The Bathroom
The Kitchen
and the Aesthetics of Waste

A PROCESS OF ELIMINATION

Ellen Lupton and J. Abbott Miller

A KIOSK BOOK
Distributed by Princeton Architectural Press

THE BATHROOM, THE KITCHEN,
AND THE AESTHETICS OF WASTE:
A PROCESS OF ELIMINATION

Written and designed by
Ellen Lupton and J. Abbott Miller
DESIGN/WRITING/RESEARCH, NY

Printed by
Studley Press, Dalton, MA

Typeset in Scala, designed
by Martin Majoor, and
Gill Sans, designed by Eric Gill

Originally published in conjunction
with the exhibition

THE PROCESS OF ELIMINATION:
THE BATHROOM, THE KITCHEN,
AND THE AESTHETICS OF WASTE

held at the
MIT List Visual Arts Center
May 9–June 28, 1992

The publication and exhibition were
supported in part by the National Endowment
for the Arts, Design Arts Program, and
The Graham Foundation, Chicago

Published by
KIOSK
214 Sullivan Street
New York, NY 10012

Distributed by
Princeton Architectural Press
37 East 7th Street
New York, NY 10003

ISBN 0-0938437-42-9

Second printing, October 1996

LENDERS TO THE EXHIBITION

The American Advertising
Museum, Portland, OR

American Museum of Sanitary
Plumbing, Worcester, MA

Baltimore Gas and Electric
Company, MD

Cooper-Hewitt, National Design
Museum, NY

David Erickson, Littleton, MA

Don Hooper/Vintage Plumbing,
Northridge, CA

Kohler Company, Kohler, WI

Metropolitan Museum of Art, NY

Museum of the City of New York

Museum Village in Orange
County, Monroe, NY

Peale Museum, Baltimore, MD

Trenton City Museum, NJ

TABLE OF CONTENTS

ACKNOWLEDGMENTS

The exhibition and publication were initiated by Katy Kline, director of MIT List Visual Arts Center. The installation was directed by List Center preparator Jon Roll. They and their staff made this project possible.

Many individuals at the lending institutions shared their knowledge and time, including Kimberly Barta, The American Advertising Museum; David Erickson; Peter Fetterer, Kohler Company; Don Hooper, Vintage Plumbing; Dean Krimmel, Peale Museum; J. Duncan Laplante, Trenton City Museum; Russell and Bettejane Manoog, American Museum of Sanitary Plumbing; Larry Paul and Tod Spence, Baltimore Gas and Electric Company; Richard Sgritta, Museum Village; and Stephen van Dyk and Susan Yelavich, Cooper-Hewitt National Museum of Design.

Our teachers at City University of New York Graduate Center provided ideas and criticism. We thank Marlene Park, Rosemarie Haag Bletter, Stuart Ewen, and Rosalind Krauss.

Opportunities to present our work at Johns Hopkins University, University of California, Irvine, and UCLA were enabled by Julia Reinhard Lupton and Kenneth Reinhard, who also shared their insights on psychoanylitic criticism.

Our parents have taught us about using, cleaning, and designing bathrooms and kitchens; we thank Mary Jane Lupton and Kenneth Baldwin, William and Shirley Lupton, and Ruby and Jerry Miller.

The editors of Zone Books published an early version of our essay in *Incorporations* (Zone 6, 1992); their suggestions helped to shape the project in its current form.

Research and production assistance was provided by Kamran Ashtary, Kevin Connolly, Tori Egherman, Gabrielle Esperdy, Michelle Miller, Dina Radeka, and Angela Wildman.

The printing of this book was managed by Suzanne Salinetti and Kenneth Milford at Studley Press. We also thank Kevin Lippert, Princeton Architectural Press, for his support in distributing the book.

Many friends and associates contributed ideas, information, and support, including Edward Bottone, Brian Boyce, Ralph Caplan, Russell Flinchum, Mildred Friedman, Elizabeth Marcus, Mike Mills, Charles Nix, Richard Prelinger, Jane Rosch, Ian Schoenher, Jennifer Tobias, George Tscherny, Massimo Vignelli, Edward Wencec, Richard Saul Wurman, and Gianfranco Zaccai. Finally, we thank our colleagues at Design Writing Research and Cooper-Hewitt National Museum of Design for their patience and support while we completed this project.

Ellen Lupton and J. Abbott Miller

FOREWORD

Design history has been the stepchild of intellectual history; too often it has focused exclusively on the form or aesthetics of objects. This project is predicated on the belief that objects do not simply exist in a culture, but, permeated as they are with its beliefs, values, fears, and fantasies, actually define it.

This exhibition and the publication which accompanies it revise the understanding of *streamlining*, which is widely credited as defining advanced American design through the mid-twentieth century. Whereas the term previously had been seen as emblematic of speed, progress, and technological utopianism, guest curators Ellen Lupton and J. Abbott Miller connnect the ideology and aesthetics of modern design to the human body as a metaphor for the actions and implications of the consumer economy. They have taken the bathroom and the kitchen, two charged domestic locations, as underexamined paradigms for critical twentieth-century design issues of both historical and contemporary importance. This look at the interrelationship among technology, form, and function and the personal and culturally imposed confrontation with waste is particularly timely, as Americans appear finally to be confronting the limits of resources and ecological systems.

This ambitious venture consumed a large part of Ellen's and Abbott's recent life. They embodied the efficiency they were studying, and wasted no time or effort in digesting large amounts of material to produce their admirably thoughtful and articulate reevaluation of our intimate relationship to the domestic landscape. I could not be more grateful for the insights they have provided in organizing both the exhibition and the publication and permitting me the pleasure of looking over their shoulders. Institutional and individual collectors generously allowed us to borrow important objects despite inconvenient deadlines. My List Visual Arts Center colleagues streamlined the logistics of a cumbersome project with their customary wise counsel and deft professionalism.

The Design Arts Program of the National Endowment for the Arts, and the Graham Foundation, Chicago believed in the venture at an early stage and provided both moral and financial support toward its realization.

Katy Kline
Director, MIT List Visual Arts Center

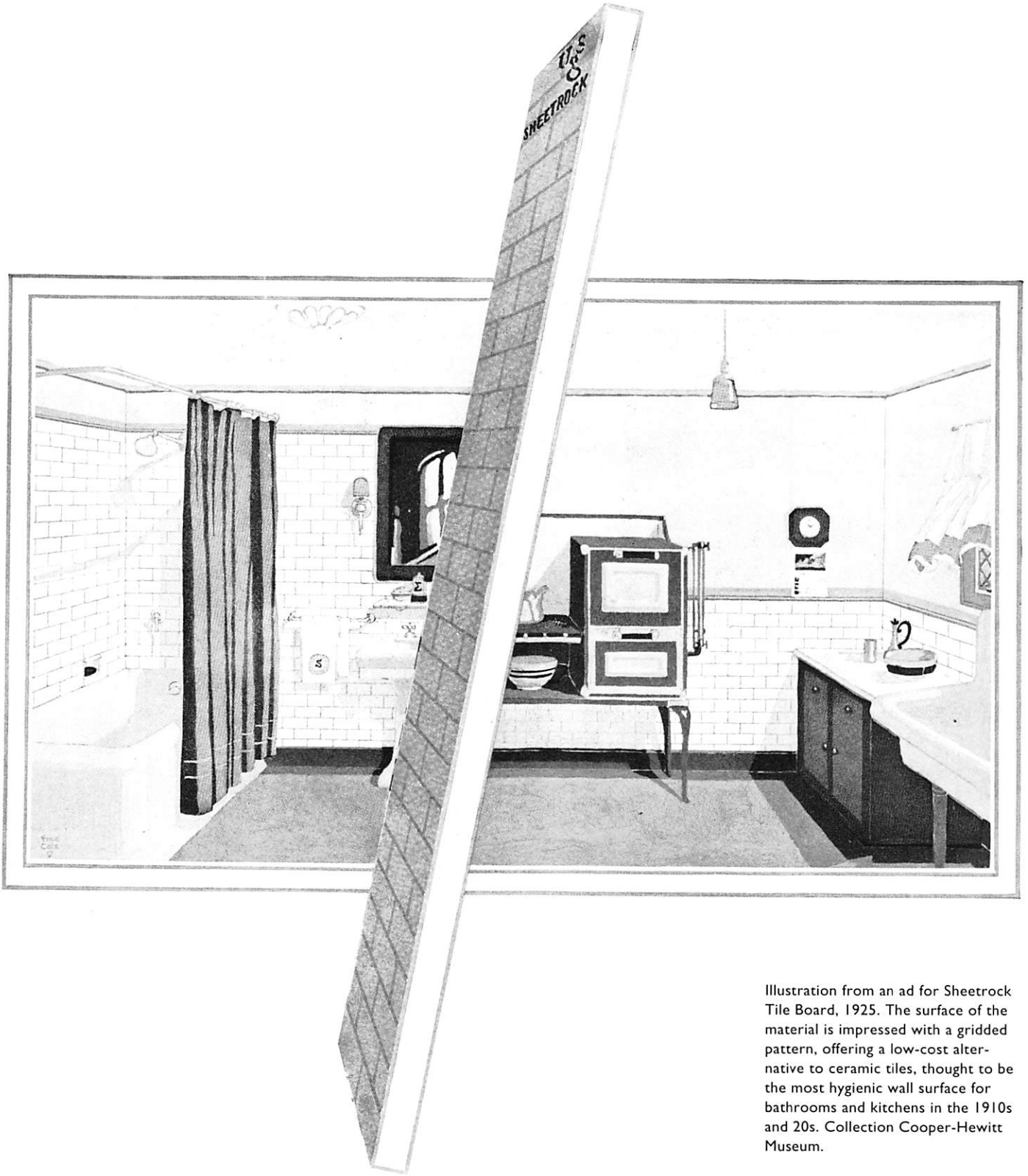


Illustration from an ad for Sheetrock Tile Board, 1925. The surface of the material is impressed with a gridded pattern, offering a low-cost alternative to ceramic tiles, thought to be the most hygienic wall surface for bathrooms and kitchens in the 1910s and 20s. Collection Cooper-Hewitt Museum.

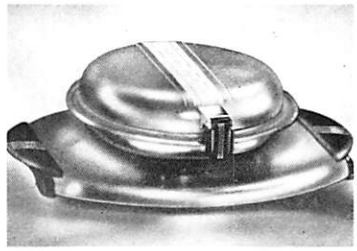
INTRODUCTION
The Process of Elimination

Between 1890 and 1940, America's culture of consumption took its modern form: products were mass produced and mass distributed, designed to be purchased and rapidly replaced by a vast buying public. The same period saw the rise of the modern bathroom and kitchen as newly equipped spaces for administering bodily care. The bathroom became a laboratory for the management of biological waste, from urine and feces to hair, perspiration, dead skin, bad breath, finger nails, and other bodily excretions. The kitchen became a site not only for preparing food but for directing household consumption at large; the kitchen door is the chief entryway for purchased goods, and the main exit point for vegetable parings, empty packages, leftover meals, outmoded appliances, and other discarded products. By the phrase *process of elimination* we refer to the overlapping patterns of *biological* digestion, *economic* consumption, and *aesthetic* simplification. The streamlined style of modern design, which served the new ideals of bodily hygiene and the manufacturing policy of planned obsolescence, emanated from the domestic landscape of the bathroom and kitchen. The organically modeled yet machine-made forms of streamlined objects collapsed the natural and the artificial, the biological and the industrial, into *an aesthetics of waste.*

"When [industrial designers] tried to introduce their new designs into the sacred American living room, they were rebuffed at the front door. But they persisted and finally gained entrance through the back door. Their first achievements were in the kitchen, the bathroom, and the laundry, where utility transcended tradition."

Henry Dreyfuss, *Designing for People*, 1955

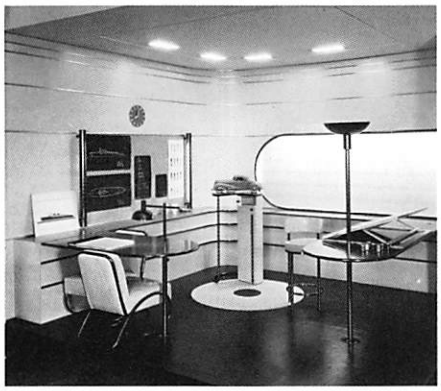
(New York: Simon and Schuster), 76.



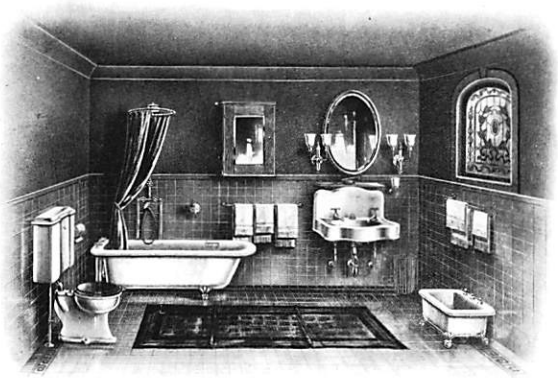
Above, streamlined household appliances, advertised by Universal in 1940.

Towards the close of the nineteenth century, various consumer goods, from packaging, appliances, and furniture to interior architecture, began to acquire a vigorous new physique: the plush fabrics, carved moldings, and intricate decorations of Victorian domestic objects were rejected as dangerous breeding grounds for germs and dust, giving way to non-porous materials, flush surfaces, and rounded edges. This "process of elimination" found its most extreme expression in the streamline styling of the 1930s, which borrowed the conical "teardrop" from aerodynamics and applied it to countless immobile objects, from industrial equipment to electric waffle irons. Streamlining used bulbous forms with tapered ends and graphic "speed whiskers" to invoke the rapid movement of an object through air or water. The mechanical devices of the industrial age, their elements assembled with visible nuts, bolts, belts, and gears, surrendered to the new ideal of the object as a continuous, organic body, its moving parts hidden behind a seamless shell, appearing to be molded out of a single piece of material.

We suggest that the fluid modeling of streamlined forms reflected the period's twin obsessions with *bodily* consumption and *economic* consumption. Streamlining was born of modern America's intensive focus on waste: on the one hand, its fascination with new products and regimes for managing the intimate processes of biological consumption, from food preparation to the disposal of human waste, and on the other hand, its euphoric celebration of planned obsolescence and an economy dependent on a cycle of continually discarded and replenished merchandise. Streamlining performed a surreal conflation of the organic and the mechanical: its seamless skins are fluidly curved yet rigidly impervious to dirt and moisture. The molded forms of streamlining yielded an excretory aesthetic, a material celebration of natural and cultural digestive cycles.



Model industrial designer's office, installed in the Metropolitan Museum of Art, 1934; Lee Simonson and Raymond Loewy. The dramatic streamlining of this interior might evoke an elegant ocean liner or a scientist's laboratory, yet its sources also lie in the mundane, feminized modernism of the bathroom and kitchen. The carved panelling, heavy drapery, and rich carpets of the traditional executive suite have given way to continuous cabinets, built-in fixtures, non-porous surfaces, and curved forms—typical features of the modern bathroom and kitchen. Courtesy Metropolitan Museum of Art.



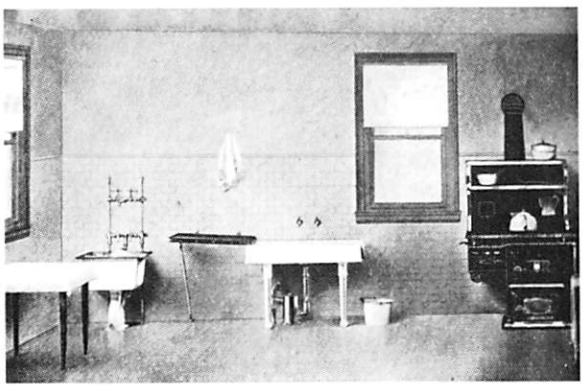
Bathroom, advertised by National Sanitary Manufacturing Company, 1910. This interior reflects the emerging ideal of the bathroom as an overtly industrial ensemble of hygienic equipment.

The flamboyant product designs of the 1930s were preceded by the more anonymous modernism of the bathroom and kitchen, which earlier had begun to replace heterogeneous collections of domestic equipment with continuous, coordinated ensembles, designed to administer a new technological regime of bodily care.

