

CHINA "UNCIVILIZED"? MILLENNIUMS of ACHIEVEMENT and CONTRIBUTION to the WEST

By MAUD RUSSELL

Foreword by Oakley Johnson

20 cents



[From Joseph Needham, "Science and Civilization in China," Vol. 1, p. 171] TRADE ROUTES BETWEEN CHINA AND THE WEST

Fig. 72. Routes of trade between China and the West from the ± 1 at and ± 2 and centuries onwards. Based upon Hudson (1).

Foreword

There is something dramatic and grand in the story of a people who were civilized and strong when Ur and Babylon and Troy were in their heyday, and who have maintained their nationhood down through six millenniums—and are *still* civilized and strong. That is what the Chinese people have done.

The central aim of this pamphlet about China is to present the gist of scientific facts about two themes: a) what have the Chinese done in the way of building civilization? and b) what have they contributed to our Western science and culture?

In trying to answer briefly and accurately these two questions, Maud Russell has assembled facts which will astonish many American readers, and may even knock over some old notions they have which happen not to be true. But they will be fascinated by these facts, too, for assembled here is the cream of some of the latest and best scientific writings about Chinese history and Chinese science.

The reader will be intrigued by details about Chinese inventions, such as paper, printing, gunpowder, the mariner's compass, silk, cast iron, and so on, and he will be further stirred by recollecting that Marco Polo and others traveled to "Cathay" hundreds of years ago and brought back ideas and contrivances from China, and that Western scientists and philosophers like Roger Bacon, Leibnitz, and Voltaire were in their day keenly interested in Chinese learning. And the point of all this? These wonderful Chinese, who

And the point of all this? These wonderful Chinese, who were in at the beginning of human civilization, have now taken firm hold of their history for what they themselves believe is a big new advance. We Americans should know what the Chinese have done in history, and what they have done for us. Then we, who are comparative newcomers in world history, will be better able to work with them to solve the world's problems, one of which is how to co-exist in peace.

in peace. The People's Republic of China was established October 1, 1949. For seven years now the United States Government has refused to "recognize" People's China (as for sixteen years it refused to "recognize" the Soviet Union). Dependable, balanced information about the new Chinese republic—whose Chairman, Mao Tse-tung, is a poet and philosopher, and whose Foreign Minister spokesman, Chou En-lai, is a cultured man who speaks English and French—is very difficult to find in the public press here or in books sold in our commercial book-stores. This little brochure by Maud Russell will give at least a historical-scientific background to our thinking about the world's most populous nation. Maud Russell's interest in China did not begin yesterday. She worked in China for twenty-six years (1917-1943) with

Maud Russell's interest in China did not begin yesterday. She worked in China for twenty-six years (1917-1943) with the Young Women's Christian Association of China, in years of tremendous social ferment and change, during which she learned to speak and read the Chinese language. This background of first hand knowledge qualifies her exceptionally as an interpreter of Chinese happenings. She personally knows some of the present Chinese leaders, corresponds with people in China, and regularly receives the latest Chinese publications.

And now, before I sign off, there's another thought I'd like to call attention to: we must face the fact that here in our country the dissemination of news and opinions has become subject to a monopoly-controlled one-party press. This is becoming generally recognized, as indicated in recent statements by Carey McWilliams of the *Nation*, by Senator Thomas C. Hennings in certain speeches, and by Robert M. Hutchins in remarks about the functioning of the First Amendment. If we'd like to see the truth about China's contributions get around among Americans, we had better determine at once to circulate, each one of us, a hundred copies of this brochure. OAKLEY C. JOHNSON

May, 1956

China "Uncivilized"?

Millenniums of Achievement and Contribution to the West

Certain American political leaders, expressing themselves on foreign policy, often speak of the Chinese as "barbarian" or "uncivilized" or "hordes." Their ignorance, feigned or otherwise, if unchecked by popular knowledge of historical fact, can contribute to a serious underevaluation of that great sector of humanity which is China. One quarter of the human race resides in China. This people is no new-comer on the world scene. The Chinese not only constitute the world's longest continuous civilization—having a history recorded in writing for over 3,500 years—but this great people have been for well over 2,000 years one of the most continuous contributors to the technical, cultural, economic and political thought and activities of the West. Indeed, our Western civilization is in deep debt as the recipient of the practical and theoretical achievements of the Chinese people.

