

CLIMATOLOGY-POPULATION

Population Centers Should Be Moved from Flood Zones

Cities Must Be Moved From River Bottoms; Geologist Urges Man Not to Dispute With Nature

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IN EVERY emergency arising from an extraordinary display of the forces of nature, especially the destructive work of natural agents, question is raised sooner or later as to causes and the possibility of prevention.

Most popular explanations are unsound and many of the cures proposed are hopelessly inadequate. Nature is blamed for the mistakes of man. Lack of appreciation of geologic processes and failure to take note of the danger signals leads to one disaster to another year after year.

Inadequate Efforts

Special reforestation, levees and a few dams are expected to do what they have no competence for. Spoonfuls of water are impounded while lakefuls on upper reaches flood the courses of our river systems. Nature has its own way of disposing of an oversupply of rain or melting snow.

It would be immeasurably more distressing if these waters were spread out over the surface of the ground to lie there stagnant until dried up by evaporation. Gravitation compels it to flow and the gathering of this run-off forms the streams that finally on occasion build up great floods.

But they all follow the lines charted by the river itself in more orderly times when its chief work was to dig a channelled course for its own accommodation.

The plain fact is that a river has nowhere else to go. The inner channel carries the stream in normal times, but in flood the valley bottom is covered also, and in great floods even the lower terraces are reached. The point is that these lands are its own property. Anyone encroaching on these particular lands is a trespasser in yearly danger and will learn by experience, if not otherwise, that nature is still master.

Although in occasional instances spe-

cial protective measures or diversions or impoundings are partially effective, the principal move indicated by the facts is very different. We are slowly learning that some of the things we have tried to do cannot be done. Our effort by comparison is too puny. But this does not mean that there is no answer. We have found out lately that agricultural settlement of the arid plains was carried too far. Everyone now knows that some of the settlement must be abandoned.

The cure for flood disaster is essentially the same. Dangerous bottomlands should not have been occupied, of course. We know full well how they came to be and why the stricken people return to the same spot in the vain hope that such a visitation may never come again. But the time must come when better plans will be laid. Helpless populations now crowded along the river bottoms in our great cities will be provided habitations beyond the reach of

danger. Cities can even be replanned.

Instead of praying that the windows of heaven may be closed, or instead of attempting to dispute the right of way of one of nature's giants, perhaps it would show great wisdom to accept the situation and turn such portion of the river bottom as it must occupy on occasion back to the river again. Nature has provided a very demanding use for these places and apparently the thing for man to do is to observe nature's danger signs and provide other ways of meeting his own needs.

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METEOROLOGY

Real Flood Cause Lay Off the Southeast Coast

A STUBBORNLY unmoving mountain of tropical air off the southeastern coast of the United States, that would not get out of the way and permit the normal midwinter traffic of storms to flow in from the northwest, is the ultimate explanation of the nation's flood woes. Ordinarily the northwesterly storms bring real winter cold, and the cold holds most of the seasonal precipitation in storage as snow and ice until time for the spring thaws. But with this persistent southeastern "high" keeping temperatures abnormally warm ever since well back into December, there was no snow, repeated rains have kept



LANDING FIELD—WITH NO LAND IN SIGHT

Penalty is exacted without remorse or opportunity for appeal, when man thrusts his works too confidently into the path of the major forces of nature.

the soil soggy, and when a whole procession of "little lows" came marching along, dumping their moisture, there was nowhere for the water to go but off. And up came the rivers.

That, in a nutshell, is the story of the present record-breaking flood disasters, as stated by the U. S. Weather Bureau to Science Service.

The floods of the early spring of 1936 followed a somewhat similar situation, Weather Bureau scientists continued. In fact, persistent high-pressure areas in the Southeast are not unusual phenomena, though nobody knows as yet why they develop. However, as a rule they do not hang over that corner of the country for more than a few days, whereas this one has been an affair of weeks.

The present flood situation differs from that of 1936 in one important respect. Then, one single tremendous storm, deluging the upper watersheds of the rivers with downpours of as much as six inches within twenty-four hours, did all the mischief at once. The present situation has arisen from a whole procession of lesser storm areas, none of which has brought more than an inch, but all cumulating into a terrific aggregate of water.

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SOIL CONSERVATION

Flood Storm Carried Off 300,000,000 Tons of Soil

LOSSES of best farm soil during the present flood period reach almost astronomical figures, according to calculations of the U. S. Soil Conservation Service. From the Ohio watershed, where most of the rains fell, it is figured that the prolonged storm period carried away three hundred million tons of topsoil at a very conservative estimate. The very fact that the rain has been long drawn out, indeed, operated toward making the losses less; the same amount of precipitation concentrated into a shorter time would have washed away an even greater mass of soil. Even as it is, gulying has been exceedingly rapid.

Careful measurements were made by the Soil Conservation Service of the run-off from certain fields in Ohio. From plowed land the run-off has been eight inches for the period of the rains; from comparable areas under grass and trees the run-off has been only two inches. Soil losses from the plowed land were of course several times as great as from the protected soil.

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ECOLOGY

Half-Hearted Measures Won't Succeed for Flood Control

By PROF. PAUL B. SEARS, University of Oklahoma

LANDSCAPE architecture on an imperial scale is our problem now.

Modern civilization must design its own landscape no less than its cities if it is to survive.

Because the disaster of flood is so ghastly and spectacular it is regarded as the disease itself, whereas it is but a symptom. The location of the worst suffering is not at the actual seat of trouble, yet much so-called flood control has been confined to downstream areas. This is not quite so sensible as treating appendicitis with pain killer.

The general principles of preventing flood damage are well understood, but great need remains for fundamental studies on climate and soil, and particularly the social sciences. The problem is really one in human ecology.

Any thorough plan of upstream engineering is headed for trouble with conflicting special interests. Moreover, such engineering alone is not adequate. The entire landscape must be reorganized. The average engineer works with great biological and social forces he has not been trained to interpret.

I agree with the statement credited to Colonel Younghusband, famous British explorer, that only two kinds of landscape are tolerable: one where man has made no change, the other where he has complete control as in western Europe.

The latter has been largely reconstructed and a working balance established following the chaos of early exploitation. The same must be done here. The white race is on this continent with both feet and must see it through. We can not restore original conditions except in limited areas and even to do so would not end floods or other symptoms of diseased environment.

Land use, highways, water supply, soil conservation, forestry, grazing, recreation, and flood control are merely facets of the major problem of creating a new landscape adjusted to the modern culture pattern. This is too vital a matter to be left any longer to chance. Industry, finance, agriculture, and science should cooperate to the limit with the Government instead of waiting to be pushed. The problem is bigger than any group of interests for it concerns the physical framework of civilization on this continent.

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TOO MUCH EVEN FOR MUDLARKS

Some racehorses are handicapped by a wet track. Here is one of the country's finest racecourses, near Louisville, Ky., too wet for anything but seahorses.