nearly as possible with respect to other individuals in accordance with 'peck-rights,' or the priority relationship which they would assume naturally. Conversely, the most unstable form of social organization would be one in which these 'peck-rights' were most flagrantly violated. Examples of this latter type of instability are to be found in the case of the army during the late World War, and in many business organizations at the present time.

In the case of the army, several million men were hastily put under arms, so that there was little opportunity in advance, had any provision to do so been made, to choose the officers on the basis of spontaneous natural priority. Instead, following the well known West Point tradition of catering to the 'right people,' and to what is 'socially correct,' the officers were picked largely on the basis of the social prestige of their families, their college training, and other superficial considerations, but with little or no regard for their ability to command the respect of the men under them. Their positions consequently were maintained largely by military police power, and many an officer fared badly once the protection of that police power was relinquished. This accounts for the

reputed high fatality of officers at the front from bullets in the back, and for the scores of others who took a proper beating upon the discharge of the men serving under them.

The same thing is true of business organizations. The weapon of control in this case is the police power of the state and the club of economic insecurity which is held suspended over the heads of the workmen. There are few business organizations today whose administrative staffs, selected largely upon the basis of favoritism to relatives and upon pecuniary considerations, are not to a great extent inverted with regard to the question of natural priority. In such organizations this state of inversion is maintained under the protection of the police power of the state, and by means of the weapon of economic insecurity which the relatively incompetent staffs are enabled to wield over the heads of the workmen. Were these artificial controls removed, it need hardly be added, these functional incompetents would find their existences extremely unsafe until they gravitated back to the level where they properly belonged.

A very great amount of confusion exists as a result of mistaking social position for ability. For example, there are few of the 'Park Avenue' crowd, most of whom have inherited money but have never done anything in their lives in evidence of superior intelligence or functional capacity, who do not adopt an attitude of extreme condescension towards such people as farmers, members of the skilled trades, and others whose daily functions are the most vital (and require among the highest degrees of intelligence) of any that exist at the present time. Likewise, the professors of a university view with considerable condescension the activities of the skilled mechanics in the university machine shops, little realizing that it takes a considerably higher order of intelligence, both as regards training and in everyday perform-

ance, to be a master mechanic than it does to become and remain the 'learned' Professor So-and-So.

No better example of this particular type of intellectual insolence need be sought than that afforded by Professor Ortega y Gasset in his book, *Revolt of the Masses*. In this book the writer is decrying the rise of the masses and uses the illustration of an African savage who has learned to drive an automobile and to use aspirin. What the professor does not appear to realize is the irony of his own situation, namely, that in the world of action his own position is practically identical to that of the savage he is describing-one of complete functional incompetence. Professor Ortega y Gasset is a Jesuit Professor of Philosophy at the University of Madrid, and, as such, so far as is publicly known, has never done anything of more importance in his entire life than to read books, talk, and write more books.

**Social Customs.** These facts lead us to the recognition of two things: first, that human beings, through the mechanism of conditioned reflexes, all react to their environment with a distinct cause and effect relationship; and second, that while human beings all react to their environment in this manner, there is considerable individual variation in the specific reactions of various individuals. In spite of individual differences, however, the degree of uniformity of reactions in a large cross section of people to similar environmental conditions is truly remarkable.

This fact is well brought out in the social customs of primitive peoples. In all primitive peoples the biological necessities of food, clothing and shelter to whatever extent is necessary, and reproduction, are always complied with, but the precise social customs and folkways such as marriage and other ceremonies, the ownership of property, etc., vary between wide limits. Every

conceivable marriage relationship such as polygamy, monogamy, and polyandry, together with all sorts of minor variations between these is the fixed and rigid custom of some tribal people somewhere. Similarly this holds true with customs pertaining to rights of property. These customs vary from almost complete communal holdings of all property by a tribe as a whole, to cultures with highly individualistic customs of property rights.

