

California Drought Update



For February 9, 2017

by Patrick Ruckert

Published weekly since July, 2014

<http://www.californiadroughtupdate.org>

<https://www.facebook.com/CaliforniaDroughtUpdate>

patruckert@hotmail.com

Every Member of Congress, everyone in the executive branch from the President on, in the field of national resources, has to plan during their period of administration or office for the next generation, because no project that we plan today will be beneficial to us. Anything we begin today is for those who come after us. And just as those who began something years ago make it possible for us to be here, I hope we'll fulfill our responsibility to the next generation that's going to follow us.

President John F. Kennedy

Pueblo, Colorado-- August 17, 1962

Dedicating the Frying Pan-Arkansas reclamation project

A Note To Readers

This week marks a turning point in the California drought. For the first time in years less than half of the state remains in any of the drought categories. Forty-seven percent to be precise. And the rain and snow do not appear to be easing off, so we shall see in the coming weeks more progress out of the drought. But, as we continue to warn, and to put it bluntly, as I title a section of this report below, "It Will Never Be Over." With the state's population heading toward 50 million in the next decade or so, water will always be short, if not state-wide, at least in local areas.

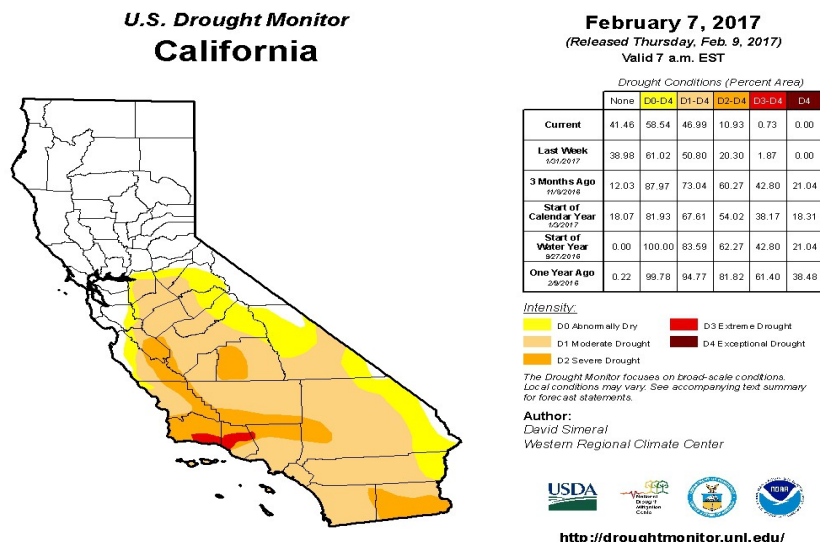
This week's report includes not only reportage on the weather, but also coverage of some of the damage from both the drought and the storms. The Oroville Dam on the Feather River has a very large hole ripped out of its spillway by the release of water to make room for more of it. A report from NASA on subsidence is also included in this week's report.

The California drought has brought to the fore not only this state's near 45 year gap of building no significant water infrastructure, but highlights the nation's similar absence from the task. As the American Society of Civil Engineers have reported for years, the infrastructure deficit for the nation is over \$3 trillion and growing. The Chinese estimate that the U.S. needs about a \$8 trillion investment in infrastructure. All this yet still ignores the fundamental principle that for any society to progress requires not just adequate transportation, energy, water, etc. structures and institutions, but unless there is a focus, a mission, to uplift the physical productivity of the economy as a whole to a new and more advanced platform, then the admonition by President Kennedy, quoted above, cannot be fulfilled. That means the nation must have a focused mission to explore the frontiers of science and technology, especially fusion power and space exploration. As we know from the Apollo Program, it is such a focus that drives all technology and progress forward at the most rapid rate.

I reported last week on some of the noise being reported about President Trump's wish to build infrastructure. There continues to be commentary and speculation on the topic. The “Feature” this week underlines the principle of our Constitution that it is the responsibility and the duty of the U.S. government to lead the nation to that higher platform of productivity and power. Unless the step by step restructuring of the economic and financial system is carried out in exactly the manner as outlined by Lyndon LaRouche's “Four Laws,” then all discussion and action on building infrastructure will fail. Even some others recognize that what the President's team has so far proposed will not work. See, “Trump team’s infrastructure plan has some big gaps.” <http://www.cbsnews.com/news/trump-teams-infrastructure-plan-has-some-big-gaps/>. A grab bag wish list approach may fix a few pot holes and ease traffic somewhere, but will never create the kind of leap in productivity required for tomorrow. Here is an example of such a wish list: <http://www.mcclatchydc.com/news/politics-government/article131145979.html>

U.S. Drought Monitor

Its all in the numbers: Each week less and less of the state is in drought. This past week shows that virtually none of the state is now in “extreme drought,” and even the “severe drought” category is down to 10 percent. And overall less than half of the state falls into any category of drought. Pretty soon we will no longer be in a “Drought Emergency,” just a “Flood Emergency.”