This brief presentation is intended to be suggestive of the immense body of China's historical relations with and contributions to the total world: only brief mention is herein made of the rich heritage we of the West have received from China but volumes of scholarly works are available to document, enlarge upon and add to the information here presented. Every fact mentioned in this article is documented in one or more of the following works: Joseph Needham, "Science and Civilization in China," Vol. I (Cambridge University Press, 1954); Needham's "Science Outpost" (Pilot Press, Ltd., London, 1948); Locke & Stern, "When Peoples Meet" (Progressive Education Ass'n, N.Y., 1952); Rudolf Hommel, "China At Work" (John Day Co., 1937).

CHINA HAS LONG BEEN IN CONTACT WITH THE WEST

"The process of exchange between Europe and China," Locke and Stern tell us, "passed through elaborate caravan relays of interconnecting civilizations. These relays of culture were world movements in their day, much more impressive on their cultural and economic sides than in their military exploits and political combinations. Throughout the rise and fall of dynasties and military leaders, these constructive processes went on, extending in geographical scope from farthest China to beyond Italy on both shores of the Mediterranean. The time span too is impressive for it runs at least back to the 4th millennium BC. Chinese civilization during much of that long period was flourishing and richly creative, and furnished Europe not only with basic materials, but time and again with technological skills, scientific inventions, and occasionally even institutional ideals and models." At the time of the Tang Dynasty (618-907 AD) China was considered the most civilized country in the world.

SOME INVENTIONS THAT APPEARED HISTORICALLY FIRST IN CHINA

The Chinese preceded the Greeks in many important scientific and technical discoveries, they kept pace with the Arabs who had access to all the treasures of the ancient Western world, and they maintained between the 3rd and 13th centuries a level of scientific knowledge unapproached in the West. The weakness of China in theory and geometrical systematization "did not prevent the emergence of technological discoveries and inventions often far in advance of contemporary Europe, especially up to the 15th century," says Needham. And he points out that these technological inventions poured into Europe in a continuous stream during the first 13 centuries of the Christian era. (See table on pp. 12-13 for the inventions and the lag between Chinese invention and Western use.)

Some of the basic, every-day things that have come to us from China are rice, tea, porcelain, silk, umbrellas, eye-glasses, the printing press, the mariner's compass, paper, paper money, water-tight compartments in ships, the finger-print system of identification, kites, etc.

Paper

Paper was invented in the first century AD by Tsai Lun but it was at least six hundred years before it passed to the West. And in China colored paper began to be used in the 7th century.

Printing

Printing had begun in China at least by the 8th century the earliest block printing known is that of a Buddhist charm of 770. The Chinese had long used paper and ink and they knew how to make seals out of clay, stone and metals; and the time was now ripe for such an invention as printing text books were needed by the thousand for the civil service system; and charms for warding off evil spirits and diseases were desired by the Buddhists and Taoists. In the 10th century the Confucian Classics were printed from wooden blocks—130 volumes which were widely distributed throughout the country; and by the end of the century Taoist books had become fairly common in the far western province of Szechuan.

Gunpowder

China gets the credit for inventing gunpowder. "Cracking and exploding staves," say their chroniclers, were used in the Wei Dynasty (220-265 AD) and fireworks were used in the Sui Dynasty (605-617 AD). The use for warfare is not proven though experiments were carried out along those lines; in 1161 "thunderbolt projectiles" made of paper filled with lime and sulphur were used in battle; when they touched water, the fire leapt from them and the dense fumes that arose confused the enemy. And there were "fire-stones" thrown a considerable distance by a "fire-drug" made of nitre, sulphur and willow charcoal. Arab traders brought the secret of this combination to the West and it was adopted for warfare.