The bathroom as an architectural space did not exist prior to the late nineteenth century. In the pre-plumbing era, America's reluctant bathing customs revolved around portable containers—tubs, pails, chamber pots, and washstands—which were used in the kitchen or bedroom. As modern plumbing coordinated the delivery and removal of water and waste from the home, the toilet and tub assumed a necessarily fixed position in the home: they became *fixtures*. While early plumbed bathrooms maintained the decorative features of traditional domestic spaces—draperies, carpets, carved details—the "modern" bathroom emerged at the turn of the century as an overtly industrial ensemble of porcelain-enameled equipment, with white, washable surfaces that reflected contemporary theories of hygiene.

The modernization of the kitchen followed that of the bathroom, whose aesthetic of obsessive cleanliness resonates in the non-porous materials used for kitchen floors, walls, and work surfaces in the 1910s and 20s, and in the gradual shift from free-standing appliances and storage units to boxy, built-in forms. Like the bathroom, the modern kitchen came to favor *fixtures* over furniture: the slender legs supporting individual units were absorbed into monolithic, built-in slabs which linked mechanical devices to work and storage cabinets. The modern kitchen emulated the unforgiving sparkle of the bathroom; it also reflected the production ideal of the modern factory, whose linear sequence of work stations enabled an unbroken flow of activity. This norm, which we call the *continuous kitchen*, was established by the end of the 1930s and remains powerful today.

A "simple hygienic kitchen," shown in the elite shelter magazine *House and Garden*, 1907. The ceramic tile walls and floor of this costly yet spartan kitchen reflect the hygienic concerns of the modern bathroom. Courtesy *House and Garden*, copyright 1907 (renewed 1935 by The Condé-Nast Publications Inc.).



"Modern commercial art can be termed...the art of elimination, the aim of which is to convey the idea intended as quickly as possible."

Richard Franken and Carroll B. Larrabee, *Packages that Sell* (New York: Harper and Brothers, 1928).

Above, packaged products, 1895-1940.

The changes in kitchen design were preceded by the rise of food packaging, a phenomenon which accelerated in the 1880s and soon dominated urban and suburban grocery sales across the US.[1] The food package encloses the product in a smooth, continuous skin, giving the organic, shapeless substance inside a clear geometric shape. The package resists dirt, air, and moisture, sealing off the product within, just as the shells of modern kitchen cabinetry and appliances would later enclose the tools and materials of the kitchen behind a seamless surface.

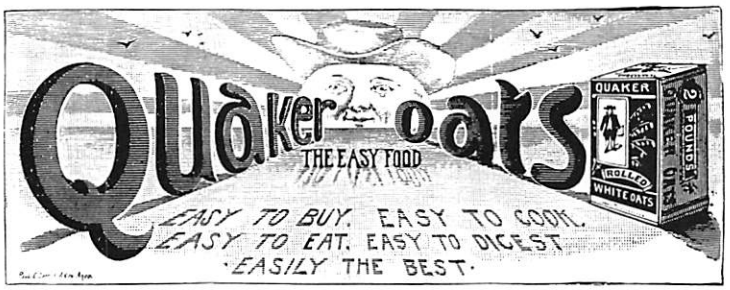
An Old Fashioned Grocery Store

Packaging was a major force in the shift from locally-based agriculture to corporate food production around the turn of the century. By 1910, many brands names which remain "household words" today were the trade marks of nationally distributed products, including Quaker Oats, Kellogg's Toasted Cornflakes, Heinz Ketchup, and Campbell's Soup. Such manufactured personalities eased the transition between the traditional food store and the modern retail outlet, where packaging replaced the shopkeeper as the interface between consumer and product, endowing products with a graphic identity and a corporate address held accountable for defective goods.

Packaging provided a model for the early industrial design profession, whose pioneers extended the principles of advertising and packaging to the product itself. The redesign of an object in the 1920s and 30s commonly involved its external package rather than its working parts. To "streamline" a product often meant to enclose it with a hard new shell.

1. On the rise of corporate food industries, see Alfred D. Chandler, *The Visible Hand: The Managerial Revolution in American Business* (Cambridge: The Belknap Press of Harvard University Press, 1977). On the American diet, see Harvey A. Levenstein, *Revolution at the Table* (New York: Oxford University Press, 1988).

2. On the industrial design profession, see Arthur Pulos, *American Design Ethic* (Cambridge: MIT Press, 1983).



Ad for Quaker Oats, c.1898. In the 1880s, new techniques for milling grains resulted in a surplus of some products, including oatmeal, which quickly saturated its tiny market. Henry P. Crowell, whose business later became the Quaker Oats Company, shipped his product to stores in attractively decorated paperboard containers, which served to explain the use of the gray and shapeless substance within. The breakfast cereal industry was effectively "invented" in the late nineteenth century (Chandler).

1920 1931 1934 ?

"...multiplicity being the essence of confusion, the designer will endeavor to eliminate or combine parts, supports, or excresences whenever possible."

Raymond Loewy, *Never Leave Well Enough Alone* (New York: Simon and Schuster, 1951), 211.

Above, from a series of drawings by Raymond Loewy, 1934, showing the evolution of products towards progressively simpler, yet always changing, forms.
The designs have addressed the exterior package of the product rather than its technology.

A Modern Grocery Store

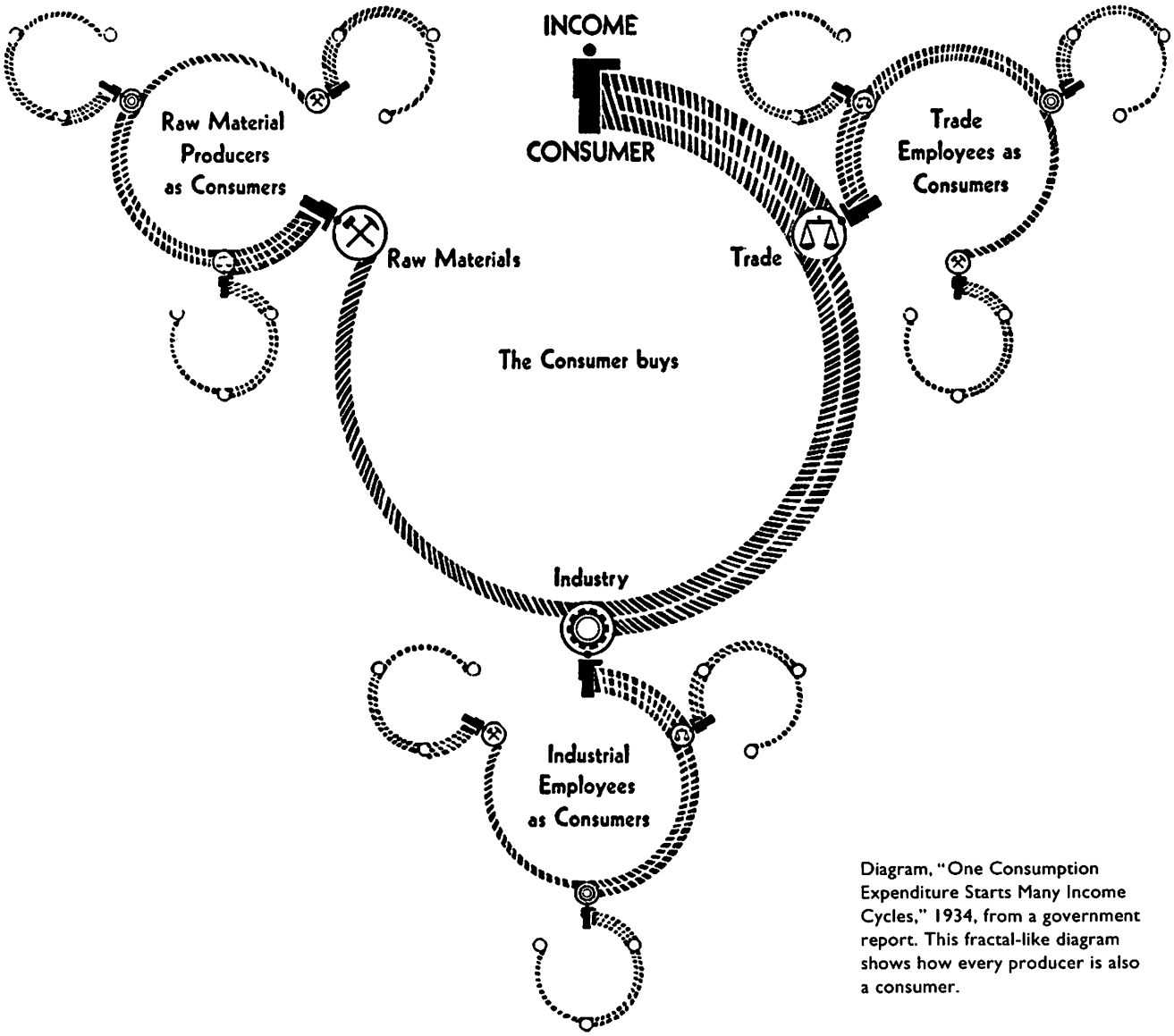
The scenes above, from a 1928 packaging textbook, were likely staged for a trade exhibition. More than just packaging distinguishes the bright modern store at right from the dingy old-fashioned one at left, with its sawdust floor, wood-burning stove, unsavory dog, and morally suspect keg of hard cider. The lab-coated worker above no longer deals with customers (cartons have taken her place), but instead spends his time stocking shelves with packaged goods. From *Packages that Sell.*

Streamlining metaphorically invoked a body gliding through fluid; it also served to accelerate a product through the cycle of purchase and disposal, stimulating sales and hastening the replacement of objects not yet worn out. The built-in disposability of food packaging became a paradigm for consumer goods more generally in the 1920s and 30s, extending a logic of digestion to durable objects. The policy of "planned obsolescence" pictured the economy itself as a "body," whose health depends on a continual cycle of production and waste, ingestion and excretion.

Advertising became a crucial lubricant for keeping this cycle regular, emerging as a powerful partner of mass distribution in the early twentieth century. Although it raised the cost of conducting business, advertising was defended as a laxative for hastening the flow of goods through the economy. Advertising created desire for new products and generated emotional differences between otherwise indistinguishable ones. It helped spread the emerging standards of hygiene, housekeeping, and nutrition by promoting new products that promised access to the rigorous ideals of modern bodily care.

Right, ad for Bab-O, 1928. While the technology of the modern kitchen and bathroom promised to save labor, its rise was accompanied by increasing standards of cleanliness and a growing inventory of products for achieving it.

"Goods fall into two classes, those which we use, *such as motor cars and safety razors, and those which we* use up, *such as tooth paste or soda bisquits. Consumer engineering must see to it that we use up the kind of goods we now merely use."*
Ernest Elmo Calkins, 1932



Diagram, "One Consumption Expenditure Starts Many Income Cycles," 1934, from a government report. This fractal-like diagram shows how every producer is also a consumer.

"...we have learned that the way to break the vicious deadlock of a low standard of living is to spend freely, and even waste creatively."
Christine Frederick, 1929

A "consumer economy" sells manufactured goods to a large populace through high-volume production, making individual items cheaper by selling a greater number.[3] American designers and advertisers in the 1920s and 30s used the term "consumption" in reference to "durables" such as radios, furniture, and clothing; the term's more literal reference, however, is to the food cycle: to consume is to devour, to eat in a voracious, gluttonous manner. To "consume" an object is to destroy it in the process of implementing it, as fire "consumes" a forest. The advertising executive Ernest Elmo Calkins wrote in 1932 that an urgent task of marketing is to make people "use up" products that they formerly "used": cars and safety razors must be *consumed* like tooth paste or soda bisquits.[4] Calkins thus compared the continual movement of goods through the economy with human digestion. To consume is to ingest and expel, to take in and lay waste. It is a *process of elimination.*

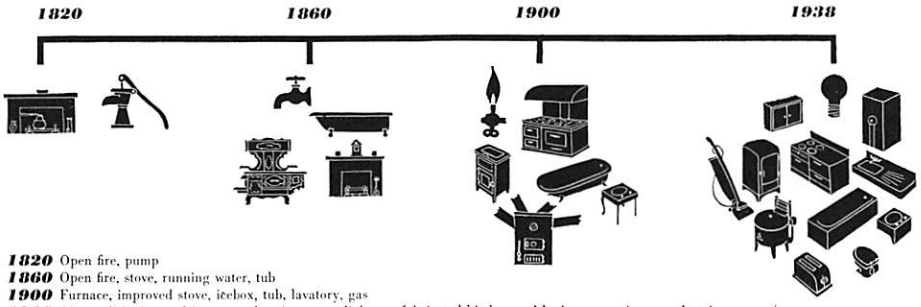
Giving voice to the ethos of disposal, the domestic theorist Christine Frederick employed the oxymoronic term "creative waste" at the end of the 1920s to describe the housewife's moral obligation to rhythmically buy and discard products.[5] Her phrase "creative waste" elevated the garbage of consumer culture into a form of positive production, valuing the destruction and replacement of objects as a pleasurable and socially instrumental act. Frederick and other promoters of consumerism conceived of "waste" not merely as an incidental by-product, a final residue, of the consumption cycle, but as a generative, necessary force. In the consumer economy, "production" finds a place *inside* the process of consumption, a cycle that reiterates the body's own form of "creative waste," excrement.

Reflecting and reinforcing the consumer culture's positive valuation of waste was the shift of cooking, bathing, and defecating from positions of invisibility to dominance in the home. Formerly relegated to the cellar, exiled to the outhouse, or merged with the bedroom, these functions came to command the most expensive and technologically advanced features of the

4. *Consumer Engineering, A New Technique for Prosperity,* Roy Sheldon and Egmont Arens, (New York: Harper and Brothers, 1932), 32.

5. Christine Frederick, *Selling Mrs. Consumer* (New York: The Business Bourse, 1929), 81.

3. The ideology of consumerism is summarized and celebrated in Daniel J. Boorstin, "Welcome to the Consumption Community," *Fortune* 76 (1967): 118-38. On social critiques of consumerism, see Daniel Horowitz, *The Morality of Spending: Attitudes Toward the Consumer Society in America, 1875-1940* (Baltimore: Johns Hopkins University Press, 1985). For essays on the development of American consumerism, see T. Jackson Lears, ed., *The Culture of Consumption: Critical Essays in American History, 1880-1980* (New York: Pantheon, 1983). On scholarly approaches to the origins and intepretation of consumption, see Grant McCracken, *Culture and Consumption: New Approaches to the Symbolic Character of Goods and Activities* (Bloomington: Indiana University Press, 1988).



1820 Open fire, pump
1860 Open fire, stove, running water, tub
1900 Furnace, improved stove, icebox, tub, lavatory, gas
1938 Air conditioning, refrigerator, electric power, light, prefabricated kitchen and bathroom equipment, electric accessories

Diagram, 1938, showing the expansion of the kitchen and bathroom: "The mechanical core of the home has become increasingly complex and all essential."

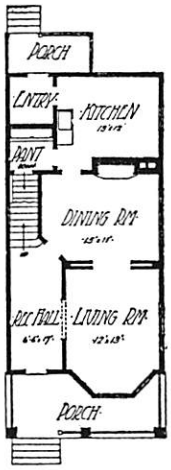
modern dwelling, their disciplined aesthetic radiating outward as a standard for the rest of the home and its inhabitants. The new governance of the house by the marginalized functions of the bathroom and kitchen reflected a shifting relationship between architecture and what Reyner Banham has called "another culture," comprised of plumbers and consulting engineers—a culture "so alien that most architects held it beneath contempt." Banham describes a historical rupture in the discourse of design in the eighteenth century that divorced the "art" of architecture from the making and operating of buildings.[6] We add to Banham's second culture the consumers—often female—who increasingly came to influence the shape of domestic space; the modern technologies of consumption directly address women's role in domestic life, a fact which both empowers and manipulates them.