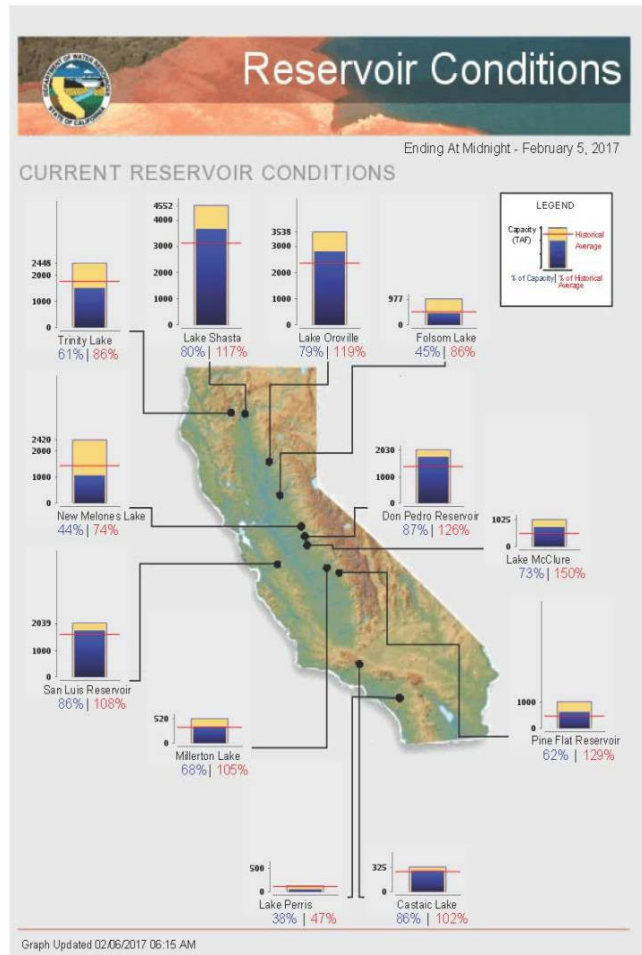


The Reservoirs

The reservoirs are all overflowing. In fact, as operators are releasing billions of gallons of water from the reservoirs, more water is added to the overflowing creeks and rivers throughout the state, washing away houses, roads, cars and whatever else gets in the way.

At Oroville Dam and Reservoir (story below) operators upped the amount of water being released which began ripping out the spillway, forcing a shutdown of the spillway. By tonight water behind the dam will begin going over it.

The reservoir graph below does not show all the reservoirs full due to water being released to make room for more coming in.



Here is the story of the damaged spillway at Oroville Dam and Reservoir. The *Sacramento Bee* article, with just the first few paragraphs excerpted here, has the most thorough coverage. I include more links following that.

Here is the latest update of February 9: DWR Increases Oroville Spillway Flows

<http://www.water.ca.gov/news/newsreleases/2017/020917spillwayflow.pdf>

Oroville Dam officials find new damage after water releases, as reservoir level climbs

By Dale Kasler, Ryan Sabalow and Phillip Reese

Sacramento Bee

February 8, 2007

<http://www.sacbee.com/news/state/california/water-and-drought/article131579999.html>

State engineers have found new damage to the Oroville Dam spillway, although not as much as they'd feared, after conducting two test releases to see how much water the scarred facility could handle, the state said Thursday. Meanwhile, reservoir levels continued to climb behind the critical flood-control structure.

The gash that was discovered Tuesday grew by another 50 feet after engineers released water for a combined six hours Wednesday and early Thursday, according to Department of Water Resources spokesman Doug Carlson. "They found additional damage to the spillway, which was predicted," Carlson said. "It wasn't as bad as they thought it might be."

Engineers were continuing to assess the situation at Oroville and planned to brief the media in greater detail at mid-day Thursday. State records show the reservoir took on another 100,000 or so acre-feet of water overnight and was sitting at around 3.2 million acre-feet Thursday morning. Lake Oroville, the state's second largest reservoir, can hold 3.5 million acre-feet.