The point is that there is no such thing as a 'correct' or 'right' system of social customs. Within each one of these tribes their own particular set of folkways is taken as the basis with respect to which the customs of all other tribes are judged-and almost invariably condemned. In any given tribe there is the usual latitude of range in individual differences, but in spite of these differences the early conditioning of the youth of the tribe is such that upon growing up all the members of the tribe of like sex present a remarkable uniformity of customs and behavior. In other words, it matters little what the particular set of customs or folkways happens to be, the conditioning of the youth of the tribe is in each case always such as to insure their carrying on in accordance with the best tribal traditions.

The same type of things occurs in the educational process in general. So similar, for instance, are the colleges and universities of this country that there is remarkable uniformity in the products turned out. On the other hand, within a given university one sees excellent illustrations of the uniform reactions of an ordinary cross section of students to different environments in the cases of different professors. It very commonly occurs in colleges that there is a Professor A, who is completely uninteresting and succeeds in inhibiting or putting to sleep almost all the students who come under his tutelage. Under Professor *B*, on the other hand, practically all of the students who come into his classes become

intensely interested in the subject matter at hand. Were these two professors each to give his private opinion of the intelligence of college students, Professor A would likely say that all students are stupid and lazy; Professor B would say that, quite on the contrary, he had found college students in general to be alert and intelligent. Both would be correct, for under Professor A even the most brilliant of students would appear stupid, and under Professor B even the dull-witted ones would show at least a faint sparkle of intelligence.

One sees the same type of thing among workmen on various jobs. It is a simple matter to stand on the sidelines and criticize a gang of workmen for their lack of enthusiasm and apparent indolence, but if one places himself on the job as a member of the gang and under the same circumstances, it is observed that he soon acts in essentially the same manner as the others do. An excellent illustration of this came to the author's observation in the case of what was known as an 'extra gang' on the Union Pacific Railroad. This gang consisted of about 80 men, and was under the direction of a tough Swede by the name of John Swanson. Under Swanson's leadership this was an efficient and well organized body of men with an excellent esprit de corps. After making a record in laying four complete railroad switches in one day, Swanson would take a look around at the men and remark, 'Well, boys, we didn't do much today, but we sure will give it hell tomorrow, won't we?'

Finally Swanson left the gang for a two-week vacation. During his absence the acting boss was an old-time section foreman, who had not done anything in years more vigorous than to sit on the railroad embankment and watch the Mexicans dig weeds. The section foreman spent the two weeks sitting on a flat car smoking a pipe, and as long as the men made the slightest pretense at

work he appeared to be quite contented. Within one week this highly efficient gang of workmen was almost completely demoralized. They were becoming disgruntled with the job, and were volubly wishing that John Swanson would hurry back.

The significant thing here is that we are dealing with identically the same men in both cases. An outside observer, watching this gang perform under the leadership of John Swanson, would have described it as a fine gang of workmen. Another observer, describing the gang under the direction of the section foreman, would have described it as being composed of a completely shiftless lot, and here, again, both would have been correct. An ordinary cross section of workmen react to competent leadership by becoming a competent crew, while the same ordinary cross section of individuals under incompetent leadership tend toward a state of complete demoralization.

In other words, when any large number of individual human beings under the same set of environmental circumstances tend to behave in a certain specific manner, it is safe to say that any other similar cross section of human beings under the same circumstances would respond in a like manner.

This basic fact shows the futility of all moralistic approaches to the solution of social problems. Such an approach always consists of the pious hope that human beings can be instructed to do the 'right' thing, regardless of how contrary this happens to be to what their environmental controls dictate.

It is the same moralistic approach that is back of the current stupidities of the liberals, the communists and others, whose chief form of activity consists of signing protest lists-protests against war, protests against fascism, protests against capitalism, etc.-or

else in the equally futile hope that they are going to educate the voting public to cast their ballots in the proper manner, while all the controls which produce the opposite effect are allowed to remain intact.