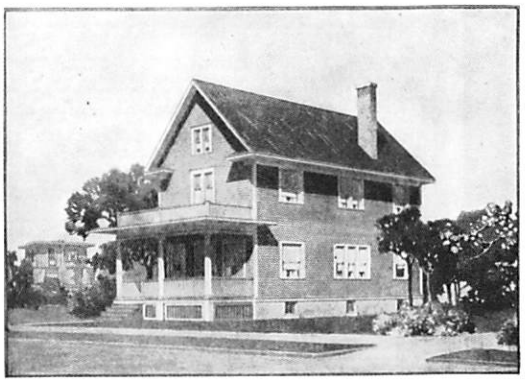
In his essay on "Infantile Sexuality," Freud suggests that during a child's development, the sexual zones move from mouth to anus to genitals: the body is an open, relational field to be mapped and remapped into regions of desire.[7] Although the genitals commonly are viewed as the "natural," healthy focus of sexual life, the mouth and the anus are the initial sites of erotic pleasure. Desire, Freud argued, leans on the alimentary functions; desire always works in conjunction with—and in excess of—need, which lends it energy and justification. Desire latches on to the biologically vital functions of digestion; at the same time, physical needs are transformed by their collaboration with desire, and can never again be reduced to simple utility.

We suggest that twentieth-century design gradually articulated the bathroom and kitchen as the erotogenic zones of the domestic body. While the parlor or living room is the home's *symbolic* heart—its "proper" architectural focus—this center was displaced by the utilitarian regions of the bathroom and kitchen, which became concentrated zones for built-in construction details, costly appliances, and on-going maternal maintenance.

6. Reyner Banham, *The Architecture of the Well-tempered Environment* (Chicago: University of Chicago Press, 1969, 1984), 9.

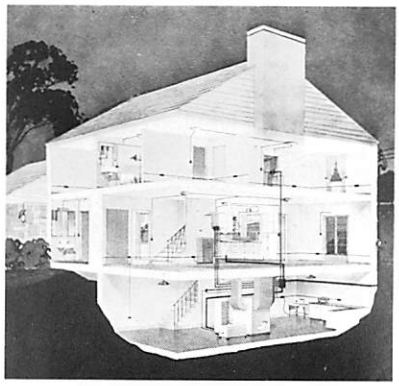
7. Sigmund Freud, *Three Essays on the Theory of Sexuality* (New York: Basic Books, 1962), 39-72.





In the anatomy of the conventional middle-class home, the front of the building is the symbolic, expressive face, marked by a ceremonial entrance; the *functional* opening of most homes, however, is the back door, a valve which serves as both mouth and anus, receiving and expelling goods and services.

Left, perspective and plan of house offered by the Chicago Millwork Supply House, 1913.

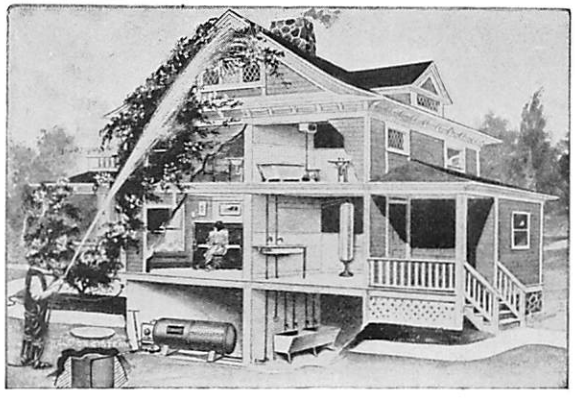


The new standards for personal and domestic hygiene, born out of scientifically-based health reforms, rapidly exceeded the demands of utility; the functional "need" for clean bodies and clean houses has fed the culture of consumption, by mapping out the human and architectural body as a marketplace for an endlessly regenerating inventory of products. Just as sexual pleasure is propped on the utilitarian processes of digestion, the restless desire for new goods builds upon the fetishized routines surrounding biological consumption.

In her reading of Marx's *Capital*, Elaine Scarry describes the relation of manufactured goods to the human body as a relation of reciprocity: every artifact recreates and extends the body. In a zero-degree state of production, human beings consume only enough fuel to regenerate their physical tissues. The body takes in food in order to build and maintain its own structure; the organism itself is the product, yielded through the process of consumption. Production at a more advanced state involves consuming a broader range of materials in order to further extend the body: chairs supplement the skeleton, tools append the hands, clothing augments the skin. Furniture and houses are neither more nor less interior to the human body than the food it absorbs, nor are they fundamentally different from such sophisticated prosthetics as artificial lungs, eyes, and kidneys.[8] The consumption of manufactured things turns the body inside out, opening it up *to* and *as* the culture of objects.

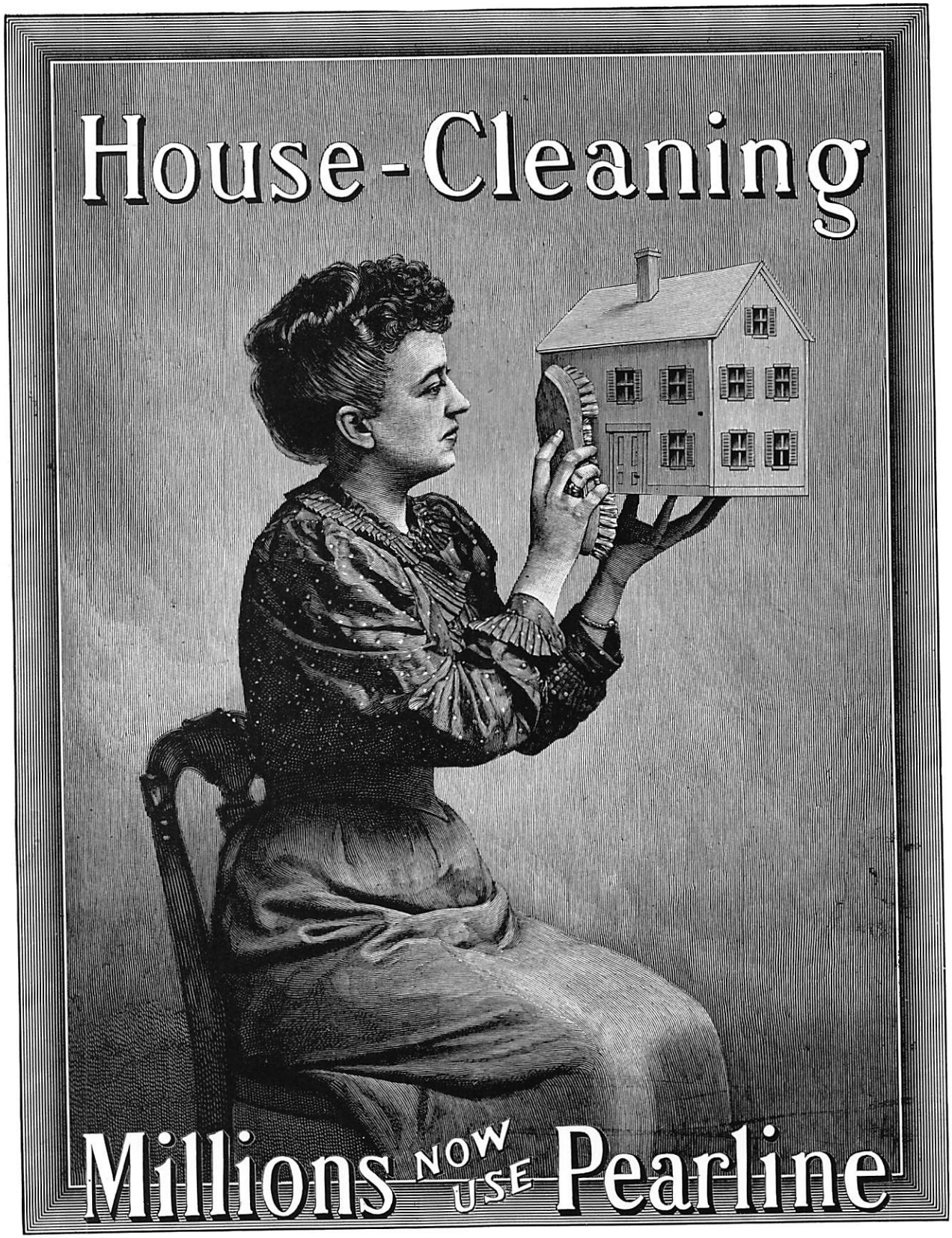
For the product world of the early twentieth century, human digestion served as a metaphor for the economy as well as a territory to be colonized and rewritten by a wealth of new commodities. The consumerist body ingests and expels not only food—the prototypical object of consumption—but the full range of images and objects that pass through the cycle of manufacture, purchase, and disposal. In this *process of elimination*, the body itself is remade.

8. Elaine Scarry, *The Body in Pain: The Making and Unmaking of the World* (New York: Oxford University Press, 1985).



The presence of heat and water in the nineteenth-century kitchen made bathing and cooking natural partners until modern standards of hygiene demanded a specialized laboratory for each function. At the same time, however, the internal anatomy of plumbing ties the two spaces together, just as eating and defecating are linked in the human anatomy by the serpentine tubing of the alimentary canal. The mechanical core of the home has become a concentrated site for expensive and sophisticated technologies.

Above, ad for a wiring system, 1936.
Right, Rural water supply, 1906.


House-Cleaning
Millions NOW USE Pearline

THE DISCIPLINE OF CONSUMPTION
Housekeeping in the Twentieth Century

The modern home is a site for what Foucault has called the "disciplines": the school, hospital, prison, and factory exert a subtle yet pervasive control over body and mind by articulating architectural spaces and devising routines for inhabiting them.[1] While Foucault's "disciplines" mold what he calls "docile" bodies, which willingly submit to the rigors of factory labor or military service, the modern home molds *consumerist* bodies, trained to embrace the logic of the consumer economy and its cycle of ingestion and waste. As the setting for physical sustenance and hygienic care, the kitchen and bathroom—and the product worlds they frame—are crucial to intimate bodily experience, helping to form an individual's sense of cleanliness and filth, taste and distaste, pleasure and shame, as well as his or her expectations about gender and the conduct of domestic duties.

The modern kitchen and bathroom emerged in a period when the notion of the American "home" was under question by designers, domestic theorists, social critics, and others. Who would control domestic cooking and cleaning? Would the kitchen remain the private province of the housewife, or would it be tended by central services? The nineteenth century had witnessed the gradual industrialization of agriculture, weaving, sewing, furniture-making, and other traditionally domestic forms of manufacture. While men went to work for wages, women found their time increasingly committed to the purchase and care of merchandise. For the male employee, the home became a sanctuary from the pressures of production, while for women it became an isolated site for the economically devalued yet demanding labors of consumption.

Catharine Beecher advocated functional interior design as a means for preserving the autonomy of the single-family, single-income suburban dwelling, set in a picturesque garden and scientifically arranged to minimize the need for paid help. See Catharine Beecher and Harriet Beecher Stowe, *American Woman's Home* (Hartford, CT: Stowe-Day Foundation, 1985; first published 1869).

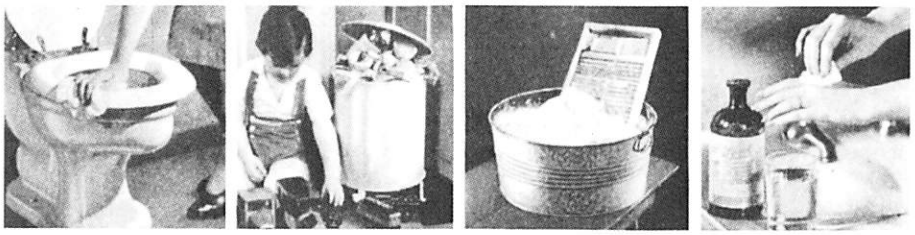
1. Michel Foucault, *Discipline and Punish: The Birth of the Prison*, Alan Sheridan, trans. (New York: Random House, 1979).

2. By "consumption," we refer not only to the *purchase* of goods, but also to their use and disposal. Similarly, biological consumption involves not only the act of eating, but also digestion and excretion. The processes of implementing, cleaning, servicing, and discarding an object are all phases in its consumption.

Left, ad for Pearline Soap, 1892.

"It is the unmistakable tendency of modern economic and industrial progress to take out of the home all the processes of manufacture... One thing after another has been taken, until only cooking and cleaning are left and neither of these...leaves results behind to reward the worker as did...spinning, weaving and soap making. What is cooked one hour is eaten the next; the cleaning of one day must be repeated the next, and the hopelessness of it all has sunk into women's souls."
Ellen Richards, "Housekeeping in the Twentieth Century," 1900

American Kitchen Magazine Vol. XII No. 6 (March 1900): 203.



An alternate model of domesticity proposed to open up the enclosed sanctuary of the home to the community at large.[3] "Home economics," established as an academic discipline in the 1890s, sought to forge a "science" of consumption that would train women to spend their time and money efficiently, and ultimately to turn their domestic skills outward into the community.[4] They promoted public sanitation, transportation, and health programs as "municipal housekeeping," and established settlement houses as model homes in poor immigrant neighborhoods. Rather than confine the feminine arts and sciences to intimate family life, they saw domesticity as an instrument for universalizing the values of the middle-class home (Wright 1980).

3. Faith McAuley, "The 'Science' of Consumption," *Journal of Home Economics* Vol. XII No. 7 (July 1920): 317-318.

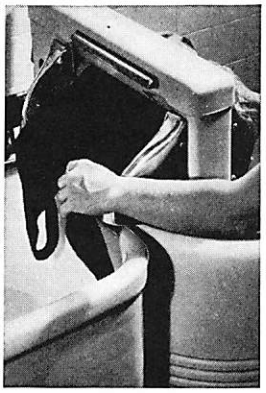
One spokesman for the home economics movement wrote in 1915, "In a sound program of social construction the streets and parks and car-lines will be all looked upon as elements in the problem of domestic housekeeping." Edward T. Devine, "The Home," *Journal of Home Economics*. Vol. VII No. 5 (May 1915): 221-229.

Above, photo strip from a Lysol ad, showing uses in the bathroom, kitchen, laundry, and medicine cabinet, 1939.

Some feminists and progressive home economists predicted the centralization of major housekeeping tasks through the establishment of community services (Hayden 1981). Looking to the precedent of trains, ships, and luxury hotels, reformers saw the potential to conduct housekeeping on an industrial scale. After WWI, however, the model of private housekeeping was reaffirmed as the American norm. Many political and business leaders wanted to discourage women from competing with men for wages, particularly with returning veterans. Private home ownership was seen as a way to create happy, mortgage-burdened and thus strike-proof workers, while in the same stroke increasing the consumer base for mass produced goods (Hayden 1984). The perfection of the small electric motor enabled the design of mechanical appliances for home use, many of them manufactured—and heavily advertised—by gas and electric utilities in search of ways to sell more power.[5]

Some of the most significant improvements in housekeeping technology—including the washing machine, the mechanical refrigerator, and the vacuum cleaner—appeared in commercial settings before becoming cheap and portable enough for mass production and private use. The laundry business is an example of a successfully centralized housekeeping service that was eclipsed by aggressively marketed household appliances. A vital commercial laundry industry rose in the 1840s and grew steadily until the Great Depression; it regained strength briefly after WWII and then plummeted—perhaps for good—in the 1950s, when the privately owned washing machine became a hallmark of de-centralized suburban life. See Fred DeArmond, *The Laundry Industry* (New York: Harper and Brothers, 1950).

Right, washing machine, 1939.



4. On the history of domestic reform movements, see Dolores Hayden, *The Grand Domestic Revolution: A History of Feminist Designs for American Homes, Neighborhoods, and Cities* (Cambridge: MIT Press, 1981); Dolores Hayden, *Redesigning the American Dream: The Future of Housing, Work, and Family* (New York: W.W. Norton, 1984); and Gwendolyn Wright, *Moralism and the Modern Home: Domestic Architecture and Cultural Conflict in Chicago, 1873-1913* (Chicago: University of Chicago Press, 1980).