Engineers to begin inspections at damaged Oroville Dam

By Dale Kasler and Ryan Sabalow

February 7, 2017

<http://www.sacbee.com/news/state/california/water-and-drought/article131348349.html>



From the Department of Water Resources

DWR conducts test to assess Oroville Spillway damage

February 8, 2017

<https://mavensnotebook.com/2017/02/08/this-just-in-dwr-conducts-test-to-assess-oroville-spillway-damage-with-pictures/>

From the Department of Water Resources:



Damage to Oroville Dam's spillway is visible in photo taken after releases were halted Tuesday afternoon. ([Paradise Post via Twitter](#))



The California Department of Water Resources has suspended flows from the Oroville Dam spillway after a concrete section eroded on the middle section of the spillway. There is no anticipated threat to the dam or the public. DWR engineers are assessing the options to repair the spillway and control the reservoir water level. The Butte County facility is the tallest dam in the United States at 770 feet and is a key part of the State Water Project. Photo taken February 7, 2017.

You Read It Here First

As I wrote a few weeks ago, perhaps the region is returning to the characteristic climate that has prevailed for the past 2,000 years-- alternating mega-droughts and mega-floods. For background I

linked the review of the book “The West Without Water.”

http://larouchepub.com/eiw/public/2014/eirv41n19-20140509/48-52_4119.pdf

Now it seems, others are raising the possibility. Here is one:

California May Be Long Overdue For A Mega Flood

February 7, 2017 10:35 PM By Paul Deanno

<http://sanfrancisco.cbslocal.com/2017/02/07/california-may-be-long-overdue-for-a-mega-flood/>

SAN FRANCISCO (KPIX 5) — *It appears California has come out of the **drought**, with a fury.*

*Atmospheric rivers, more commonly known as Pineapple Express storms, fueled by Hawaiian tropical waters, have pounded the Bay Area, and the state, with **rain**.*

*But this is not new. Over **100 years ago** California was in the same boat, literally. The **rain** started to fall just before Christmas, and it didn't let up for over 40 days. The Central Valley became a lake.*

So the question is, could it happen again? The answer: yes.

*Geographic data indicates California has a mega **flood** about every 100 to 200 years. So the Golden State is overdue, long overdue for a big storm.*

It Will Never Be Over

Article after article asks, “is the drought over,” and the experts respond saying “no.” The experts are correct, but I am afraid our short attention span, immediate gratification driven population will never quit asking the question. Here are just a few of many articles updating the picture.

As the snowpack piles up, is California drought over? No, say experts

New measurements of the Sierra Nevada snowpack show California's snowiest winter in 20 years. But it may be too soon for sweeping policy changes.

By Ellen Powell

<http://www.csmonitor.com/Environment/2017/0204/As-the-snowpack-piles-up-is-California-s-drought-over-No-say-experts>

February 4, 2017 — Though heightened snowpack in California's Sierra Nevada is cause for optimism, reducing water use remains as important as ever, scientists say.

On Thursday, the state's snowpack in the mountain region reached 173 percent of average for that date. That's the highest it's been since 1995, thanks to a series of storms that bombarded California in January. Come spring, the snowpack will melt into 5.7 trillion gallons of water, enough for as much of a third of the state.

“It gives everything a much brighter outlook,” said Frank Gehrke, California's snow survey chief, the Associated Press reported. Does the heavy rain- and snowfall signal a change in the way that California will approach its years-long drought?

As California Gov. Jerry Brown weighs ending the drought-related state of emergency this spring,

farmers and city governments are calling for more water. But scientists caution that the drought is a long-term problem that won't be fixed by one season of heavy precipitation, and they advise officials to stay the course.

"Any aquifer recharge that occurs as a result of this winter's storms is just a small uptick in a century-long decline of groundwater storage, at least with respect to the once-vast reserves in the Central Valley," said James Famiglietti, a senior water scientist at NASA's Jet Propulsion Laboratory, according to the LA Times.

'Astounding' Snowpack Bodes Well for Summer Water Supply

By Craig Miller

February 2, 2017

<https://ww2.kqed.org/science/2017/02/02/astounding-snowpack-bodes-well-for-summer-water-supply/>

Statewide, the Sierra snowpack, source of about a third of California's water, stands at 173 percent of the long-term average for early February. In fact, it's already more than 100 percent of the average for Apr. 1, when the snowpack usually tops out for the year. In other words, there's essentially an entire winter's worth of snow already on the ground.

