

The
**PRAIRIE
SCHOOL**
Review

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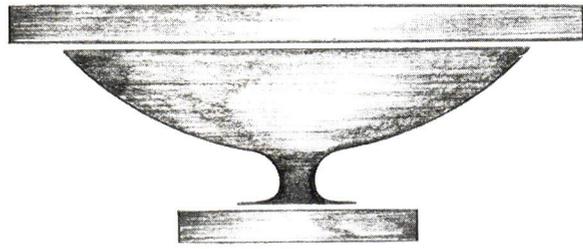
ABOVE:

The Chicago Stock Exchange Building, considered by many to be the epitomy of the Chicago School of Architecture, stands no more, a victim of "progress."

COVER:

Chicago's downtown is still the most exciting architectural experience in the world. Old and new buildings combine to present a panorama of excellence unexcelled anywhere. Photo by Hedrich-Blessing.

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From the EDITORS

With this issue of The Prairie School Review we conclude the transcription of the Concora Symposium held at Northwestern University in 1969. It is fitting that we open these pages with a photograph of the Reliance Building, still standing at the corner of State and Washington in the heart of Chicago's loop. No architect has ever superseded Charles Atwood in inventiveness and elegance in skyscraper design. Today's masters owe much to this structure. It is now under consideration as an official Chicago Landmark Building — let thoughtful men prevail.

The Chicago School of Architecture: A Symposium—Part II

Structural Development

by Carl W. Condit

There has been so much written about the Chicago School (that's such a convenient term I'm going to continue to use it), written by me and other people, that I think it would be an insult to the intelligence, as well as boring, to go over a lot of the details again; so what I would like to do is to put the commercial and public work of the Chicago movement into a perspective in which it constitutes the focal point, the center point, so to speak, of about 200 years of structural development. First, it is the culmination of about a hundred years of structural development preceding it; and then the beginning of a more intricate, vastly greater structural development that has followed it.

What I shall say is complementary to what Mr. Weisman has said. He has talked very eloquently, very expertly about the architectural form, the architectural characteristics of many interesting buildings of Philadelphia, New York, Boston, and other parts of the country. (I wonder if he knows, by the way, that a little bit of the central court of McLaughlin's Shillito Store in Cincinnati still exists. It's imbedded in the new building, a piece of PWA-like architecture of 1937). What I have to say will be complementary because I want to talk about structural development, and there are two reasons for talking about that. The first is that I am a historian of technology, and the other is that I think one can assert a fundamental generalization here: Most great architecture (I don't know what proportion, but certainly a very high proportion of great architecture) represents the expressive and symbolic fulfillment of technical potentialities. (The foremost examples that occur to me would be Roman concrete building, beginning in the reign of Nero and going on through the end of the Empire in the west, and high medieval building in the 13th century). I would take that to be axiomatic; it does seem to me to be fundamentally true. So what I want to do is move very rapidly through the chronology of technical development which constitutes the means by which a new architecture came into being at the end of the 19th century in many places, as Mr. Weisman has correctly shown. (Mr. Weisman will excuse me if I think the real masterpieces of it are in Chicago beginning in 1889, continuing up to about 1905 or 1910; I'm talking about the commercial work now).

I have resisted the temptation to show slides of these early things because if I did I'm afraid we would never get to lunch. Besides, I think one word is worth 10,000 pictures, so I'm going to rely on a descriptive and analytic approach.

Let's go back to the beginning; it isn't the true, the only beginning, but it will do very well: The Calico Mill in Derby, England, of William Strutt, 1792-3. This was the first multi-story, supposedly fire proof building (it was at least partly fire proof) in which iron was used for structural members; the columns were of cast iron. As the first multi-story building with iron columns the Calico Mill is the first modern industrial building. A few years later came the Marshall and Benyon Flax Mill in Shrewsbury, 1796-7, by Charles Bage, a man whose work deserves the most careful investigation and is just beginning to receive it. This building, opened in 1797, had the first all-iron interior frame: cast iron columns and case iron beams.

Now the chronology is compressed here, for things came at a very rapid rate. It appears that the first iron roof-truss was used in a foundry in Soho in London in 1810, William Murdock being the designer. The first proposal for an I-beam (this is an extremely complex little part of structural history) came in Thomas Tredgold's practical essay on the strength of cast iron in 1822, paralleling the theoretical work of Navier (which was way beyond Tredgold, as Navier was too much interested in mathematics and too little interested in the practical work that Tredgold represents). The history of the I-beam turns out to be vastly more complicated than anybody imagined, but it seems that that essential feature of metal frame construction can be traced to Tredgold. (The flanged-beam had been introduced earlier by Boulton and Watt in several mills). Iron was coming rapidly to the fore in the advanced industrial nations, chiefly England, with France lagging behind by only a couple of years. Experimental work was necessary to understand its properties, its structural role, its potentialities, and we get this first in the experiments of Eaton Hodgkinson and William Fairbairn at Manchester, 1826-30, published in the *Philosophical Transactions* of the