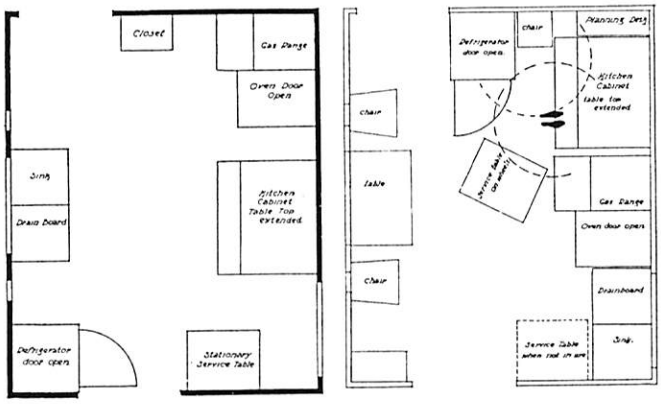
This photograph from a 1932 ad for coffee shows a supposed "time and motion study" in operation. The improved coffee, the copy claims, saves steps in preparation. The housewife is depicted as an object of surveillance, under scrutiny by the scientific industrialist armed with his motion picture camera.

Industry was retained as a metaphor for the private kitchen, conceived as a tiny factory dedicated to consumption. As early as 1869, Catharine Beecher had drawn upon the "ship's galley" as a model for the efficient suburban kitchen; while she pointed out that such facilities were designed to feed two hundred people, she saw no irony in using a similar arrangement to feed a family of four (34). The ship's galley and the Pullman car were common metaphors for the early modern kitchen, which was also called the "workshop of the home," suggesting a place for the production—rather than the *consumption*—of material goods.

The most elaborately developed industrial metaphor for the home was found in "Taylorism," a management technique that breaks down the production process into a series of smaller tasks, divided among workers on an assembly line. Taylorism or "scientific management" used photographic time-and-motion studies to uncover wasted gestures; each worker became machine-like, repeating a single atomized task over and over. Beginning in the 1910s Christine Frederick, Lillian Gilbreth, and others borrowed the corporate cachet of Taylorism and turned it towards the private home, performing their own time-and-motion experiments to expose the inefficiences embedded in domestic habits and conventional house plans.[6] As Dolores Hayden has pointed out, Taylorized housework is a contradictory proposition: while factory labor involves breaking down one process into many, housework traditionally is performed by a single worker and involves countless divergent tasks (1981). Taylorism organizes *production*, while cooking, cleaning, and laundry are labors of *consumption*. The Taylorized housewife acts as both factory manager and factory worker, professional mastermind and disciplined laborer.

5. On the rise of domestic technologies, see Siegfried Giedion, *Mechanization Takes Command: A Contribution to an Anonymous History* (New York: Oxford University Press, 1948); Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1983); Adrian Forty, *Objects of Desire* (New York: Pantheon, 1986); Penny Sparke, *Electrical Appliances, Twentieth Century Design* (New York: E. P. Dutton, 1987); and Susan Strasser, *Never Done: A History of American Housework* (New York: Pantheon, 1982).

6. On domestic Taylorism, see Christine Frederick, *Household Engineering: Scientific Management in the Home* (Chicago: American School of Home Economics, 1919), and Lillian M. Gilbreth, "Efficiency Methods Applied to Kitchen Design," *Architectural Record* Vol.67 No.3 (March 1930): 291-294.



Lillian Gilbreth's improved kitchen design (1930) consolidates the appliances and work surfaces along one wall of the kitchen, as in the linear sequence of an assembly line. Steps are saved walking around the kitchen, because the cook stands in one place while working.

The Servant Problem

Above, manservant with vacuum cleaner, 1909. Facing page, Sani Flush, 1938; built-in ironing board, 1928; garbage incinerator, 1928.

Woven through the domestic literature about housework is "the servant problem," a theme obsessively repeated from the Civil War onwards: according to the "servant problem," the middle-class American woman is faced with an ever-dwindling supply of paid help. By the turn of the century, factory labor had become a more attractive means of employment for many women; the live-in servant became rarer, gradually replaced by the "daily" who worked by the hour for several families, taking care of her own home as well. Meanwhile, the middle class broadened to include more families who lacked the income to pay for servants yet qualified as "middle class" because they lived in single-family homes and the husband worked for a salary.

Centralized housekeeping schemes do not necessarily eliminate the class divisions inherent to the "servant problem." For example, Bertha Bass published a "co-operative housekeeping" proposal in 1895 which is, at bottom, a corporate maid-service: the individually contracted servant is replaced by workers rented from a central bureau. While the employees would benefit from regulated wages and rotating shifts, an unanswered question remains: Who will do the *maid's* housework? Bass wrote, "Instead of forty cooks in charge of as many saucepans of potatoes in as many different houses on the same street, one cook and one saucepan might do the work for all, with manifest advantage to thirty-nine of the mistresses" (161). Bertha Bass, "Co-Operative Housekeeping," *New England Kitchen Magazine* Vol. II No. 4 (January 1895): 159-163.

The endless discussion of the "servant problem" enforced the notion that being middle-class meant the possibility—however remote—of hiring servants, while at the same time reassuring the housewife that her "problem" was shared with other members of her class, and had to be dealt with creatively and realistically. Phyllis Palmer has pointed out that the expectation of middle-class women to employ servants, whether realized or not, has helped perpetuate the consistent devaluation of housework and the social superiority that middle-class women (usually white) feel towards the women (often of color) whom they hope to hire.7

During the 1920s and 30s, the concept of housework as "service" crystallized, encouraging middle-class women to disdain household labor. They aspired to pass on housework to an "inferior" hired worker, yet in most cases could not afford to do so. Repeating the contradictory structure of "Taylorized"

7. Phyllis Palmer, *Domesticity and Dirt: Housewives and Domestic Servants in the United States, 1920-1945* (Philadelphia: Temple University Press, 1984).

This housewife is shown sitting at a desk in her kitchen, performing the management duties of housekeeping. She serves alternately as mistress and maid, chief executive and manual laborer. From a Crane's Cabinet brochure, 1938. Collection Baltimore Gas and Electric Company.

A 1920 article promoted electrical appliances as the solution to the new "eight-hour day" demanded by contemporary servants: "the housekeeper is in the position of an industrialist whose product requires continuous operation of the plant, while, at the same time, labor shortage makes extremely difficult the introduction of a three-shift system." Mary Ormsbee Whitton, "The Eight Hour Kitchen," *House and Garden* Vol. XXXVIII No. 2 (August 1920): 19-21, 81.

housework, the middle-class housewife is forced to take the position of both mistress and servant, task-master and manual laborer.

Some historians of design have linked the "servant problem" to the American drive to invent clever labor-saving devices and the subsequent liberation of the American woman from domestic drudgery (Giedion, Heskett, Pulos); in contrast, feminist scholars have asserted that the labor-saving virtues of modern household technology were countered by an expansion of maternal duties and more exacting standards of cleanliness.7 Mass distributed household appliances discouraged centralized services, ensuring that the housewife would take the position of the desired but ever-elusive servant.

The "servant problem," as both fact and fantasy, belongs to the modern kitchen's mythology of origins. Efficient kitchen plans and labor-saving devices were promoted as solutions to the "problem," substituting the privately contracted servant for the privately purchased product. The supposed universality of the "servant problem" became a defining feature of middle-class life; the "servant problem" eliminated the obligation to hire help, while holding it forth as a distant promise, a reward owed by one class to another. The actual "solution" to the problem lay not in the liberating force of technology, but in the continued gendering of housework, administered by a wife or mother who is at once mistress and maid, industrialist and three-shift laborer.

7. The feminist literature on housework is extensive. Christine E. Bose *et al.* argue that the rise of domestic technologies was accompanied by heightened standards of cleanliness and child-care. While mechanical clothes washers, for example, lessened the hardship of laundry, the frequency of the task increased. As Marx pointed out for the mechanization of manufacture, machines did not make the worker's day shorter, but rather increased the quantity of objects produced by his or her labor. Christine Bose, Philip L. Bereano, and Mary Malloy, "Household Technology and the Social Construction of Housework," *Technology and Culture*, Vol.25 No.1 (January 1984): 53-82.

Similarly, Ruth Schwartz Cowan argues that while household machines minimized the tasks of cleaning and food preparation, shopping became a time-consuming activity of unprecedented scope. The emotional signficance of household labor also changed, particularly in the period surrounding World War I, when advertisers infused domestic labor with guilt. "The 'Industrial Revolution' in the Home: Household Technology and Social Change in the Twentieth Century," *Technology and Culture* Vol.17 No.1 (January 1976): 1-23.

Joann Vanek demonstrates that involvement in the paid labor force—not technology—leads to reduced housework hours. Employed women spend less time on housework, because they have less time to spend. The disappearance of servants has made all but the richest women into household laborers, bound together by the uniform standards of cleanliness promoted by a national product culture. "Household Technology and Social Status: Rising Living Standards and Status and Residence Differences in Housework," *Technology and Culture*, Vol.19 No.1 (January/October 1978): 361-75

Christina Hardyment argues that because appliances were conceived of as "mechanical servants," they discouraged the growth of centralized laundry, cleaning, and cooking services: the "servant problem" was solved by creating technological surrogates for the private housekeeper. *From Mangle to Microwave: The Mechanization of Household Work* (Cambridge: Polity Press, 1988).

John Kenneth Galbraith has called the American housewife a "crypto-servant" upon whom the modern consumer economy depends. The non-employed housewife has more time to manage consumption, and thus helps ensure the flow of goods: "it is women in their crypto-servant role of administrators who make an indefinitely increasing consumption possible... it is their supreme contribution to the modern economy." *Economics and the Public Purpose* (Boston: Houghton Mifflin Company, 1973), 37.

YOUR CHILD'S TENDER SKIN REQUIRES THE GREATER SOFTNESS AND DAILY PROTECTION OF *LUXURY TEXTURE*

HOW MANY mothers faithfully "follow the book" on child feeding and care—yet are completely unaware of the daily risk they run in exposing a child's tender skin to ordinary, harsh toilet tissue!

Don't be this sort of mother! Give *your* child the comfort, security and essential health protection of LUXURY TEXTURE ScotTissue. Linen-soft, this safe, fine tissue cleanses immaculately and without irritation to the most sensitive skin. Yet Luxury Texture is firm, strong, 30% more absorbent. And it lasts 3 to 5 days longer, because fewer sheets are necessary.

Always keep Luxury Texture in *your* bathroom. Your child *needs* its greater comfort and protection and your whole family will welcome it, too. Scott Paper Company, Chester, Pennsylvania, also makers of Waldorf and ScotTowels for home use.

CLEANLINESS AS HYGIENE
The Civilization of the Body

Facing page and above: 1939 ads for ScotTissue toilet paper. In the full page ad, a woman's maternal skill is judged against her knowledge as a consumer. Above, the small copy reads: "All too often standards of cleanliness are taken for granted. Doctors know this from experience." Whether or not the mother and daughter will meet the standard—or be embarrassed—is left unstated.

From the mid-18th century forward, respectability, morality, and good health would increasingly converge to form a nexus of values at the heart of American culture. Early nineteenth-century sensibilities about bodily cleanliness were shaped by gentility manuals that specified appropriate behavior for polite society, religious teachings that connected cleanliness with morality, and a growing body of medical opinion.[1] In the second half of the century cleanliness was medicalized as "hygiene" when germ theory connected cleanliness to the prevention of disease. Although attitudes about the *good* of cleanliness solidified over two centuries, the *motives* for cleanliness varied with the shifting terms of class, science, technology, fashion, and geography. For instance, among upper-class society in the early 1800s washing was largely an issue of appearance, but by the 1850s middle-class sanitary reformers were teaching cleanliness to the working class as a battle against disease. Even as late as 1908 the priorities of health versus personal grooming were still being negotiated: a textbook on hygiene described the advantages of personal cleanliness as healthful and "not merely an esthetic adornment," allowing that it was nonetheless an "acquired taste."[2]

The *measure* of cleanliness has also varied: daily sponge bathing was not common in middle-class homes until the mid-1800s, while more intensive full-body washing occurred perhaps a few times a year. A 1929 ad sponsored by the "Cleanliness Institute" advised women to shampoo every two weeks, which at the time was considered frequent.

1. For a thorough review of bathing customs and attitudes towards cleanliness in America, see Richard L. Bushman and Claudia L. Bushman, "The Early History of Cleanliness in America," *Journal of American History* Vol. 74 (March 1988): 1213-1238.

2. Quoted in Jay Stuller, "Cleanliness has only recently become a virtue," *The Smithsonian* Vol. 21 No. 11 (February 1991): 126.

"The bathroom is an index to civilization. Time was when it sufficed for a man to be civilized in his mind. We now require a civilization of the body. And in no line of house building has there been so great progress in recent years as in bathroom civilization." 1917

"Bathrooms and Civilization," *House and Garden* Vol. XXX No. 2 (February 1917): 90.

Ad for Pears Soap, 1886.
"Toilet soap" for cleaning the body did not come into middle-class use until the Civil War period. While coarse laundry soaps had been manufactured as a product of the tallow industry, the body soap business was initially dominated by French perfumers. With the rising interest in hygiene, American manufacturers developed finer soaps to compete with imports. At left is a detail from the first ad for *Ivory*, 1882. *Ivory* made the transition between body and laundry soap: the notch indicated its dual use for laundry and bathing. Soap production responded to the general interest in hygiene. While manufacturers eventually advertised on a large scale, advertising did not "create" a market for cleanliness (Bushman 1236-1238).

Bathing: The War on Germs

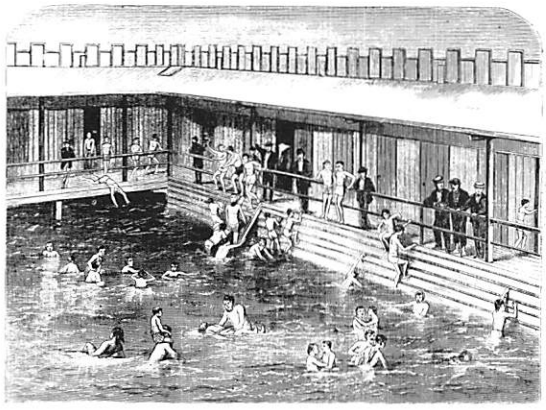
Bathing in America was not initially connected to cleanliness. In his classic study on mechanization, Siegfried Giedion classified two poles of bathing practices—cleanliness and rejuvenation—which have overlapped at different times (628-712). American practices began in the rejuvenation mode with an emphasis upon the bath as a curative for illness, but throughout the nineteenth century bathing was redirected towards the goals of cleanliness.

By way of European interest in the Turkish bath, American nature enthusiasts and medical advisors suggested various forms of steam baths, vapor baths, and cold plunge baths for maintaining proper circulation and as a calming agent for insomniacs. As historians Richard and Claudia Bushman have written, "Modern ideas about bathing as a means of getting clean took form only when another bodily system began to be understood, the skin. The change from cold bathing to invigorate the blood system to warm bathing in tubs to remove dirt came about because of the spreading understanding of the skin's function in the removing of wastes" (Bushman 1223). Thus, bathing as a curative for illness was joined to the idea of bathing as a "curative" for perspiration. Washing drifted in and out of fashion until it received the imprimatur of science.

The extension of habits of cleanliness from "polite society" to a broader populace was driven by the nineteenth-century public health movement. Prevailing theories in the early decades of the century held that disease and illness were caused by foul and stagnant air, a condition that reformists believed could be preempted by ventilation. By the 1860s, the research of Louis Pasteur and Joseph Lister advanced the idea

"Rain shower baths are considered, from a hygienic stand-point, to be much superior to tub baths. The running water touches the body but once....it more readily loosens and removes the dead cuticle...."
Edward C. Cuthbert, "The Mechanics of the Morning Bracer," *House and Garden* Vol. XXIX No. 1 (January 1916): 38-39.

Above, available through the 1895 Montgomery Ward and Company catalogue, this "shower bath ring" transforms the bather into a self-contained rainstorm.