What we are pointing out is simply this: regardless of what occupation a man may pursue, the chances are highly in favor of his being obliged to pursue that occupation in approximately the same manner as it is pursued by others. One may not like bankers, lawyers, policemen, or politicians, but if he happens to follow any one of these professions he will soon find out that if he does not indulge in the same objectionable practices common to that profession, he will soon be seeking employment elsewhere. Thus, bankers, lawyers, policemen, and politicians, as well as the members of other professions, are merely ordinary human beings who are obliged to operate under a set of controls which are peculiar to the particular profession considered; any other human being under the same controls is likely to behave in a similar manner. This being the case, the only possible way of eliminating those types of behavior which are socially objectionable, and of replacing them with types of behavior which are socially unobjectionable is to alter the controls accordingly. No amount of social moralizing ever has, or ever will, affect this to any appreciable extent.

**Social Change.** This, of course, raises the question as to just how social change comes about. The answer is that social change comes about spontaneously. Human beings, when fed, housed, and clothed, in a manner which is not too uncomfortable, and when permitted normal social relationships among themselves, tend to crystalize their routine activities into non-varying social habits. These habits are buttressed by folklore and the sanction of religion. Any attempt made to change them will produce a reactionary response. If, however, for any reason whatsoever, these

habits become incompatible with the same biological necessities of food, clothing, etc., the social habits are always observed to be readjusted in a form which is compatible with the fulfillment of those necessities.

It has already been pointed out in earlier lessons that present-day social complexes are evolving and undergoing change at a rate faster than at any previous period in history. That, moreover, this evolution is a unidirectional and nonreversible process. At no two succeeding times is our social mechanism the same. Since human beings themselves are only one component of this evolving mechanism they find themselves inextricably bound up with its evolution, and since stationary habits are possible only under stationary environmental conditions, it follows that with an environment which is in a continual state of flux, social habits have to change accordingly.

At the present time we find those of our social habits which we have termed the 'rules of the game of the Price System' becoming increasingly at variance with the biologic necessity that 150,000,000 people have to eat. Under these circumstances it follows that social change will occur spontaneously until a new set of relatively stable habits is acquired which are compatible with an environment characterized by a high-energy social mechanism on the one hand, and, on the other hand, by the biological fact that 150,000,000 people are going to be fed, clothed and housed. 'Social change,' Howard Scott has succinctly remarked, 'tends to occur at a rate directly as the approach of the front of the stomach to the spine.'

### **Summary**

It was remarked at the beginning of this lesson that most of the fundamental advances in human knowledge have been

opposed because these advances have contradicted what men have thought they knew about themselves. Little by little, as scientific knowledge has advanced, human ignorance and superstition have retreated, until now, for the first time, we are able to view fairly objectively the fundamental nature of this human animal which we may summarize as follows:

- (1) The human animal is composed of chemical atoms which are derived from the ordinary inorganic materials of the earth, and which ultimately return to the place from which they come.
- (2) The human being is an engine taking potential energy in the form of chemical combinations contained in food, and converting this potential energy into heat, work, and body tissue. The thermodynamic processes involved, while more complicated in detail, are in exact accordance with the laws of thermodynamics and are in no essential particular different from the corresponding processes in man-made engines.
- (3) The human animal responds to its external environment through the mechanism of the conditioned reflex which is a purely automatic but tremendously complex, nervous control mechanism. These conditioned reflexes are, however, subject to control and manipulation through the device of manipulating an individual's environment. An individual's present conditioning is always the resultant of all of his own past experiences. The more nearly the environment of a large number of people is kept identical, the more nearly are the human products identical. This is the reason for the great similarity among individuals of various groups, for example, college students, policemen, politicians, Rotarians, farmers, or soldiers, In other words, within the limits allowed by their physiological differences, all human beings respond alike to a like external environment. These conditioned reflexes are

sufficiently strong that, so long as the human beings are amply supplied with the basic biological necessities-food, necessary amounts of clothing and housing, and gregarious and sexual outlets-they will perform in a routine manner without upsetting either their conditioned responses or their conditioned inhibitions. They will literally face bullets in preference to social disapprobation.