Iron Refinement

The appearance of iron among the Chinese about 600 BC was indeed the last appearance of iron among any of the great culture areas of the world; but the Chinese rapidly surpassed all other parts of the world in iron technology. Pliny represents the Chinese as sending to Rome the most highly prized kind of iron. There was a highly skilled iron industry in North China in Han times—"fine cast iron, otherwise unknown to the ancients" (Locke and Stern). China achieved the mastery of cast iron—which may well have been due to the nature of the ores employed, permitting fusion at temperatures lower than those possible elsewhere.

Silk

Chinese embassies made presents of Chinese silk to the Parthians in the first century; and it was they who then introduced silk into Western Asia (though caravans from China to Iran date from 106 BC) and it was about then that the trans-Asian silk trade became regularized. The event whereby the Roman Empire and thus ultimately Europe as a whole was rendered independent of China for the supply of raw silk took place in 552: someone guilefully smuggled silk-moth eggs in a hollow stick from Kashgaria.

Porcelain

True porcelain was not only made as early as the Tang Dynasty (618-907 AD) but had already become articles of overseas trade by that time. Proto-porcelain, pottery with elements of porcelain, had been made in Han times, just before the dawn of the Christian era. It was the 18th century before Europe was producing true porcelain.

The Mariner's Compass

Still extant writings (of Han Fei, who died in 233 BC) tell of a "south-pointer" which fixed the position of morning and evening; legend in China even puts the use of a guiding "south-pointing contrivance" as far back as the 12th century BC. The eastern deviation of the magnetic needle was already pointed out by a writer, Shen Kua, about 1068. The first mention in Europe of the deviation of the needle (by Pierre de Maricourt) in 1269 comes therefore two centuries later than the Chinese record.

Navigation

The gimbals of the navigator (rings for suspending his compass so as to keep it always horizontal) and the mounting of the gyroscope of the automatic navigator go back, not to the charcoal stoves which warmed the hands of medieval prelates in chilly cathedrals, but to the self-righting perfume burners with which a 2nd century (AD) Chinese mechanic furnished the beds of princes and officials, Dr. Needham assures us.

Automatic Clock Drive

It was not in 19th century Europe, but in 2nd century (AD) China that the automatic clock-drive of the astronomical telescope first appears; and its "equatorial mounting was first made, not in the workshops of Uraniborg or Vienna, but in Mongol Khanbaliq; when Fraunhofer invented his clock drive in 1824 he certainly did not know that the Chinese had for many centuries caused their equatorial armillary sphere to rotate by water power."

Bridges

The first great segmental bridge was constructed by Li Chun in China shortly after 600 AD, but no such structure was built elsewhere until Italy followed with several of the kind shortly after 1300. The first suspension bridges with iron chains were constructed in China at least as early as the 6th century AD; yet, though they had many successors in that part of the world, especially among the Tibetans and other Himalayan peoples, the principle was not suggested in Europe until the end of the 16th century and the first such bridge was not built there until the end of the 18th century.

Medical Gymnastics

Techniques of medical gymnastics, generally supposed to have been the gift of 18th century Sweden to Europe, can be shown to arise in fact directly from the practices of early medieval Taoists in China, says Dr. Needham.

The Sowing Plow

Chinese records of the Han time (220 BC-205 AD) relate that the prefect of the Tun Huang District taught the people to make a sowing plow which saved half their labor. In Europe its earliest mention is in the 16th century.

Brick Making

In China the art of brick making and the utilization of bricks seems to go back as far as the Hsia Dynasty (22nd-18th century BC). A Chinese account of that period says that brick enclosures were built over coffins; by the Han times the art was fully developed.

Well Boring

Needham tells us that "the art of drilling deep wells or bore-holes, such as are used today for exploiting fields of petroleum, is specifically Chinese, for we have much evidence of it going back to the Han period. Furthermore, the method used for so long was essentially the same as that employed in California and Pennsylvania before the application of steam power. . . . No trace of the radiation of the technique into other cultures appears for a millennium."