Above, a "floating bath" in New York City's East River, one of 15 serving tenement dwellers in 1889. These wooden structures arose in Boston in the 1860s but were criticized by reformists as "floating sewers." As late as 1897 over 90% of the families in the tenement districts of America's four largest cities had no baths, leaving the poor to wash in hallway sinks or courtyard hydrants. A contemporary account estimated that tenement dwellers bathed fewer than six times a year. See "The Public Bath Movement in America," David Glassberg, *American Studies* Vol. XX No. 2 (1979): 7.

that germs—not foul air—were the source of disease. In the 1880s, the germ theory of disease was bolstered by the identification of the bacteria causing typhus, tuberculosis, and cholera.3

There was a significant lag between scientific and popular knowledge: magazine articles reveal that the public understanding of germ theory was fragmentary and often inaccurate. Yet the basic insight that disease could be transmitted through germs, and that germs were associated with bodily filth, was aggressively promoted by health reformers, journalists, and the manufacturers of personal care products.4

In a 1916 article in *Collier's,* the "war of the body against invading germs" is described as "a great battle that one is called upon to fight," which must be "waged continually throughout life."5 The recurrence of war and battle metaphors in health journalism suggests the complexity of reformist impulses. Reformers saw the low level of public health as an expression of a larger social malaise and believed that cleanliness would encourage morality.

Viewed in a less altruistic light, reformers saw "unwashed" members of society as a potential threat to the health of the larger community. Given the lack of bathing facilities in tenements, reformists campaigned for the institution of public bathhouses. Conceived as facilities for lower-class patronage, their location echoed the ghettoization of different immigrant groups. They were an instance of the Victorian spirit of reform as well as a strategy of containment.

3. Adrian Forty provides a concise overview in *Objects of Desire* (New York: Pantheon Books, 1986), 156-181. See also Daniel M. Fox, *Health Policies and Health Politics, The British and American Experience 1911-1965* (Princeton: Princeton University Press, 1986).

4. Andrew McClary, "Germs are Everywhere: The Germ Threat as Seen in Magazine Articles 1890-1920," *Journal of American Culture* Vol. 3 No. 1 (Spring 1980): 33-46.

5. William J. Cromie, "Dodging Germs," *Collier's* (September 23, 1916): 33.

Opened in 1891, New York City's "People's Baths," an indoor public bathhouse, was the first successful one of its kind in America. Its success led other private charities to build similar bathhouses. Reformists campaigned for municipally supported facilities. An 1895 New York State law ordered the construction of bathhouses in municipalities exceeding populations of 50,000, yet by 1904 there were only three in the entire state (Glassberg 11).

Between 1895 and 1904 the number of public bathhouses in America increased from six to forty-six. Their rapid growth may be partly explained by the rise in other civic institutions and services at this time, including libraries, parks, zoos, hospitals, beaches, schools, garbage collection, fire protection, and sanitary inspection. Bathhouses typically had more facilities for men than women, indicating that workingmen were considered to be their primary users (Glassberg 5).

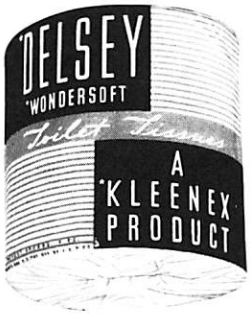
The Hospital in the Home

Above, package for Mum anti-perspirant, 1938. Introduced in 1888, Mum was the first anti-perspirant, designed to prevent moisture under the arms rather than to mask odor. The term "B.O." entered the marketing vocabulary in 1919.

Literature on the modern bathroom often compared it to a hospital. One article described the bathroom as a place of "truly surgical cleanliness, which, as everyone knows, is far above and beyond mere housewifely cleanliness." Mary Newberry, "A Model Bathroom," *House Beautiful* Vol. XVI No. 2 (July 1904): 21-22.

The issue of cleanliness and hygiene, and the product world that accumulated around it, was promoted not only by social reformers but also by popular journalism and advertising. At the turn of the century there appeared *Good Health, Health Culture,* and *Hygiene Gazette*; the older, more academic *American Journal of Public Health* began to publish scientific and popular material side by side. By the 1920s health became a regular feature of newspaper journalism, often constituting a daily or weekly column written by a doctor or specialist. In 1923, the American Medical Association began publishing the popular magazine *Hygeia,* concerned with cleanliness, health, and nutrition. *Hygeia* gained credibility through its affiliation with the AMA and, in turn, products advertised in its pages were granted an unofficial, and not always deserved, legitimation.[6]

Manufacturers turned the new field of medical journalism to their advantage by blurring the distinction between articles and advertisements, creating ads which not only looked like articles but were authored by doctors and other experts. Advertising in the 20s and 30s strategically represented products in proximity to surgical instruments, doctors, nurses, or men wearing lab coats.[7] While nineteenth-century advertising is filled with unfounded claims and fake prescriptions, the public attention to the science of hygiene in the 1920s and 30s made audiences especially receptive to the imagery and "evidence" of medicine. Advertisers mapped out the human body as a field of danger zones, marked by discoloration, bad odors, unsightly blemishes, and other embarrassing compromises of personal "daintiness." The house was treated as both a hospital and a patient, in need of intensive product therapy from antiseptic detergents to paper towels.

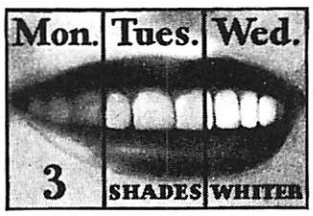


Right, toilet paper package, 1934. Toilet paper was unsuccessfully marketed in 1857, but was reintroduced in the bathroom-conscious 1880s.

Popular journalism in the 1930s extended the concept of hygiene beyond its domestic and bodily senses. Throughout journals such as *Science Education, Hygeia,* and *The American Journal of Public Health*, there are references to School Hygiene, Industrial Hygiene, Mental Hygiene, Sexual Hygiene, Social Hygiene, Emotional Hygiene, and Moral Hygiene. For example, "Morale—The Mental Hygiene of Unemployment," *American Journal of Public Health* Vol XXIII No. 3 (March 1933): 404-405, and Camilla M. Anderson, *Emotional Hygiene: The Art of Understanding* (Philadelphia: Lippincott, 1937).

6. John C. Burnham, *How Superstition Won and Science Lost: Popularizing Science and Health in the United States* (New Brunswick: Rutgers University Press, 1987), 55-59.

7. On scare campaigns in the 1930s, see Roland Marchand, *Advertising the American Dream* (Berkeley: University of California Press, 1985), 102-103, 290. For a contemporary review of scare tactics, see Treffie Cox, J.S. McCollum, and Ralph Watkins, "Science Claims in Magazine Advertising," *Science Education* Vol. 22 No. 1 (January 1938): 14-19.



Above, illustration from an ad for Squibb's Dental Cream, 1927.The obsession with white enameled surfaces in the bathroom extended to the teeth.

Below, from an ad for Kotex, 1932. The copy reads, "Made in factories where the very air is washed every two minutes. White as new snow... " Kotex was invented at the end of WWI, and marketed by 1921, replacing reusable "diapers." See Delaney, Lupton, and Toth, *The Curse: A Cultural History of Menstruation* (Urbana: University of Illinois Press, 1988), 129-134.

Above left, from an ad for Red Cross paper towels, 1938. The towels are promoted as a sanitary bandage for the home. Paper towels were introduced by the makers of Scot-Tissue in 1907; they were originally called Sani-Towels, and were promoted for use in public restrooms.

Above right, slogan from an ad for Nujol, a laxative, 1924. The ad presents the product as a cleaning agent for the bowels.

Above, the Stasco seamless toilet seat promised "hospital cleanliness" in the home, 1929. The nurse is a medical shadow behind the fashionable but health-minded housewife.

Right, "Ask your Doctor" about standards of cleanliness, 1939. This ad for ScotTissue suggests that the secret behind the little girl's nasty demeanor lies in her mother's choice of toilet paper.

Far right, ad for Lysol offers "First Aid" for the home, 1938.

THE SANITARY CITY
A Chronology of Water, Waste, and Electrical Systems

1790s, Philadelphia builds a system of public waterworks (Stone).

1820, extruded lead tubes, produced by forcing metal through dies with hydraulic pressure, begin production in England. Used primarily for water supply, the extruded pipes are stronger than cast tubes. Production begins in America by 1850 (Stone 285).

1840s, hot water for bathing is facilitated by the introduction of a boiler situated to the rear or side of the hearth, which is automatically fed from the main water supply. The hearth at this time is also the site of the cooking range (Stone 286).

1842, the Croton Aqueduct brings water to New York City and makes plumbing available to a wider public. A reservoir in Central Park is constructed to store water from the Croton River. The lack of adequate drainage throughout the city, however, makes the increased availability of water a mixed blessing (Stone 293).

As water becomes available, plumbers supply pre-existing homes with running-water fixtures, converting small bedrooms into bathroms. In new urban homes built by higher-income families, water is routed to the kitchen and to bedroom lavatories; the bedrooms would share a water-closet (Stone 300).

1846, a new law in Britain allows towns to tax their population in order to build public baths; by 1854 London has 13 bathhouses. In the US bathhouse construction is left to charity (Glassberg 7).

1849, among Philadelphia's 340,000 residents there are only 3,521 bathtubs. In 1855 New York City's population of 629,904 has only 3,521 bathtubs (Winkler 15).

By 1850, Philadelphia, New York, Boston, and Chicago have semi-adequate public water supplies; integrated sewage disposal systems, however, are non-existent. Before the 1850s cities typically depended for their water supply on private companies, a technically inefficient and economically exclusionary practice with little or no municpal control (Schultz 390-391).

c.1850, engineered sewers begin to replace cesspools (Stone 284).

Between c.1850 and c.1875, mass-produced cast-iron, wrought-iron, and glazed stoneware pipes encourage consistency within the plumbing industry. Plumbing remains expensive, however, because handwork is still necessary for manufacture and installation. Full mass-production makes plumbing available to lower income households only in the first decades of the twentieth century (Stone 286-288).

1859, New York City's daily per capita water consumption (combining public, industrial, and domestic use) is reported as 40 gallons. By 1880 per capita use is estimated at 78 gallons, 60 of which is for domestic use (Stone 294)

1860, plumbing and gas fitting supply manufacturers in America number 221. By 1870 the number increases to 705, and by 1880 it reaches 2,161 (Stone 286).

By 1860, the water closet is a typical feature in wealthier American households (Stone 294).

1865, The Citizens' Association of New York publishes its *Report on the Council of Hygiene and Public Health*, pointing to the urgent need for sanitary regulations. In 1866 New York state institutes a Metropolitan Health Board, setting a precedent for sanitary law in the US. In 1879 the Board gains authority over tenement construction; in the same year, a national board of health is established (Stone 288-291).

1870, a department of public works in New York City is formed and begins modernizing Manhattan's sewers. Connection spurs for water supply and waste removal are placed every 15 feet along new lines, in anticipation of new house construction (Stone 294).

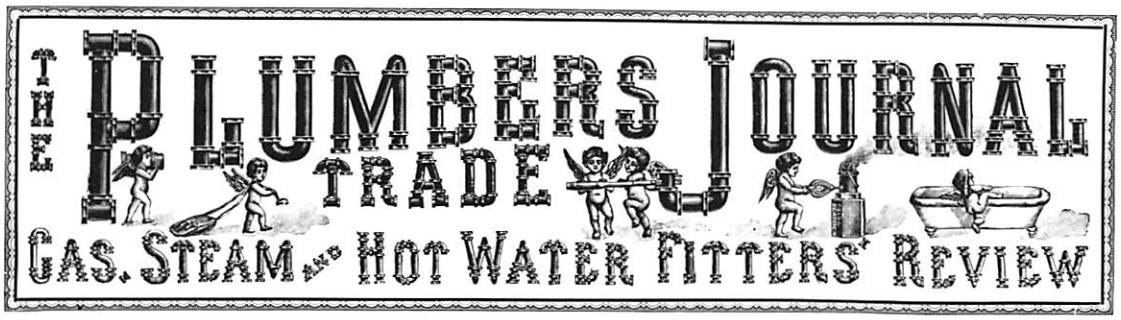
1870, sanitary engineering begins to evolve as a discipline, in response to demands for experts in sewage, water supply, and drainage. By 1880 the term "sanitary engineer" gains currency (Stone 289).

1870s, large integrated sewer construction begins in American cities in response to the vast increase in water consumption afforded by new waterworks and the increasing use of flush toilets. Extensive street paving is also initiated to improve drainage (Schultz 393).

1870s, American sanitarians campaign against the inadequate drainage provided for domestic buildings. The foul odors of faulty drain systems were erroneously assumed to be a major source of illness (Stone 283).

1877, *The Plumber and Sanitary Engineer*, a paper directed at plumbers, builders, architects, doctors, and the general public, begins publication. Later renamed *Sanitary Engineer* and then *Engineering Record*, the paper is responsible for improvements in the plumbing industry (Stone 291).

1878, Thomas Edison and Joseph Swan independently invent incandescent carbon-filament lamps suitable for domestic use (Hardyment 27). Electric light becomes a major competitor with gas light during the 1870s (Sparke 37).



Logo for a plumber's trade magazine, 1906. Collection Baltimore Gas and Electric Company.

Between 1880 and 1900, water pressure becomes inadequate as water consumption grows. Houses at this time typically place a water supply tank on the top floor of the building, filled with a hand pump, whose downward flow produces sufficent pressure (Stone 298).

1880s, the germ theory of disease is confirmed. The discovery that many diseases are waterborne encourages the campaign for clean water, sewer construction, and water and sewage filtration. These campaigns lead to decreased typhoid mortality rates (Schultz 395).

1881, the New York Board of Health begins supervising new plumbing installations and requiring the registration of plumbers, encouraging professionalism through accountability. Plumbers gain respect as the trade organizes itself. (Stone 295).

1881, the estimated cost of plumbing fixtures for a typical house is $500. Another source in 1887 estimates plumbing costs for an average home at $600 (Stone 302).

1890, the cost to plumb an average home is between $500 and $1000, or 20% the total building cost. In 1860 it had cost only $250 to plumb a $3000 house, or 12% the total cost (Wright 1980, 90).

1890, the Edison-Swan Company builds power stations in New York and London, which become prototypes for municipal generators in Europe and the US (Hardyment 28).

From the late 1880s to the early 1900s, urban health and planning commissions take form in response to pollution from sewers and waterworks. These groups act as impartial councils, mediating the divided interests of different political bodies (Schultz 399).

1891, New York City's secretary of the Board of Health announces that cesspools and outdoor privies (usually in the lots behind houses and tenements) have been successfully eradicated (Stone 294).

1894, the American Society for Municipal Improvements is founded by engineers involved with urban water supply, sewers, parks, and roads (Schultz 401).

1901, New York's Model Tenement House Reform Law requires water to be provided on each floor of new buildings. The law later requires that water be supplied to each apartment. This sets a precedent for San Francisco, Baltimore, Cleveland, Pittsburgh, Chicago, Boston, and Philadelphia, which require a water-closet for each family or every three rooms. Since plumbing had become a prerequisite, many builders had further incentive to install bathtubs. 86% of new tenements built in New York City between 1901-1910 have bathtubs (Glassberg 18).

By 1902, 8% of US homes have electricity provided by power stations; the number rises to 24.3% in 1918; 53.2% in 1925, and 78% in 1948 (Hardyment 28; Cowan 1976, 159).

By 1907, almost every city in the country has a sewer (Schultz 395).

By 1910, over 70% of American cities with populations over 30,000 have their own waterworks. The conversion from private water companies to municipally controlled waterworks occurs mainly in the period between 1860 and 1890 (Schultz 393).

By 1913, General Electric is marketing irons, toasters, and an electric range for the consumer market; sales do not become significant until the 20s, however, when the home appliance industry triples in value (Sparke 27).

1919, a USDA survey finds that while 42% of farm households have power-driven machinery, only 15% have power-driven domestic appliances (Kleinegger 173).

1923, electricity is listed in the cost-of-living index for the first time, indicating that it has become part of the American "standard of living" (Shaw 31).

By 1929, eleven manufacturers control 85% of the home appliance industry; many of these companies also sell electrical power (Sparke 27).

In 1930 c.85% of urban homes have electricity. Between 1930 and 1940, the annual use of electricity per home doubles, due to greater use of electrical appliances (Shaw 31).