- (4) There are basic physiological differences among individuals which are partly inherent and partly acquired through differences in diet, secretions of the endocrine glands, etc. It is these basic physiological differences among various human beings that upset all philosophic theories of equality and hence any governmental theory of democracy. In any group of human beings having practically the same external environment certain individuals always tend to be dominant, and others with regard to these are submissive and constitute the followers. If there were only two men on an island, one of these men would be No. 1 and the other would be No. 2. If this spontaneous natural order of priority among men is inverted by an artificial means whereby the submissive type is made superior to the dominant type, a socially unstable situation is created.
- (5) Human social habits and institutions tend to remain stable or else to undergo change extremely slowly, except in the case of a rapid change of the external environment, especially when this latter affects the basic biological necessities. When human beings are fed, clothed, and housed in a manner compatible with good health, are not obliged to do an uncomfortable amount of work, and are permitted normal social intercourse with their fellows, social habits and customs tend to become crystalized about this particular mode of procedure. Let any change of environment develop in such a manner that the biological necessities can no longer be met by activities according to the old habits, and these latter will

be rapidly abandoned. For instance, just now the social habits and customs of some 20,000,000 people, most of whom until recently have been self-supporting, and many of them well-to-do citizens, but who are now on relief, are undergoing rapid and profound change. Social stability, on the other hand, is restored when a new set of social habits and customs are formed that so conform to the dictates of the new environment as to satisfy the basic biological necessities.

#### References:

Conditioned Reflexes, Pavlov.

Bodily Changes in Pain, Hunger, Fear and Rage,
Cannon. Sex and the Internal Secretions, Allen.
Folkways, Sumner.

# **CHAPTER 8**

### **A Future For Youth**

The next two chapters, (which are not from the Technocracy Study Course), are of more modern vintage and complete the book.

### A FUTURE FOR YOUTH

The social change confronting young people today presents them with a totally new set of circumstances for which they have not been prepared; and an uninformed, ill-trained younger generation cannot be expected to inherit and properly handle the leadership of this massive and complex technological machine and all the social problems that go with it.

The attitudes and values of society haven't caught up with the circumstances of today's existence. In the past, parental and other social forces functioned together to condition young people to play some part in social affairs. The young were a practical asset to their society. They learned to work and thereby were able to contribute. They learned the rules of society, and the home was the source of most basic education, but those attributes no longer fit in our society.

### TIMES HAVE CHANGED

During the last several decades we have witnessed more social change than ever before, and society has not been able to keep up with this change due to the restriction of an obsolete system. We need a social system that is in balance with this technological complex we have created.

The constant escalation of unemployment should be making this point clear. Those great job-creation figures the politicians keep throwing out are only window dressing because most of the jobs are in the service sector with minimal pay. So, why would students want to work at three jobs to pay for the tuition

that in the end is not really providing them training for their future.

Young people can see the obvious: those businesses don't create jobs to employ people. They create jobs to make a profit. Any time they can figure out a way to make that profit with fewer man-hours to pay for, they will certainly take that direction. This involves a number of tactics, including automation and moving factories to foreign countries for the cheap labor. In either of these instances, it is North Americans who stand to lose consuming power.

### THE FUTURE CAN BE DIFFERENT

How are young people's desires to "fit in" going to be satisfied in the drastically changing environment of North America today? Much of the training offered is learning the wiles of an adversarial culture, whereas the institutions for education should be responsible to instruct youth on the nature of this modern technological society. Their role should be to educate for the future—rather than to inculcate the values of an obsolescent social system. Teachers need to know the total picture of technological change in this society such as in manufacturing, transportation, communication and power transmission and how these changes are affecting the social system in which we live. The major problem for all levels of education today is their viewpoint. They are having trouble all over the country keeping up with technological change, in course planning, teaching methods and teaching materials, together with a lack of funding. The education system is certainly not keeping up with the physical change that is taking place, and until we have a proper social system that is in accord with present reality, any change will likely only add to the confusion.