Metal Coinage

The classical statement is that the making of small pieces of precious or standard metal with specific dies or with designs produced in casting first developed in Lydia in the 7th century BC. It appears however that the earliest coined money in China goes back almost to the Shang period (1530-1030 BC).

Edibles and Household Things

Our potato, with its claim of American ancestry, was known and eaten by the people of China in the Liang Dynasty (907-923 AD). And sugar was already mentioned in records dating back to the second century BC. The Book of History (24th-8th Century BC) mentions a *fermented beverage* of millet or rice; the straining of liquor from lees is mentioned in the Book of Odes (23rd-6th Century BC). The first refer-ence to coal in China was made about 100 BC, called "icecharcoal," and was probably discovered about the same time in Europe; though Marco Polo (13th Century AD) noticed its use in China and described it in such a manner that it seems it was utterly unknown to him or his contemporaries. The Chinese had perfectly developed *cooking stoves* by the time of the Han Dynasty and were also acquainted with the principle of the *chimney*. And it was the Chinese who intro-duced the *washboard* into the U. S.

Chopsticks and Table Manners

The most universally known fact about the Chinese is that they use chopsticks to convey food to their mouths. We are apt to look down on this as a crude method, but we should remember that the general use of the fork in Europe dates back no further than the late 16th century—before which time our ancestors used only knives and their fingers. The Chinese have been using chopsticks for several thousands of years. European table manners rules at the end of the 15th century indicate clearly that table forks were not then in general indicate clearly that table forks were not the 15th century indicate clearly that table forks were not then in general use in Europe; it was "manners" to reach for a piece of meat only with three fingers and not to leave the hand unduly long in the bowl; another point of good behavior was not to wipe the nose with the same hand you use in taking a piece of meat. Chopsticks are as much an evidence of refinement and culture as the use of forks in the West; and it's more network hore convenient and loss dengerous! natural, because more convenient, and less dangerous!

HISTORICAL TABLES [from Needham]

China produced a profusion of developments which reached Europe and other regions at times varying between the first and eighteenth centuries. The feature common to all examples is that firm evidence for their use in China antedates, and sometimes long antedates, the best evidence for their appearance in any other part of the world. This is summarized below:

TRANSMISSION OF MECHANICAL AND OTHER TECHNIQUES FROM CHINA TO THE WEST

[Up to about 1750]

I

		прролицие	
tem	I	ag in Centurie	
a)	Square-pallet chain-pump	15	
b)	Edge-runner mill	13	
	Edge-runner mill with application of w	vater	
	power	9	
c)	Metallurgical blowing-engines, water po	wer 11	
d)	Rotary fan and rotary winnowing machi	ne 14	
e)	Piston bellows	c 14	
f)	Draw loom	4	
g)	Silk-handling machinery (a form of flyer laying thread evenly on reels appear the 11th century AD and water power	r for rs in er is	
	applied to spinning mills in the 14 th)) 3-13	
h)	Wheelbarrow	9-10	
i)	Sailing-carriage [a type of boat]	11	
j)	Wagon-mill	12	
k)	Efficient harness for draught animals: Breast		
	strap (postillion)	8	
	collar	6	
1)	Cross-bow (as an individual arm)	13	
m)	Kite	c 12	

n)	Helicopter top (spun by cord)	14
	Zoetrope (moved by ascending hot air	
	current)	c 10
o)	Deep drilling	11
p)	Cast iron	10-12
q)	"Cardan" suspension [a type of suspension	
	bridge]	8-9
r)	Segmental arch bridge	7
s)	Iron-chain suspension bridge	10-13
t)	Canal lock-gates	7-17
u)	Nautical construction principles	10
v)	Stern-post rudder	c 4
w)	Gunpowder	5-6
	Gunpowder used as a war technique	4
x)	Magnetic compass (lodestone spoon)	11
	Magnetic compass with needle	4
	Magnetic compass used for navigation	2
y)	Paper	10
	Printing (block)	6
	Printing (movable type)	4
	Printing (metal movable type)	1
z)	Porcelain	11-13

TRANSMISSION OF MECHANICAL TECHNIQUES FROM THE WEST TO CHINA

[Up to about 1750]

a)	Screw	14
b)	Force-pump for liquids	18
c)	Crankshaft	3
d)	Clock-work	3

Applied Sciences

The Chinese were centuries ahead of the West in succeeding to calculate the value of pi.