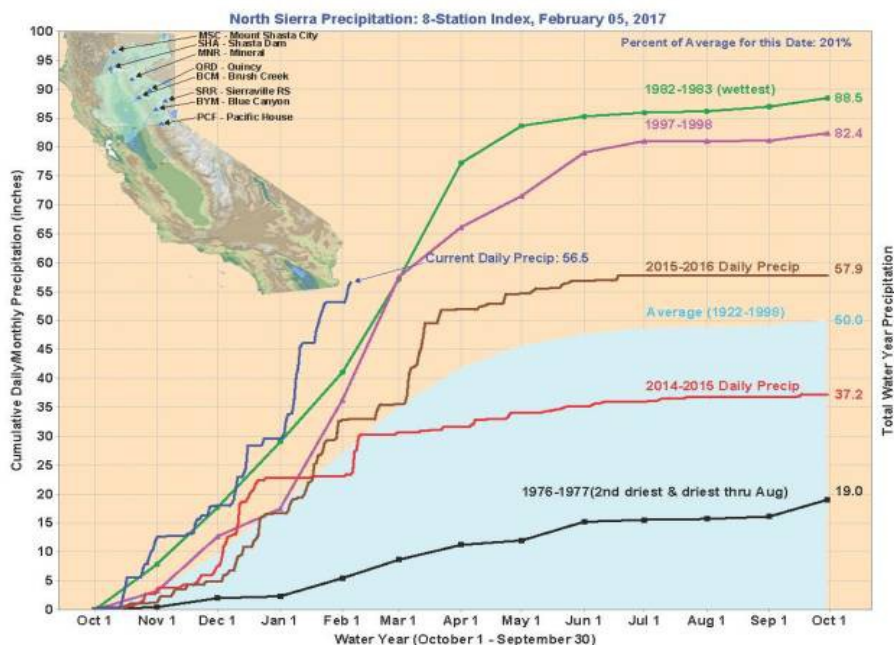
'It's unbelievable how much water fell out of the sky during that period.' Tom Painter, snow hydrologist
Even more impressive, though, is how much of it fell during just two prolonged "atmospheric river" storms in January.

Yet, it is very wet out there:

California's Wettest Drought? –2017

Posted on [February 5, 2017](#) by [jayluna](#)

<https://californiawaterblog.com/2017/02/05/californias-wettest-drought-2017/>



State Water Board Continues Water Conservation Regulations, Prohibitions Against Wasting Water

February 8, 2017

<https://mavensnotebook.com/2017/02/08/this-just-in-state-water-board-continues-water-conservation-regulations-prohibitions-against-wasting-water/>

From the State Water Resources Control Board:

Today the State Water Resources Control Board extended its existing water conservation regulations, which prohibit wasteful practices such as watering lawns right after rain and set a conservation mandate only for water suppliers that do not have enough water reserves to withstand three more dry years.

“Pineapple Express” storm heading to Bay Area with heavy rain, strong winds

By Mark Gomez

February 8, 2017

San Jose Mercury News

<http://www.mercurynews.com/2017/02/08/pineapple-express-storm-heading-to-bay-area-with-heavy-rain-strong-winds/>

“It’s simply a type of atmospheric river, with large plumes of moisture that bring heavy rain to the West Coast,” said Matt Mehle, a meteorologist with the National Weather Service. “It has a connection to near Hawaii. On satellite, the moisture source, there is a large plume of moisture extending from the West Coast to Hawaii.”

On the heels of an atmospheric river that soaked the Bay Area on Tuesday, the Pineapple Express storm could once again cause widespread flooding, mudslides and traffic nightmares.

Subsidence Report

The excerpted report below from NASA illustrates the serious damage from land subsidence caused by the draining of the aquifers, a problem that will continue drought or no drought.

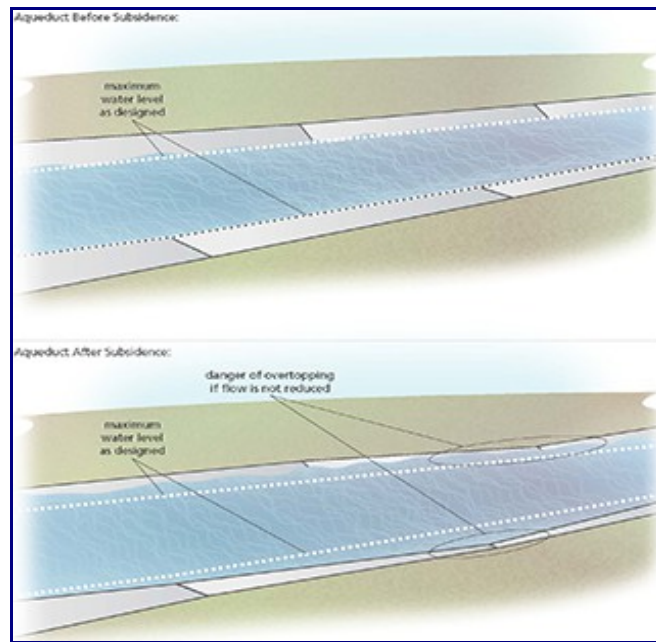
NASA Report: San Joaquin Valley Land Continues to Sink