A crucial task of society should be to stimulate the interest of

young people to participate in the proper stewardship of this continent. They need knowledge of the physical world gained by hands-on experience as well as academic knowledge. Young people need a sense of social responsibility, so that they can properly manage a continent that requires intelligent stewardship. And, further, the way should be clear for them to live easily, comfortably, and responsibly while doing this in this high-energy civilization.

A veil of superstition and distrust of science still seems to appear in the public consciousness, but it is the misuse of science and technology that really is the problem. People must understand that the power of technology makes it possible for them to have their food, clothing, shelter, education, recreation and health care. They must realize that they are now dependent on technology for survival. The technology is being operated in ways that run counter to their best interest.

Most of the change that has been thrust on society has occurred in the last couple of generations—and it is accelerating. Unfortunately, the young people of today have the problems of the world in their hands—whether they are ready for such a massive challenge or not. Young people face an awesome array of problems. To some extent they have been trained to regard money as the cure-all for society's problems, when in reality it is money, and not having enough of it, that is the biggest problem. It is not just the expense of living, it is the tab that is out there waiting for you and your children—the expense of bailing out financial institutions, the compounding of the national debt and its interest. It's an unrelated concern, an unnecessary burden; we can never have enough money to pay this debt and we know it. Why not just abandon such foolish games and learn how to deal with reality effectively?

### A SCIENTIFIC SOLUTION

Technocracy is not a political movement. It is an organization with a dynamic plan for the future—a non-monetary system of distribution, managed by the people most qualified in their particular field not by the opinions of politicians and financiers—we've already seen what they do.

We owe our standard of living to science and technology—in the hands of those who know how things work. In the wrong hands, we face an uncertain future. You owe it to yourself to look into Technocracy's design. After all, that is where you will spend most of your life—in the future.

# **CHAPTER 9**

# The Science of Society

### THE SCIENCE OF SOCIETY

By Ron Miller

Member, Technocracy

If one is looking for certainty one should not be looking at science. Science is a process of looking ever deeper into the nature of reality. The reality of yesterday simply becomes the superstructure for the new reality of tomorrow. Today's science makes it possible to build new instruments with greater accuracy. Bigger and better telescopes and microscopes see further and deeper uncovering newer wonders. Science is like a flower petal that never stops unfolding. Those looking for ultimate truth, chiseled in granite, newly arrived from the mountaintop, should not be looking at science.

The most expensive thing in science is data. Whether it is measured in energy, effort, time, or money it is expensive. Seldom is data absolute. Degrees of accuracy are measured in probabilities. The more measurements are taken around a given point the higher the degree of accuracy but it is never absolute.

Data is taken by people. People are not objective observers. Frequently they see what they are looking for rather than what is there. Data sometimes is used in ways the original collector of the data never intended. One needs to look at data very carefully. What conditions was it collected under? What was not measured that might have affected what was measured? What was missed that should have been seen?

Every data point measured actually exists within a range. All that is possible to say about a data point is that it exists within that range with a probable degree of certainty. One can increase

the degree of certainty; narrow the range or both by taking more measurements at that point. You might reduce the range to within the range of instruments you are using but the range never disappears.

Analysis of the data is simply trying to make sense of the patterns that one sees in the data and to draw from it rules that can be applied to similar situations. One must avoid errors of logic such as attempting to prove a negative and so forth. When spelling out the rule in language one should make certain that it is falsifiable. Contained within the rule should be the necessary requirements for disproving it.

Mathematics is the language of science and it is here where one can look for rules written in concrete. Virtually every sliver or crack in every definition or rule open for a possibly different interpretation has been examined by some of the best minds the human race has produced in the last several hundred years. The question to be answered in most scientific analyses is: was the math done correctly? If the math was done correctly, are the underlying assumptions correct? Was the data properly interpreted? Was all the data relevant to the investigation included?