The Sung dynasty (918-1280 AD) produced some of the greatest *mathematicians* of any age: this was the period of the great algebraists, and China was the country where, during those centuries, this branch of mathematics reached its highest level.

Improvements in hydraulics engineering as well as its intensified use came in the Sung Dynasty, such as lock-gates and new surveying instruments. In bridge building the use of the ingenious transverse sheer-wall and the caisson were introduced.

In architecture, the classical Chinese compilation on the subject, the Ying Tsao Fa Shih, of Lieh Chieh, appeared about 1100. Shipbuilding took great strides, the sternpost rudder, which probably was invented some time before, became general, and sea-going junks of considerable size were built. *Treadmill driven paddle wheel ships*, again not new, became general.

general. There is another line which was developed in China, which led to great improvement in agriculture and kindred sciences—that is, *chemistry*. The origin of chemistry is in alchemy. The earliest alchemy is to be found in China—at least 400 years before there are evidences of it in the West in Greece and Egypt where it is not known until about the 2nd century AD. There was reference to alchemy in China in the second century BC and the earliest book on alchemy in any language is that of Wei Po Yang in 142 AD. This pre-science was developed by the Taoists; searching for immortality by means of drugs and gold, they developed chemical technology, and the ways of handling materials, and so were the fathers of modern chemistry. The *biological sciences* also flourished and were applied

The biological sciences also flourished and were applied for the benefit of man. Many famous physicians appeared in the Sung period (918-1280 AD) and old systems such as those of *pharmaceutics* and *acupuncture* were diffused; about 1100 the Imperial Medical Encyclopedia was compiled by twelve of the most eminent medical men of the time (The "Sheng Chi Tsung Lu"). The books of pharmaceutical botany reached an unprecedentedly high standard; the illustrations in certain editions of the 12th and 13th centuries were better than those of the European botanical books of the 15th and early 16th centuries. Particularly characteristic of the period are numerous botanical and zoological monographs of which *The Orange Record*, in 1178 (by Yen Chih) is a type specimen—it deals with aspects of *citrus horticulture* and was the first book on the subject in any language; besides, there were numerous monographs on bamboo, lichis, aromatic plants, cucurbits and flowering trees, as well as crustacea, birds and fishes.

SIMULTANEOUS APPEARANCES

In Chinese and Hellenistic civilization toothed wheels appeared almost simultaneously (2nd century BC-1st century AD) with many immediately resulting applications of gearing. The hodometer, appears in Europe between the 1st century BC and the 1st century AD; and in China sometime between the 2nd century BC and the 2nd century AD. The water-wheel appeared on the north coast of Asia Minor about 60 BC and in China about 20 AD, and since in China it was used, not to grind grain, but to operate metallurgical bellows, the pre-existence by at least several decades of trial and use must be admitted. The camera-obscura appears both among the Arabs and the Chinese about the 10th century AD. The dependence of sea-tides upon the moon was distinctly stated in China (by Wang Chung) about 80 AD; it is possible that some word of Seleucus, the Chaldean who explained tides by the resistance opposed by the moon about 140 AD, may have reached Wang Chung, but in China the idea had been in the air earlier, Needham assures us.

Just about the time *eclipses* began to be *regularly recorded* in Babylonia (8th century BC) we find them carefully noted in Chinese writings. . . . The Babylonian records are all lost, but the Chinese records are still preserved. The soli-lunar cycles of Meton and Callippos appear in China under different names at the same times, where they may indeed have been much older. The cycles of Plato and Berossos have their analogues in China from 300 BC onwards at least. The Chinese had been observing and registering sun spots since the first century BC.