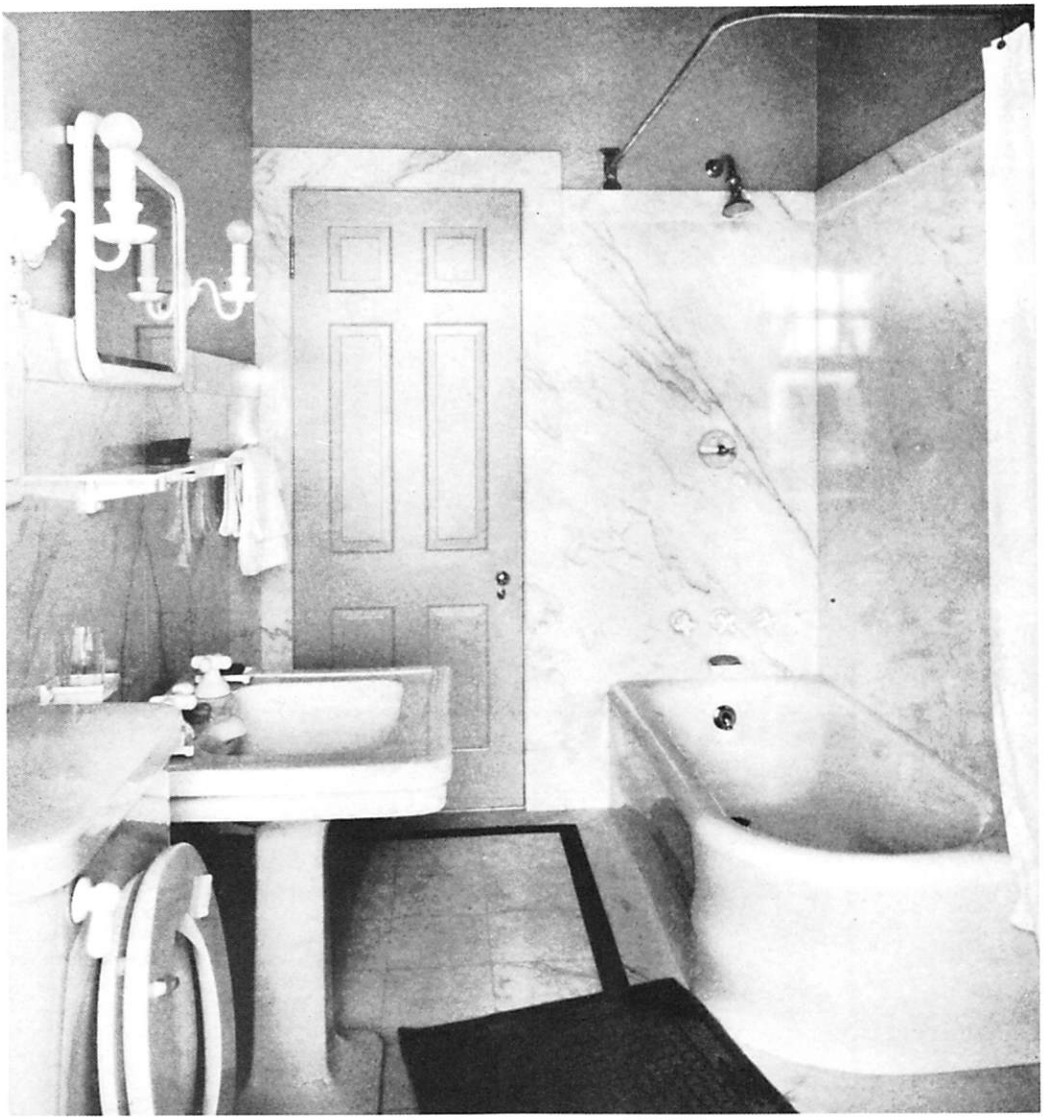
1934, 89% of housing units in New York City are equipped with bath or shower (Glassberg 18).

1937, the death rate from typhoid fever decreases from 35.8% per 100,000 in 1900 to 2.1 per 100,000 as a result of increased attention to water treatment. *Architectural Record* Vol. 86 No. 5 (November 1939): 65.

1938, more than half the US population (73,000,000) disposes of its bodily waste through public sewage sysyems. *Architectural Record* Vol. 86 No. 5 (November 1939): 65.

1940, 93.5% of the dwellings in the urban US have running water; 83% are equipped with indoor toilets, and 77.5% have bathing arrangements. Of the more than 40% of Americans living in rural areas, 17.8% have runnning water in their homes and 11.2% have toilets and bathtubs (Winkler 11). In homes wired for electricity, 64% have mechanical refrigerators, 63% have washing machines, and 52% have vacuum cleaners (Shaw 32-3).

There is No Substitute for Marble



One of the EVERYDAY USES of MARBLE

MARBLE, despite its elegance, is so enduring, so readily available, so easy to keep clean and so free from cost of replacement, that it is actually the most economical of all materials for the interior finish of buildings of a better character—both commercial and residential.

A series of illustrated folders detailing the advantages of marble in the home or public buildings are yours for the asking. Write to Department G-6 for the ones that interest you—no obligation, of course.

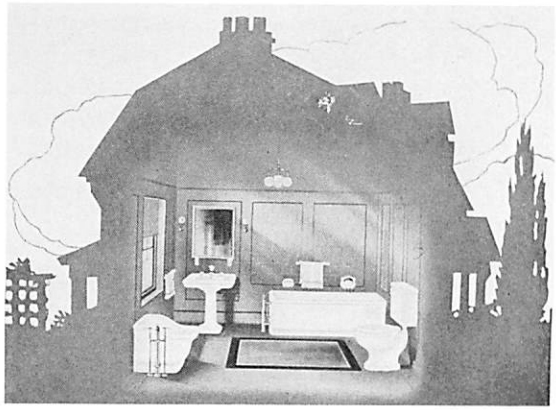
NATIONAL ASSOCIATION *of* MARBLE DEALERS

ROCKEFELLER BUILDING - CLEVELAND - OHIO

THE MODERN BATHROOM
Ornament and Grime

The Austrian architect Adolph Loos travelled through America from 1893 to 1896. More noteworthy than buildings were American bathrooms. In an 1898 essay Loos compared Austrian and American facilities: "A home without a room for bathing! Impossible in America. The thought that at the end of the nineteenth century there is still a nation...whose inhabitants cannot bathe daily seems atrocious to an American."[1] Like its grain silos and factories, America's bathrooms at the turn of the century presented an image of unfettered modernity, often idealized as a spontaneous evolution of pure functionalist design. The modernism of the bathroom—its straightforwardly technological forms and the novelty of its materials within the domestic landscape—made it an exemplary new environment, an instance of what design would be like unburdened by historical precedents and styles. In the words of designer Paul Frankl: "Chippendale never designed a bathtub. ...we have been forced to use our own ingenuity in planning [the bathroom]."[2]

The bathroom's imagined freedom from the baggage of history led designers to envision it as the laboratory from which the modernization of the rest of the home would eventually follow. Paired with the increasing importance of hygiene in American culture, the bathroom was poised to influence all areas of domestic life. It was also upheld as an aesthetic model: thus the designer Egmont Arens exhorted readers, "Consider electric refrigerators and skyscrapers and bathroom equipment. This is where to look for the development of a genuine modernism."[3] Against this "genuine modernism" was judged the frivolity of the stylistic *moderne* that also influenced American design. While *moderne*



A 1915 ad for Trenton Potteries Company.
The bathroom is shown as the core of the enlightened, modern home.

"The new order invading our homes has established itself first and most firmly in our kitchens, bathrooms, and basements."

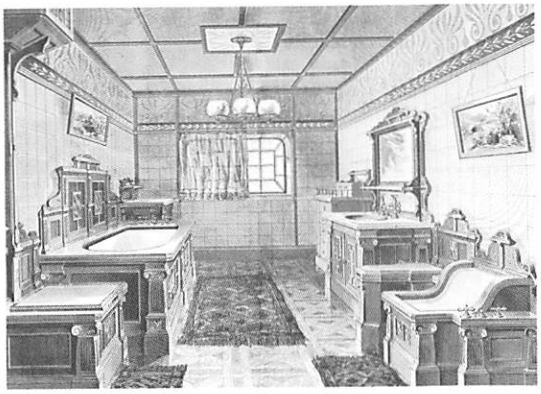
Walter Dorwin Teague, *Design This Day* (New York: Harcourt, Brace and Company, 1940), 52.

Left, a 1927 ad for the National Association of Marble Dealers.
The use of marble in bathrooms was criticized because its porous surfaces allow deposits of moisture and dirt to accumulate.

1. Adolph Loos, "Plumbers," in *Spoken Into the Void: Collected Essays 1897-1900*, trans. Jane O. Newman and John H. Smith (Cambridge: MIT Press 1982), 45-49.

2. P. T. Frankl, "Baths and Bath-Dressing Rooms," *House and Garden* (August 1927): 51-55.

3. Egmont Arens, "Imagination for Sale!" *Advertising Arts* (November 1931): 22-23.



A deluxe bathroom as depicted in the J. L. Mott Iron Works Catalogue of 1888. The fixtures inside of the wooden cabinetry were made of cast-iron and were porcelain enameled. The style shown here is "Eastlake."

and art deco styles "expressed" modernity, the aesthetic of the bathroom *embodied* it. As such, the bathroom was seen as beyond style, which explains why designers as disparate as Walter Dorwin Teague and Le Corbusier both valorized it as a pure expression of form in the service of function.[4]

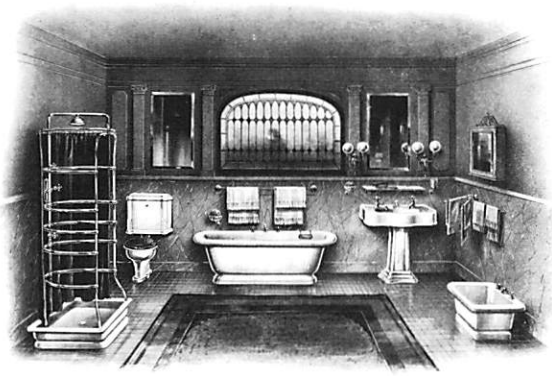
However, the "non-style" of the bathroom has *not* been chiefly determined by the functional requirements of defecating and bathing—these concerns are consistently overlooked in the design of bathroom equipment.[5] Hygiene, rather than bodily comfort, determined the evolution of the "bathroom" aesthetic. Non-porous vitreous china, enameled iron, and ceramic tile were favored over such potentially moisture- and germ-gathering materials as wood, marble, and wallpaper. The cracks and recesses as well as carved and relief ornament of early bathrooms were eliminated; in their place came smooth, unornamented surfaces impervious to dust and moisture. White porcelain fixtures were freed from their dark wooden enclosures and made flush with the floor and walls. The hard, white porcelain bathroom rendered dust and grime immediately visible.

This *process of elimination* took place from roughly 1890 (with the gradual decline of decorated enclosures and sculptural fixtures) to 1930 (when the decorated, yet hygienic, bathroom appeared). A modern aesthetic in design was also developing at this time, characterized in part by the elimination of ornament. Designers working in an industrialized society questioned the logic of reproducing traditionally hand-wrought ornament by machine. Loos' 1908 polemic "Ornament and Crime" equated progress with the elimination of ornament from utilitarian objects, arguing that "ornament is wasted labor power and hence wasted health."[6] Others urged the acceptance of a new aesthetic that exploited the properties of the machine, rather than using it to imitate handcraft ideals. This new sensibility about the relationship between technology and design had its laboratory phase in the bathroom.

4. Le Corbusier described the modern home as one that adopted the hygienic standards of the bathroom. See "The Manual of the Dwelling" in *Towards a New Architecture*, Le Corbusier (New York: Dover Publications, 1986; first published 1931), 122-123.

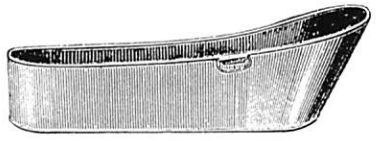
5. See the classic study of bathroom ergonomics by Alexander Kira, *The Bathroom* (New York: Viking Press, 1976).

6. Adolph Loos, "Ornament and Crime," *Programs and Manifestoes on 20th-Century Architecture*, Ulrich Conrads, ed. (Cambridge: MIT Press, 1986), 19-24. See also Katy Kline, *Aesthetics of Progress: Forms of the Future in American Design 1930s/1980s* (Cambridge: MIT List Center for the Visual Arts, 1984). Loos criticized ornament for fueling the consumption of styles so that goods are replaced before they are worn out.



A deluxe bathroom as depicted in a 1910 National Sanitary Manufacturing Company trade catalogue. The wooden cabinetry that enclosed plumbed appliances disappeared with the increasing awareness of hygiene. The shift from wooden cabinetry to china and porcelain enameled "exposed" fixtures entailed a shift from dark to light, porous to non-porous, soft to hard, and ornamented to unadorned.

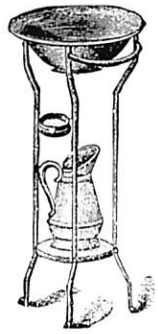
From Furniture to Fixture: Towards the Built-In Bathroom



With the introduction of plumbing to the nineteenth-century household, formerly portable body appliances—bathtubs, wash stands, and chamber pots—assumed a fixed position in the home, tied to water supply and waste disposal pipes. Giedion has described this as a shift from "nomadic" to "stable" conditions (683). This transformation was articulated in the design of bathroom equipment, which moved from its origins in conventional furniture types to its modern incarnation as overtly industrial "fixtures."

By the 1880s water-supplied appliances were called "set" or "stationary" to distinguish them from the movable devices that preceded them.[7] The newly-stationary status of plumbed equipment was reinforced by the wooden cabinetry that enclosed the awkward pipes, bowls, and leaks of early plumbing.[8] Looking back two decades, a writer at the turn of the century commented, "Prior to 1880 the plumbing fixtures were considered so unsightly that architects were accustomed to sacrifice even the occupant's health to hide [them]. As a result, the fixtures were boxed or encased."[9] These enclosures took stylistic cues from the carpentry, parquet floors, and wainscotting found in other parts of the home. Carpets, oil cloth, wall paper, and drapes graced the floors, walls, and windows, marking the bathroom as a space whose closest kin was the bedroom (Stone 308).

By the 1890s, with both mechanical improvements and aesthetic adjustments, the "exposed" or "open" plumbing that was common in laundry rooms, kitchens, and servant quarters became acceptable in the bathroom, as did annealed brass supply pipes (Stone 303, 308; Winkler 21). Yet the *utility* of the kitchen and laundry room were admitted into the *gentility* of the bathroom through the agency of ornament: the new "exposed" plumbing featured applied decorative patterns, ornamental relief, sculptural forms such as elephant trunks and dolphins, and the "claw-foot" that would dominate bathtub design until enclosed bases merged the tub with the floor and wall.

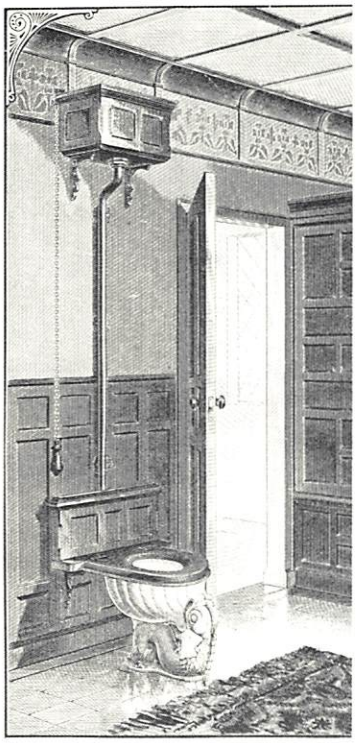


The nineteenth-century bathroom took shape as formerly portable appliances became equipped with running water. While the chamber pot, the sitz bath, and the wash stands shown at right could be used in the bedroom, near the hearth, or in the kitchen, their plumbed equivalents—the toilet, bathtub, and lavatory—required their consolidation in a special room. The devices shown at right were typical of those used throughout the nineteenth century. These items were available in the 1895 Montgomery Ward and Company catalogue; the sitz bath remained popular even through the 1920s.

7. May Stone offers an excellent history of American plumbing in "The Plumbing Paradox," *Winterthur Portfolio* Vol. 14 No. 3 (1979): 283-309.

8. Gail Caskey Winkler, *The Well-Appointed Bath* (Washington, DC: The Preservation Press, 1989), 11-25.

9. "Modern Plumbing" *Architectural Record* Vol. 8 (July 1898): 111-113.