February 8, 2017

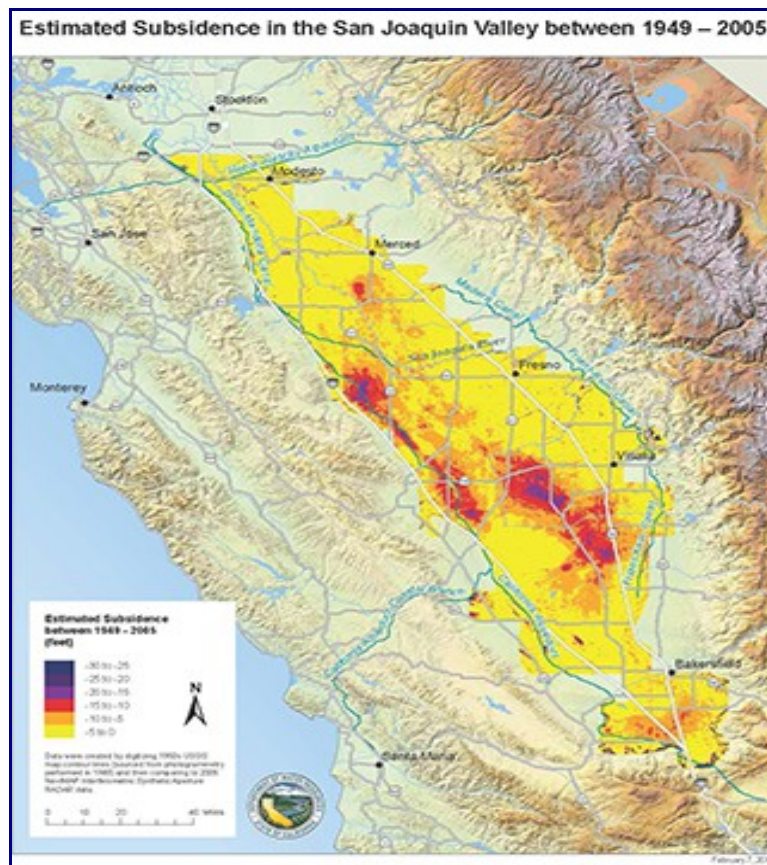
New NASA radar satellite maps prepared for the California Department of Water Resources (DWR) in the report, [Subsidence in California, March 2015-September 2016](#), show that land continues to sink at in certain areas of the San Joaquin Valley, putting state and federal aqueducts and flood control structures at risk of damage.

“The rates of San Joaquin Valley subsidence documented since 2014 by NASA are troubling and unsustainable,” said DWR Director William Croyle. “Subsidence has long plagued certain regions of

California. But the current rates jeopardize infrastructure serving millions of people. Groundwater pumping now puts at risk the very system that brings water to the San Joaquin Valley. The situation is untenable.”



Aqueduct before and after subsidence



Estimated subsidence in the San Joaquin Valley between 1949-2005

Desalination of Brackish Water

This thorough article on the topic of desalination of brackish groundwater covers a topic not often mentioned. But, as the above article on groundwater depletion makes clear, simply adding another drain on the aquifers will only exacerbate the problem.

Desalination of aquifers offers drought-weary California new hope

By Devika G. Bansal

February 5, 2017

<http://www.mercurynews.com/2017/02/05/desalination-of-salty-aquifers-offers-drought-weary-california-new-hope/>

California's historic drought may be winding down. But water officials across the Golden State are increasingly exploring a hidden but promising way to add to the state's water supply: removing salt from the billions of gallons of brackish — or distastefully salty — water that lies deep below the Earth's surface.

A new report by the Pacific Institute that explores the cost of potential water sources in California is spurring hopes that the desalination of brackish water could quickly become a vital tap in the state.