CHINA'S INTELLECTUAL LIFE

By the 6th century BC, Needham tells us, the Chinese were "entering the greatest period of intellectual flowering of an-cient China." The "hundred schools" of philosophers were at their height between 500 and 250 BC. Increasing popula-tion pressure, increasing conflicts with barbarians and among the feudal states themselves, growing unrest among the people and the technological revolution caused by the coming of iron, all led to a demand for advisors on the part of the feudal lords, who often felt themselves at a loss in unfamiliar situations. Such at any rate are the only explanations which are available for the great rise at this time of philosophers, traveling from capital to capital with their disciples, and being prepared to take up positions as advisors and diplomats upon request. From this time date the earliest Chinese books to which names of individual authors are attached. Con-fucius (551-479 BC) spent most of his life imparting his social By the 6th century BC, Needham tells us, the Chinese were fucius (551-479 BC) spent most of his life imparting his social teachings to his disciples; one might say that in his strong political support to the Chou emperor he was fighting for the only unifying factor he could see in the society of his day-as if some one in 1946 declared their support for the ideal of the United Nations. Besides the Confucians there were many other schools-the Taoists, the Mohists, the Logicians, the Legalists.

The beginnings of academies of scholars go back to this very early time in China. The most famous of them was the Academy of the Gate, founded in 318 BC, uniting together many of the most brilliant scholars of the age, towards the end of the 4th century and the first half of the 3rd BC. The Academy founded by Plato was already formed in 348 BC

and the Stoic Academy originated shortly after 300 BC. The first assembly of scientific experts in Chinese history was called together in 4 AD. One thousand of them as-sembled at the capital-persons learned in the lost classics and ancient records, in astronomy and calendrical science, in mathematics, and the acoustics of standard musical tones, in philology and history, in magical and medical techniques, in the botany of woody plants and herbs, and in the Five Classics including the Confucian Analects, the Filial Piety Classic, the Literary Expositor. In 124 BC the Imperial University was set up with a chair for each of the classical books. This supplied candidates for the government official posts for many years. From Han times on there were oral and unorganized examinations for official positions; by the Sui period (581-618 AD) there were systematic written examinations, and during the Tang period (618-907) the examinations led to the reorganization of the university which about 650 AD had some 5000 students, as many as Cambridge today. An Imperial Academy was founded in 754 and continued to the end of the empire (1911 AD); and if we may consider it the forerunner of the Academia Sinica today, the latter is older than any existing European Academy by nearly a millenium. Needham, the scholar, presents these facts. ECONOMIC IDEAS

ECONOMIC IDEAS

China long ago grappled with our "modern" economic problems! "Confucian officialdom was always in fear of a ruination of the agricultural basis of production by the specu-lative activities of the merchants; and in the Tang period (618-907 AD) returned to the Han (206 BC-220 AD) expedi-ent of 'compensation offices' or 'ever-normal granaries'. Gov-ernment buying during gluts prevented prices falling, and conversely release of seed grain at the right time of year pre-vented scarcity; the government store-houses were also, at any rate partially, effective against famines. Han ti-Wu

(140-87 BC) tried to bring the economic system . . . into some kind of order. The merchants, goaded and bewildered by erratic anti-mercantile edicts, had speculated heavily and driven prices so high that the coinage no longer sufficed; then, to remedy this, the right of private minting was given to certain families, leading to an extremely localized capital accumulation. Now the emperor took the most capable of these merchants and financiers into the civil service, especially in relation to the salt and iron monopoly; experiments in currency were made, including the first attempt at paper money; the conception of the ever-normal granary was also introduced. But throughout the period taxation was heavy and constantly increased, largely for the financing of the wars against the Huns." (As compiler of this material I refrain from commenting on Modern USA and modern China.-M.R.)