Once the report is published is usually when the uproar begins. If the conclusions are at all controversial, no matter how well founded, attempts will be made to discredit the results. This is particularly true if what is discovered contravenes the commonly accepted ideological dogma of the day. Findings sometimes contradict what has been commonly accepted and run afoul of simple human inertia.

There are many things that exist outside the purview of science. Love seems quite real yet has never been measured. The beauty of art can not be measured. Concepts such as "utility" in classical economics or "the labor theory of value" in Marxian

economics can not be objectively verified. All these concepts can, however, be dealt with scientifically. Mathematical procedures can be applied to anything one wishes. A mathematical veneer obscures the lack of foundation beneath but can still produce interesting results.

### The Technology of Society

Technocracy declared that the activities of social mechanisms are governed by the laws of thermodynamics. The wisdom of this assumption is rather obvious when one thinks about it a bit. Thermodynamics consists of the laws of energy and the way it moves. Poor as it is, the definition of energy is "the ability to do work." Work is a force multiplied by the distance it moves. Power is the work multiplied by the time it takes to do it.

Fortunately there are only two laws of thermodynamics that are useable for the study of systems. The first law says that you can't create something out of nothing. You have to use what you have been given. You can convert it from one form to another as is done in a steam power plant. The second law says that you will have to pay a price, in energy, for everything you do. In every transformation something is irretrievably lost. The something is called entropy.

Nothing can move without an expenditure of energy. Human beings, automobiles, and nuclear power plants all have one thing in common—they are all energy converting devices. A nuclear power plant converts the energy of fissionable uranium or other fissionable elements into energy. An automobile converts the energy contained in gasoline into motion. A person converts food into useful work—sometimes.

Natural resources require energy to transport them from where they are found to where they are to be found into commodities for use. Crops require energy to plant, nurture, harvest,

transport and prepare as food. There is energy contained in every substance whose temperature is above absolute zero. Of course most of that can't really be used for anything without some way of accessing it.

Prime movers, devices that produce power, or, to be more accurate, convert energy from fuel into work, usable by society must produce more power than they consume to produce it. This seems rather obvious just by thinking about it. The energy returned for the energy invested has to be larger than one. If it is not then what you have is an appliance not a power source.

Everything other than prime movers consume power to produce work that someone wants done. Every device that does work has a certain minimum amount of energy required to do the job. In all cases, that amount is exceeded when the thing is working. In other words, it always takes more energy to do the job than the minimum that can be calculated.

Table legs are usually turned out of a solid block of wood. If we turn out a leg that is nothing more than a round shaft, the minimum amount of energy required to do that is fairly easy to calculate. The force required is equal to the shear stress along the grain for that type of wood multiplied by the surface area of the leg. If the leg is simply pushed out of the block of wood, the force required is the whole amount when one begins to push it out and is zero when the leg is pushed all the way out. This means that the work required is equal to one half the length of the leg multiplied by the force.

Table legs are not produced this way. A block of wood is attached to a chuck in a lathe. The wood is turned at high speed by a motor driving the lathe. A cutting blade shears away the unwanted wood until the finished shape appears. If one were to put a current transformer on the power line feeding the motor on the lathe, one could measure the energy required to produce it.

If one now divides the minimum energy required to produce a leg by what was actually used, then multiplies the result by one hundred one gets the efficiency of the process. In most cases, this will be a disappointingly small number. Most, if not all, processes that are required to operate our social system could be determined and measured in just this way.

If we were to do this for every process in our system, then add them all up, we would have the total energy consumption and efficiency of our whole social system. The energy our system consumes is the actual physical cost of operating it and the cost of our living. If we were to do this, we would easily see where the greatest improvements in efficiency could be made and we might question the value of doing some things at all.

The value of such an accounting is obvious so why is it not done? The reason is simple; we don't care. We live in a society that cares about one thing—money. Just what is money? In a little thought experiment suppose one was to go to the moon with a billion dollars but without enough fuel to get back. How much good would all that money do you? All you could do is to sit there looking at your money until you ran out of either oxygen or food and died.