“There are places in California where there may be groundwater available, but it may not be fresh,” said Heather Cooley, director of the water program at the Oakland-based think tank. “Those are places where it's possible to use brackish desalination at a much lower cost and with fewer social and environmental impacts than ocean desalination.”

Feature

By What Constitutional Authority Can the Government of the U.S. Fund Infrastructure?

We continue here our discussion over the past few weeks of the elements of the general policy known as “LaRouche's Four Laws” required for an actual physical economic recovery of the United States.

The fundamental authority for the national government of the United States to promote industry, fund infrastructure projects and to generally do all that is necessary to promote the general welfare of the people of the United States, is, without question, a necessary power of the government of the United States.

It is often claimed that the United States government has no business either funding such endeavors, or that such actions are in violation of the Constitution of the United States. Sometimes such a claim is even put forward by those whose livelihood exists solely due to such projects by the government, like the Federal Central Valley Project of California.

Below, we demonstrate that not only can the government do such things, but the language of the Constitution itself authorizes such powers.

We begin with the Preamble to the Constitution itself.

The Preamble to the Constitution of the United States

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

A serious reading of this “introduction” to the Constitution clearly establishes the general powers of the government and makes clear the following ideas that those who wrote the document intended.

First, that the Constitution itself not only supersedes the previous Articles of Confederation, but itself is an imperfect document that contains within it the procedures for making it “more perfect.”

Second, that the government established was not just for the benefit of those who wrote it, but for all posterity. In other words it establishes for all time a government to “establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity...”

That the phrase “promote the general Welfare” is found both in the Preamble and in Article 1, section 8 of the body of the Constitution gives that idea extra strength.

Here is the first sentence of Article 1, section 8 of the U.S. Constitution:

The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States.

Among the authors of the Constitution, Alexander Hamilton and his close associate Gouverneur Morris, were instrumental in orienting the document toward the intention stated above. Morris, in fact, was the author of the Preamble itself as a member of the Committee on Style of the Constitutional Convention.

Hamilton, as Secretary of Treasury in the first George Washington administration, wrote four reports on finance as ordered by the U.S. House of Representatives. The fourth report, “Report on Manufacturers,” discusses directly the phrase “general welfare,” establishing beyond debate the intent and meaning of that phrase.

Here are excerpts from that report to Congress which focus on the phrase “general welfare” found in the Preamble of the Constitution of the United States, and included in the first sentence of Article 1, section 8 of the body of that document. In the report Hamilton is arguing that the promotion of the establishment of manufacturing, the funding of roads, canals and ports are not only in the interest of the people of the United States, but such action by the Congress is authorized by the U.S. Constitution.

Report on Manufactures

Communicated to the House of Representatives

December 5, 1791

By Alexander Hamilton

There is no purpose to which public money can be more beneficially applied than to the acquisition of

new and useful branch of industry; no consideration more valuable than a permanent addition to the general stock of productive labor.

A question has been made concerning the constitutional right of the Government of the United States to apply this species of encouragement, but there is certainly no good foundation for such a question. The National Legislature has express authority "to lay and collect taxes, duties, imposts, and excises, to pay the debts, and provide for the common defence and general welfare," with no other qualifications than that "all duties, imposts, and excises shall be uniform throughout the United States; and that no capitation or other direct tax shall be laid, unless in proportion to numbers ascertained by a census or enumeration, taken on the principles prescribed in the Constitution," and that "no tax or duty shall be laid on articles exported from any State."

These three qualifications excerpted, the power to raise money is plenary and indefinite, and the objects to which it may be appropriated are no less comprehensive than the payment of the public debts, and the providing for the "general welfare" were doubtless intended to signify more than was expressed or imported in those which preceded; otherwise, numerous exigencies incident to the affairs of a nation would have been left without a provision. The phrase is as comprehensive as any that could have been used, because it was not fit that the constitutional authority of the Union to appropriate its revenues should have been restricted within narrower limits than the "general welfare," and because this necessarily embraces a vast variety of particulars, which are susceptible neither of specification nor of definition.

It is, therefore, of necessity, left to the discretion of the National Legislature to pronounce upon the objects which concern the general welfare, and for which, under that description, an appropriation of money is requisite and proper. And there seem to be no room for a doubt that whatever concerns the general interests of learning, of agriculture, of manufactures, and of commerce, are within the sphere of the national council, as far as regards an application of money.

The only qualification of the generality of the phrase in question, which seems to be admissible, is this: That the object to which an appropriation of money is to be made be general, and not local; its operation extending in fact or by possibility throughout the Union, and not being confined to a particular spot.