In the Sung period (918-1260 AD) Wang An Shih, the 2nd of the two great reformers of Chinese history (the first was Wang Man of Han) introduced a long series of reforms. "He first reorganized the finance ministry . . . and managed to save as much as 40% of the national budget. He then pro-posed to abolish the ancient system of transporting tax grain to the capital, substituting a system of local warehouses from which grain could be sold on the spot and the taxes remitted to the central government in money. At the same time money-lending arrangements were made—another attack on the mer-chants as source of credit—so that farmers could obtain ad-vances on the security of growing crops at rates of interest vances on the security of growing crops, at rates of interest lower than those commercially obtaining. New land surveys were carried out and taxes based on them. Further antiwere carried out and taxes based on them. Further anti-mercantile laws bore heavily by taxation on hoarding of com-modities and restricted production of luxury goods," writes Needham. The bourgeoisie of that day, "the official and scholar gentry," resisted on the same basis as the bourgeoisie of today... they felt an abyss opening beneath their feet.... If the peasants were no longer to be commanded, if what seemed a dangerous reliance on unstable money (paper money) were to take the place of the good old long hauls of

grain in kind, and worst of all, if quantitative accounting were to restrict or close the field for peripheral "squeeze" and the modest enrichment of functionaries which every one ex-pected—the end of the world had come! (Remember, this was one thousand years ago in China: but how modern it sounds!)

CHINA INFLUENCES EUROPEAN CULTURE, ECONOMY AND POLITICAL THOUGHT

ECONOMY AND POLITICAL THOUGHT Periodically in the art and literature of medieval and Renaissance Europe interest in China makes its appearance, reflecting cultural relations; such interest continued as late as the 18th century—a sustained Chinese cultural vogue, affecting influentially the art, literature and philosophy of that period. ... Artists were charmed with the beautiful Chinese painting on silk, porcelain and lacquer—designers of gardens turned from formal geometrical patterns to a free imitation of nature on the Chinese model; architects imitated Chinese roofs; Chippendale and others imitated Chinese furniture; porcelain manufacturers were set up at Sevres, Delft, and Meissen, and by Wedgewood in England. The common people used china-ware, drank tea and enjoyed fireworks; they decorated their mantle with Oriental objects of art. The courts adopted Eastern luxuries, silks, perfumes, sedan-chairs, and new fash-ions of dress and ceremony. ions of dress and ceremony.

The building of canals, roads and dikes had already begun in Europe but was greatly stimulated by the Chinese example. Statesmen interested in taxation, public education, civil service, and prison reform found that China was worth study-ing. Not only economics but many other fields of thought and action felt the new influence.

In philosophy Roger Bacon, Leibnitz and Voltaire were interested in and impressed by China. Two Physiocrats, Ques-nay and Mercier de la Riviere, found Chinese works on economic and political thought useful in their own writings, helping them prepare proposals regarding the proper eco-nomic and political organization of Europe; works by Domin-

ican and Jesuit missionaries to China relating to Chinese agriculture, government support of agriculture in China, the Chinese attitude toward domestic and foreign trade, the sys-tem of taxes, definitely influenced the Physiocrats. Locke and Stern affirm that "our twentieth century heritage from these Physiocrats has retained deposits from the Orient," even going so far as to state that this Chinese influence became the base so far as to state that this Chinese influence became the base of the classical economic theory as well as being the stimulant of much of the rationalistic and utopian thought of the period. These two scholars conclude that "Western econo-mists who study the economic and social thought of the Chinese may well regard it not as something alien and irrele-vant to Western civilization, but as having contributed to the development of Western thought."

CONCLUSION FOR US AMERICANS

The scholars know. What is now needed is popular ap-preciation of the long relationship and contributing participa-tion which the Chinese people have had with our Western world over the centuries. This knowledge and appreciation will serve to help Americans more correctly evaluate the achievements, energy and potential of this quarter of the world's peoples with whom we of the modern world must and can coexist.

This booklet can close with no better thought than lines from Dr. Needham. "For better or worse, the die is now cast, the world is one. The citizen of the world has to live with his fellow citizens at the ever narrower range of the airfoil and the radio wave. He can give them the apprecia-tion and understanding they deserve only if he knows the achievements and the sages and the precursors of their culture as well as his own.

"We are living in the dawn of a new universalism which, if humanity survives the dangers attendant on control by ir-responsible men of sources of power hitherto unimaginable, will unite the working people of all races in a community both catholic and cooperative. The mortar of the edifice is mutual comprehension."

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