Money itself is of no value. It is the things that money can buy that are of value. Our society has focused all its attention on a mirage. It is possible to have a great deal of money that is of no value to anyone. No matter how much of it you have, it would buy nothing.

### The Human Equation

Money is what controls our society. It makes us do things that, from a physical sense, are contrary to our best interests if not directly opposed. Maximizing profits means, for the most part, maximizing consumption. This means the most rapid possible

consumption of the Earth's natural resources with a maximum amount of waste. Once gone, they cannot be replaced. Currently humanity is even consuming replaceable resources at a rate beyond replacement. The oceans are being denuded of fish and the land of trees.

Economists promote policies encouraging faster population expansion because that means more customers and, usually, lower labor costs. As a result, the human population is expanding like cockroaches in a slum. If a nation's population fails to expand to the satisfaction of business interests immigration from areas with higher rates is encouraged. Those opposed to immigration are frequently confused with those who are opposed to immigrants. The two are not the same. If those nations with low or negative rates of population growth are to act as escape valves for those nations that cannot or will not control theirs we will all shortly be in the same rotten barrel.

People always want to believe what makes them comfortable. People want to believe that their government is always on the right side of things and always tells them the truth. As a result most social decision making is based on myth rather than actual knowledge. During the Second World War soldiers went to war believing "Gott Mit Uns". The translation is "God is with us". In view of the slaughter and mayhem they caused one has to wonder what sort of God they were referring to.

People filter what they see and hear through their past experiences. It is this fact that may well be the undoing of the human race more than any other. A new way of looking at an old situation is often viewed with both incomprehension and fear. The human race has developed excellent methods of analyzing problems but few people are versed in the methods. Few of those capable of using such methods seem capable of using them for the solution or even the analysis of social problems.

Those who profit from the operation of the current social system have exhausted huge efforts to control, subvert, co-opt, eliminate or, if possible, annihilate any group or organization that dare question the dominant ideology. Even those who can see some of the obvious difficulties with the operation of the system blame technology, the wrong political leadership, the lack of "moral fiber" or a multitude of other such causes but few look at the operation of the price system itself.

The real danger is, as has happened with the collapse of every other civilization, that those who can see the onrushing disaster approaching will do all in their power to protect the system from any possible alternative. The rapidly expanding shell, seeking to protect itself, at any cost, becomes ever more brittle and ever emptier of any sort of fall-back position except total collapse. As resources are exhausted, further expansion becomes impossible and the price system cannot exist without expansion.

This is the concern of Technocracy. Technocracy can see through to an entirely new level of human social existence that, very often, its own members cannot clearly see. As the sham that is our current price system becomes ever more hollow and ever more fragile, that vision is needed more desperately than ever.

### Afterward;

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# Suggested Reading List

The Ancient Near East Vol. 1—Pritchard

**Egypt, Canaan and Israel in Ancient Times**—Donald Redford, Princeton University Press

The Classical Greeks—Michael Grant

Particularly the chapters on Demosthenes the orator, and Isocrates the Pan-Hellenic Educationalist. The three pamphlets have their roots of style from here.

Conversations with Kafka—Gustav Janouch

Meetings with Remarkable Men—G. I. Gurdjieff

The First and Last Freedom—J. Krishnamurti

The Theory of the Leisure Class—Thorstein Veblen

The Thirteenth Tribe—Arthur Koestler

**The Technocracy Study Course**—First published in 1934 this book is key to the understanding of Technocracy.

Technocracy is simply a philosophical cultural concept - same as the price system - the difference between the two however is immense. They are two different ways to look at two different cultures. Both are viable. One, however, has a heart and elevates us - the other is cruel and degrades. Technocracy's strength is the liberating, poetic view at it's heart. - It's a realistic plan for survival with life enhancing benefits.

"Many of the ideas in this book have never been said more directly or eloquently."

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