The Toilet

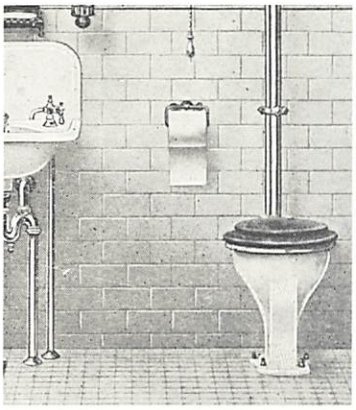
Early toilets were disguised with cabinetry and clothed in the language of traditional chairs. Toilet enclosures were common in the 1870s and 80s; this one was advertised in 1929.

The passage of the toilet from its nomadic to stable form was an uneven development.[10] The toilet rehearsed the same problems that beset the introduction of plumbing generally: water supply advanced ahead of water drainage, posing problems at the domestic as well as civic scale. Thus the first water closets patented in America in the 1830s were not connected to a plumbing system, and environmentally they were little different from the hole-in-the-ground outhouse.

In the 1840s and 50s, the earliest types of flush-drainage water closets began production, and by the 1860s they were a typical feature of wealthy American homes. The cast-iron *pan closet,* the first major type, featured a bowl that was tipped mechanically to empty its contents. Lack of water pressure left incompletely disposed contents on the pan, yielding unsanitary conditions and foul odors.

Improvements resulted in the *washout* closet, followed by the *siphon-jet,* which increased the force of water to empty the bowl and featured an oval—rather than circular—form that created a centrifugal force. Originally made of sheet metal, the washout closet was vulnerable to rust, leaking seams, and peeling paint, and eventually was manufactured in porcelain enameled cast-iron and later vitreous china (Winkler 19; Stone 304). With technical advances in manufacturing, toilet tanks that were formerly made of wood with copper or lead-lining also were made of vitreous china. The tanks were brought down from the wall and situated directly behind the bowl, establishing the typology and material of the modern toilet.

10. The history of the toilet has been documented extensively: Lawrence Wright, *Clean and Decent: The History of the Bath and Loo* (London: Routledge and Kegan Paul, 1960); Reginald Reynolds, *Cleanliness and Godliness* (Garden City: Doubleday, 1946); Roger Kilroy, *The Compleat Loo: A Lavatorial Miscellany* (London: Victor Gillancz, Ltd., 1984); Hester Lent Miller, *A Social History of the American Bathroom,* unpublished masters thesis (Ithaca: Cornell University, 1960).



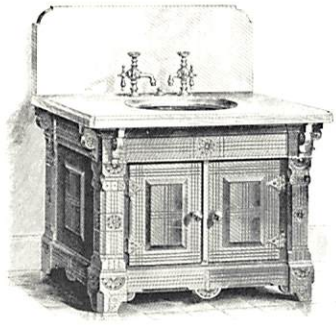
Top left, a fancy porcelain-enameled toilet advertised in 1888 by J. L. Mott Iron Works. Ornamental styling made "exposed" rather than enclosed forms acceptable.

A detail of a 1905 Standard Sanitary Manufacturing Co. ad offering an unornamented toilet; the tank is elevated on the wall.

The "Expulso Closet," a modern siphon jet toilet with the tank brought just above the bowl, advertised by Standard Sanitary Manufacturing Co. in 1922.

The "T/N One-Piece," advertised in the 1930s, merged the separate, box-like form of the tank with the rounded forms of the bowl.

The Lavatory



Wash stands holding jugs of water, bowls, and towels were a standard piece of furniture in American homes prior to the advent of running water. Lavatories with faucets fed by hand pumps were availbale in the 1850s (Giedion 685). Following the wash stand, these also featured bowls, although now sunk into a marble or wooden slab. Because the earthenware, soapstone, or metal-lined bowls were physically separate from the slab, a dirt-collecting gap made them difficult to clean (Stone 304-306). Cast-iron, which had been used extensively since the 1850s for the mass-production of pipes, allowed manufacturers to cast the bowl and slab as one seamless unit with a porcelain-enameled interior.[11] The cast-iron lavatory, heavily ornamented or housed in a wooden base, was the dominant type from the 1860s to the 1890s.

In the 1890s, fixtures made of either cast-iron or fragile, porous earthenware were superseded by the gleaming white finish of non-porous "vitreous china."[11] As production techniques became more sophisticated, the complex forms of the toilet also were made in vitreous china, bringing a homogeneity of color and materials to the bathroom.

The two principle lavatory types—wall-mounted and pedestal base—shifted in and out of currency from the 1880s to the 1940s. Design changes have included the creation of more counter space around the basin, culminating in the "console table" lavatories of the 1920s and 30s. In the late 1940s, spurred by the production of laminates such as Formica, there was a shift backward to the typology of the enclosed cabinet with the basin set into a slab.

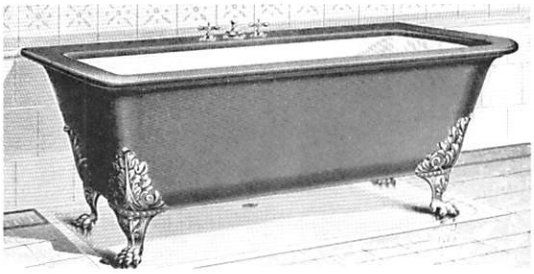
11. "Porcelain enamel" is a mixture of sodium carbonate, sand, and lime. "Vitreous china" is a clay material hardened through an intense firing procedure. Made in two stages, the clay is first hardened under high heat, then glazed and re-fired so that the material and the glaze become molten and merge. As trade literature described it: "The surface is in reality a part of the body and the body itself is hard, non-porous and impervious to moisture...." *Vitreous China Plumbing Fixtures* (Trenton: Thomas Maddock's Sons Company, 1924).

Top, a wash stand from J. L. Mott's 1888 catalogue. The counter is made of marble, the bowl is porcelain enameled iron, and the cabinet is walnut wood decorated in the "Eastlake" style.

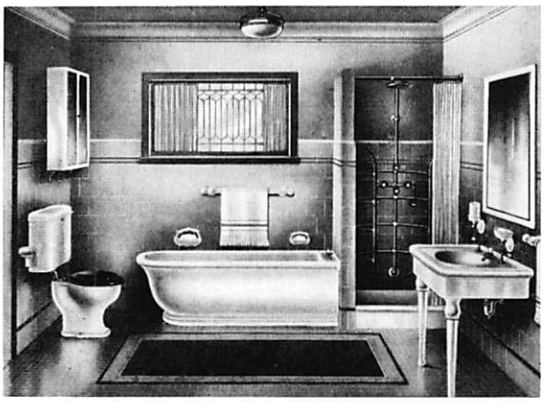
A lavatory mounted on the wall in a bedroom, from a 1906 ad for Standard Sanitary Mfg. Co. The ad copy proclaims the elimination of the "unsightly wash stand."

A pedestal base with wide console top, as seen in a 1924 Standard Sanitary Mfg. Co. ad.

A 1954 ad for "Panelyte," a laminated panel, shows how the lavatory reverts to the cabinetry and bowl-sunk-into-countertop typology from which it evolved. The ideal of the seamless bathroom interior is here achieved in sheet form rather than tile.

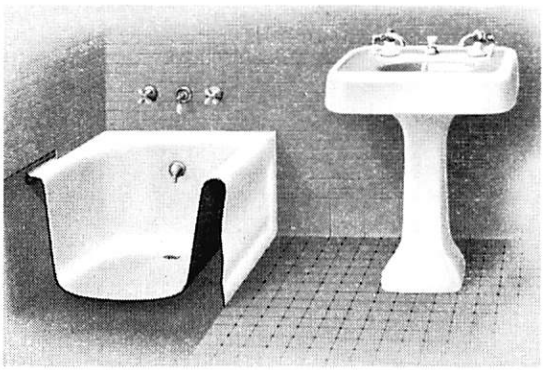


The Bathtub



Although the bathtub has taken many sizes and shapes, from shallow, lightweight metal "saucer" baths to massive wooden boxes lined with sheet lead, the decisive factor in the development of the modern bathtub has been the finish of its interior surfaces: the point of contact between the skin of the bather and the skin of the appliance. In the mid-nineteenth century, lead, copper, and zinc linings prevailed, yet their easily damaged surfaces required intensive maintenance (Stone 286). British craftsmen succeeded in producing solid porcelain bathtubs, whose surfaces offered a smoothness comparable to marble; their fragility and weight, however, made them an expensive import item. Cast-iron bathtubs were manufactured in the 1870s, following the use of cast-iron for lavatories, and became the major bathtub type by the 1880s. The tubs were painted on the interior with white lead (initiating a long-lasting shift towards whiteness), or finished with enameled and galvanized coatings (Stone 286). Mass-production techniques in the 1920s reduced by nearly 20% the cost of double-shell cast-iron tubs with porcelain enamel finish, bringing the bathtub to a broader public (Glassberg 18; Giedion 703).

Like the toilet and lavatory, the bathtub moved from furniture to fixture, passing through ornamental to exposed states. More than any other appliance, the tub has determined the size and design of the bathroom: the gradual abolition of the tub raised on legs in favor of one that hugs the walls and floor encouraged the standardization of a five-foot recessed bay (Winkler 8).



Top left, a porcelain-lined cast-iron bathtub offered by the J.L. Mott Iron Works in their 1888 catalogue.

A cast-iron bathtub with porcelain enamel inside as well as out, as shown in a 1910 National Sanitary Manufacturing Company catalogue.

A 1911 Trenton Potteries Company ad shows a tub with an enclosed base, abutting one wall. Footed bathtubs began to be criticized for the difficulties they posed in cleaning behind and underneath their low forms.

In 1911 Kohler introduced a built-in bathtub cast as a continuous form. "Built-ins" had previously been accomplished by tiling the front of a recessed bay, or welding a separately-cast "apron" to the upper edge of the tub. The Kohler design integrated the apron as part of the tub and set a standard for the industry.

The Built-In Shower and Bath Ensemble: The Seamless Enclosure

When a turn-of-the-century home had a shower, it typically was located next to the bathtub. Along with the sitz bath, foot bath, and bidet, the shower was used in wealthier homes for specialized bathing tasks, rather than as a daily alternative to the tub bath. The shower routinely was linked to male use: referred to as the "rain bath" or the "morning bracer," the force and athleticism of the shower was seen as incompatible with female grooming rituals.

With the growing standardization of the recessed bathtub in the late teens and early twenties, the shower became more generalized and widespread, displacing the tub in many homes with space limitations. The consolidation of the shower with the tub encouraged the complete integration of bathing equipment and its surrounding architecture. A *House and Garden* writer in 1922 advised careful planning, since "bathroom equipment becomes a part of the very construction of the house."[12]

Tiled floors and walls created a seamless, water-proof environment for showering. By 1905 there are references to "cove base" or "hospital" tiles for bathrooms, whose curved transition between right angles allows water to run-off rather than collect in seams and corners: this germ- and water-proof environment "could be quite safely flushed out with a hose."[13] The recessed bath and shower ensemble encouraged the glovelike fit of all bathroom equipment and accessories: in 1931 *Vogue* commented: "Nowadays...everything [is] recessed, concealed, smoothed away, and our bathroom walls are honeycombed with excavations for various gadgets instead of being spiky with things that jut out of them" (Hardyment 103).

12. Mary Fanton Roberts, "If You Are Going to Build," *House and Garden* Vol. XLI No. 6 (June 1922): 76.

13. Charles James Fox, PhD, "Up-to-Date Bathrooms," *House and Garden* Vol XII No 3 (September 1907): 119-122.

Top right, early in the century the shower stands alongside the bathtub as an independent unit. Needle-baths such as the one shown in this Standard Sanitary Mfg. Co. ad from 1911 were associated with a therapeutic function; thus the shower and bath were not seen as redundant. Such facilities would equip wealthy homes: middle-class dwellings typically had baths with shower attachments.

Middle, in this 1912 ad for Standard Sanitary Mfg. Co., the recessed bay creates an enclosure for the "built-in" shower. Ceramic tile runs from floor to ceiling.

Bottom, a 1922 Standard Sanitary Mfg. ad shows the "built-in" tub and shower combination. This ad presents the minimal space required for the complete ensemble, revealing the way the dimensions of the tub established the size and arrangement of the room.

Detail from a 1929 ad from the Trenton Potteries Company offering a simulated marble finish. "To the beauty of marble is now combined the unequalled sanitary and enduring qualities of china."

Decorating the Bathroom: The "New Ceramic and Enameled Furniture"

Magazines—in both their advertising and articles—played an important role in fostering the norm of the hospital-white bathroom. Whiteness—described as either pure, virginal, sanitary, or snowy—was the ideal against which fixtures, accessories, soaps, cleansers, toilet tissue, feminine napkins, towels, and teeth were judged. Yet as early as 1911, a writer in *House and Garden* noted that since the modern bathroom had reached "almost perfect sanitation," it was now time to consider decoration. The author suggested, "While conforming to every law of health, the place should be made as attractive in its way as any other room in the house."[14] Such articles created a conducive atmosphere for the magazine's advertising base of decorating manufacturers and services.

It was in the pages of popular magazines that the stringent norms of the bathroom were called into question—not on the grounds of cleanliness, but on the grounds of style. If the bathroom's cleanliness reflected the housewife's standards of hygiene, then its decoration—or lack of it—reflected her taste.

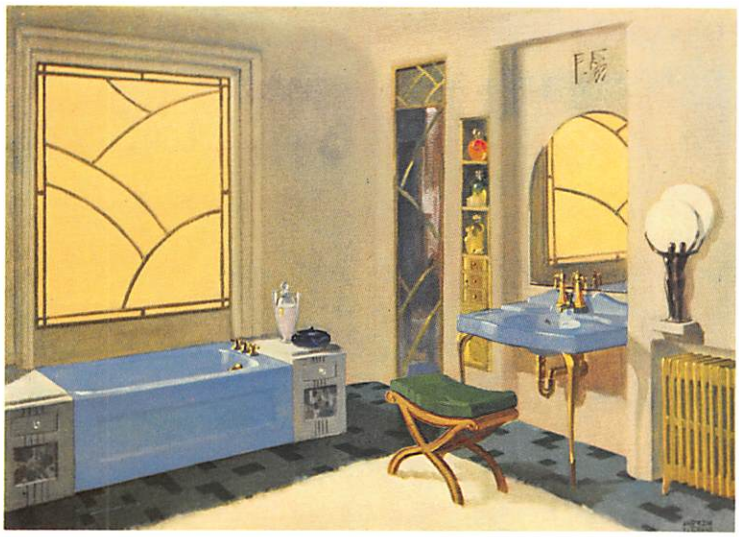
A 1931 ad for Crane fixtures encouraged consumers to visit their showroom, stating that "the first step in planning the bathroom that is to be an expression of yourself is to see the materials that go into it, just as you insist on seeing living room furniture you buy."[15]

Beginning in the late 1920s, the industrial language of the modern bathroom underwent a transformation: the ideal of sanitation was accused of sterility, exposed plumbing was called severe, and unrelieved whiteness was denounced as dull. With the help of colored tiles or new toilet seat covers, the housewife could reclaim her bathroom.

14. Lydia LeBaron Walker, "Beautifying the Bathroom," *House and Garden* Vol. XX No. 6 (December 1911): 378.

15. *House and Garden* Vol. LIX (March 1931): 153.

Detail from an ad for Church Sani-Seats, 1930.



Left, a 1930 ad for Standard Sanitary Mfg. Co. Hailing the bathroom as "the new American interior," the ad urges readers to dispose of their "Chippendale bathtub....[with] its claw and ball feet," in favor of the "new ceramic and enameled furniture for the bathroom."

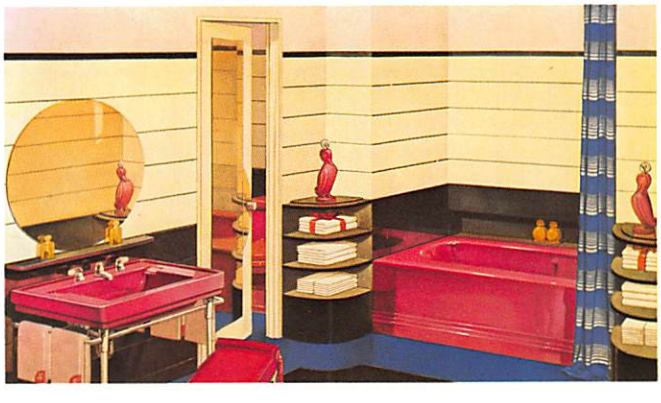
Colors offered by Standard in the early 1930s were Ming Green, T'ang Red, Clair de Lune Blue, St. Porchaire Brown, Rose du Barry, Ivoire de Medici, Orchid of Vincennes, Royal Copenhagen Blue, and Ionian Black.

In this 1934 ad for Armstrong Linoleum Floors, the unusual hoop design of the bench and the streamline banding around the tub announce the vanguard styling of this fashion-conscious flooring material.

16. Catherine Wooley, "The Bathroom—A Developed Interior," *House Beautiful* (February 1932): 125-126.

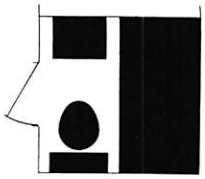
Whereas the modern bathroom was once valued for its intensified standards of cleanliness, these standards now informed other areas of domestic life. The bathroom, formerly positioned as a kind of hospital-within-the-home, was now being re-absorbed into the fabric of the house, subject to the same decorative attention as other rooms. A 1932 article began with a scenario suggestive of a definitive shift: "When Mr. and Mrs. Jebediah Jones built their brand new house some five years ago, their bathroom—white of tile, glistening as the inside of a new refrigerator—was the acme of hygienic perfection.... But when [her] younger sister Jessie displayed *her* new house the other day, the bathroom turned out to have fixtures of Copenhagen blue,...a dark green lacquered floor, ...and a shower curtain of apricot."[16] Consumers were being encouraged to soften and personalize the industrial aesthetic of the bathroom.

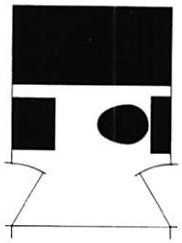
The decorated bathroom was spurred by the appearance of color bathroom fixtures in the late 1920s. The Universal Sanitary Manufacturing Company was the first to introduce colored fixtures, followed by Kohler and Crane in 1928, and Standard in the early 1930s (Winkler 22). Initially featuring light pastels, manufacturers later introduced deep colors, including a black ensemble by Kohler. Colored fixtures dominated bathroom advertising, but were not widely accepted until the 1950s. This may have been due to their cost—which ads described as "just pennies more"—but also reflected the endurance of whiteness as an ideal of hygiene.

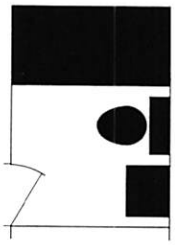


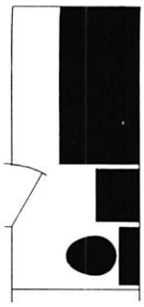
A 1935 ad for Carrara Structural Steel Glass Walls features the rounded corners, round "porthole" mirror, and horizontality of streamlined design.

The Minimal Bathroom





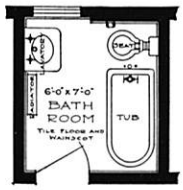




The small size of the standard bathroom reflects the ambivalence which has attended bodily functions and maintenance in American culture. The bathroom is at once the most and least important room in the house: it accounts for a large percentage of building costs and is used by all of a home's occupants, yet it is granted one of the smallest spaces. It is a private room yet is made very public by its shared status. It is physically clean yet culturally dirty.

The marginalization of the bathroom has several historical sources. As it was introduced to homes with new plumbing, the bathroom was granted small, incidental spaces, such as stairwell landings, dressing rooms, and closets. Also, as Giedion has noted, the American bathroom was most vigorously pursued in the hotel industry, where the one-bath-for-every-bedroom standard established a precedent for small bathrooms; the domestic market subsequently inherited the "compact bathroom" as a model (697-700). The equipment of trains with plumbing nurtured the development of the compact bathroom as well as the "Pullman kitchen." Hardyment has noted that, in the British experience, the size of the bathroom was also influenced by the need to keep it warm: the smaller the space, the more easily it is heated (101).

Bathroom dimensions also have been influenced by class and wealth: servants' quarters routinely were equipped with small facilities, while the owner's bathroom was roughly two feet larger in each direction. A writer in 1906 advised that the minimal bathroom be no smaller than six by eight feet, while a 1912 interior design text suggested that the owner's bathroom should be no smaller than eight by ten feet, and that the servant's bathroom be 5'6" x 6'6".[17] By the early 1920s, as the the five-foot recessed tub and shower bay became a typical feature, the bathroom reached its five-by-five-foot standard; this minimal compartment suggested the development in the 1930s of a prefabricated bathroom, conceived as one appliance.



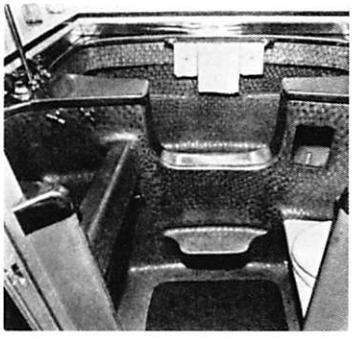
This 6-x-7-foot bathroom was advised as the minimal size for servants' quarters in Vollmer's *Book of Distinctive Interiors*, 1912.

The plans at left are from an article on minimal space planning, A. Lawrence Kocher and Albert Frey, "Dimensions, Part Two: Bedrooms, Bathrooms," *Architectural Record* Vol. 71 No. 2 (January 1932): 123-128.

17. Robert C. Spencer Jr., "Planning the House: Bath-Rooms, Closets, and Dressing-Rooms," *House Beautiful* (February 1906): 20; and William Vollmer, *A Book of Distinctive Interiors* (New York: McBride, Nast & Co, 1912), 88.

Deliberately luxurious, over-size bathrooms have existed alongside the minimal standard. Installed primarily in master bedroom situations, over-size bathrooms are associated with the intimate pleasures of married life. Recent designs for up-scale dwellings have attempted to integrate large bathrooms into the public living and recreational areas of the home. See Elizabeth Rudulph, "Comfortable Stations," *Time* (December 30, 1991): 79; Joseph Giovannini, "A Combination Gym and Bath, The Latest in Home Amenities," *The New York Times* (Thursday, January 23, 1986): C1, C6; and Beverly Russell, "Pool-Bathroom Shapes Up as the New Amenity," *The New York Times* (Thursday, March 17, 1982): D1, D8.

Prefabrication



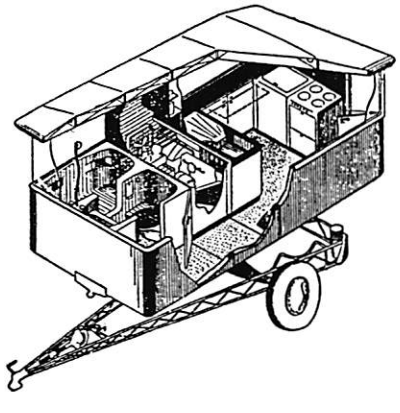
Above, the *Prefabricated Bathroom in Two Parts*, by R. Buckminster Fuller. The patent was filed in 1938, granted in 1940.

Above, the Bathroom Utility Wall, designed by George Sakier, 1937. This lavatory was one among a number of attempts to produce equipment as an integral part of the bathroom walls. Manufactured by the American Radiator Company, it provided storage for linens as well as a place to conceal the radiator and toilet tank. It was part of a system of interlocking panels for both the kitchen and bathroom. "Sanitation Equipment: Bathrooms and Kitchens," *Architectural Record* Vol 81 No. 1 (January 1937): 45.

The recessed bay of the tub and shower, as well as the determination of the minimal bathroom plan, encouraged designers to think of the bathroom as one large water-supplied appliance. Since a single manufacturer typically made all three pieces of bathroom equipment—toilet, sink, and bathtub—and since the interior of the bathroom entailed the creation of water-proof walls, it was logical to think of the entire room as a unit that could be mass-produced and installed on-site. Socially-minded proposals throughout the 1930s—notably R. Buckminster Fuller's 1938 prefabricated bathroom—conceived of the bathroom as a large scale appliance whose elements were stamped out of a continuous piece of material.[18] Several prototypes of Fuller's five-by-five prefabricated bathroom were built (the architect Richard Neutra installed one in his otherwise deluxe Brown House of 1938), but the project was commercially unsuccessful.

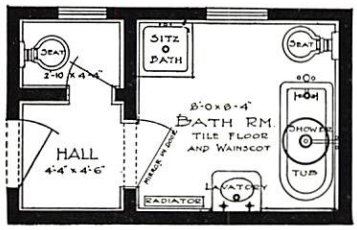
Such plans failed to take hold in the 1930s and 40s for several reasons. Giedion has criticized the attempt to translate the architecturally fixed, integrated bathroom into a movable appliance, as well as the use of metal rather than time-tested china and porcelain (711). Indeed, manufacturers have discovered that fixtures made of plastic rather than china are rejected by consumers. Furthermore, the construction industry—contingent upon field erection and assembly—has resisted prefabrication. As Alexander Kira has noted, "With few exceptions, the bathroom has rarely been conceived of as an entity, certainly not by the plumbing industry" (9). Moves towards an ecologically and ergonomically intelligent bathroom are only now beginning to take shape.

18. Fuller's design was initiated in 1930 and originally sponsored by American Standard and the Phelps-Dodge Company. Fuller intended it to be made of glass-reinforced plastic rather than metal. See *Inventions: The Patented Works of R. Buckminster Fuller* (New York: St. Martin's Press, 1983), 41-52. Fuller reported that his prefabricated bathroom was mass-produced in Germany. See also "Integrated Bathroom," *Architectural Record* Vol. 81 No. 1 (January 1937): 41.



Left, Buckminster Fuller's 1936 proposal for a "Mechanical Core," which services the bathroom and kitchen. A similar design was the "Vinylite House," a proposal for inexpensive housing that used standardized building parts bolted together on-site. Like Fuller's Mechanical Core, the Vinylite kitchen and bathroom were delivered as a fixed unit; all plumbing resources share a wall. "The Vinylite House," *Architectural Record* Vol 75 No 1 (January 1934): 36.

Zoning the Bathroom(s)



Top, a 1912 ad for Standard Sanitary Mfg. Co. features the toilet in a separate space. Above, a floor-plan from a 1917 book suggests a separate room for the toilet. Advertising from the 1880s to the present often places the toilet just beyond view, or behind a half-open door.

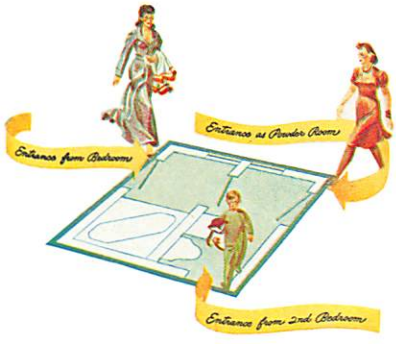
19. Lydia le Baron Walker, *House and Garden* Vol. 20 No. 6 (December 1911): 378.

As the bathroom entered the American home, opinions were divided over whether the toilet should be part of the bathroom or placed in a separate compartment. While some designers and builders sought to determine the limits of the minimal bathroom, sanitarians were critical of the increasing trend towards including the toilet alongside the lavatory and bathtub. Health critics felt it was not hygienic to mingle functions; later writers emphasized the practical advantages of separate facilities: "Keep the bathroom what the name signifies. Eliminate the toilette [sic]. Put that in a separate room, even if it be tiny. ...the convenience of both rooms will be more than doubled."[19] Developments from the 1910s and through the 1940s brought the toilet from remote hallway locations to the bathroom interior, separated from the bathing area by a door and accessible directly from the hallway.

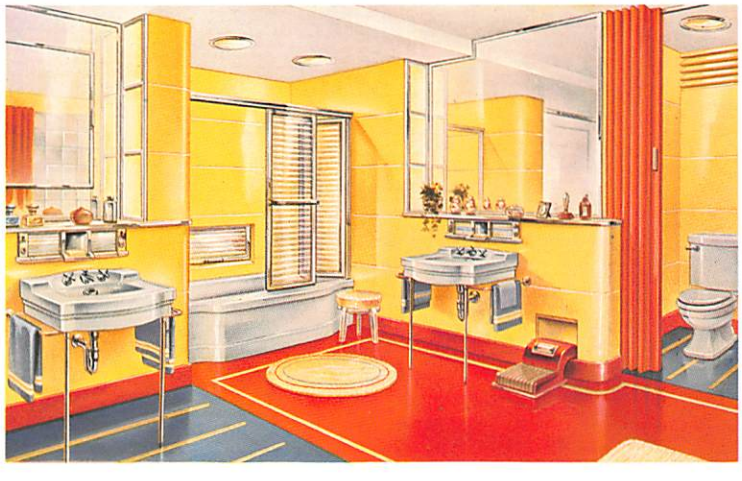
A 1928 ad for Crane Fixtures suggests installing two lavatories.

The trend towards multiple points of entry evidenced an erosion of the boundaries of privacy in bathroom use. In the mid-30s dual lavatories for family use and the "dental lavatory," a small sink for brushing teeth, were promoted by the plumbing industry as ways to open the bathroom up to multiple users. A partitioned space for the toilet encouraged simultaneous use of the bathroom. By the late-1930s and throughout the 1940s and 50s the emphasis in advertising and articles on home building and decoration shifts from multiple points of entry to multiple bathrooms: a 1938 article refers to "the 'separate bath for each bedroom' standard," while other articles stress the importance of the "powder room," located just off the dining room for use by visitors, and the necessity of a master bathroom for the private use of parents.

Kohler's "dental lavatory" was introduced in 1936. Manufacturers attempted to invent many new fixtures: the gimmick of the dental lavatory (a small sink) did not take hold.



This 1944 ad from Standard presents a cut-away view of the "Duo-Use" bathroom that allows for multiple access and simultaneous use. Standard promoted it as a way of combining the powder room and traditional bathroom. It features the "Neo-Angle" bathtub, introduced in 1934, that was used in rooms of unusual proportions.



Left, a 1945 ad from the Briggs Mfg Company. The bathroom has taken on the proportions of a family room. The dual lavatories, partitioned toilet, and glass-enclosed shower enable multiple and simultaneous use of the bathroom.

The Modern(ist) Bathroom

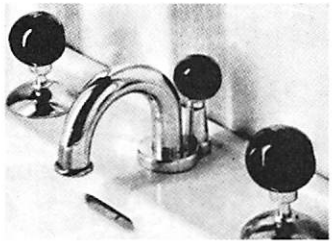
Ad for Marlite Pre-Finished Wall Panels, featuring its use in Richard Neutra's 1937 Kaufman House in Los Angeles. The ad incorporates a representation of the house from *Architectural Forum*. Like the Neuvogue ensemble designed by Dreyfuss, Neutra's bathroom interiors accentuate geometric purity in the bathroom. The Marlite ad appeared in *Pencil Points* Vol. 22 No. 8 (August 1941): 60.

The bathroom has been a recurring object of interest to modernist designers: George Sakier, Henry Dreyfuss, and R. Buckminster Fuller were involved in the design of bathrooms and fixtures, and the architects Le Corbusier, Richard Neutra, George Fred Keck, and Frank Lloyd Wright all attached particular significance to this room. While for Wright the installation of a low toilet signaled his insistence upon the organic and bodily, for Neutra the bathroom was a site for announcing his vanguard sensibility: Neutra's Brown House, a luxury residence, featured Fuller's prefabricated bathroom, originally designed to make facilities affordable to a wider number of people.[20] Neutra's 1935 Von Sternberg house featured floor-to-ceiling mirrors, highlighting the reflective surfaces of porcelain and chrome. In a similar exaggeration of the formal language of the bathroom, George Fred Keck's Crystal House, shown at the 1934 Century of Progress exhibition, featured a sink whose tubular steel framework was echoed in the legs of a modern bench and floor lamp.[21] While the bathrooms promoted by the plumbing industry took on color and period styling in the 1930s, such modernist bathrooms intensified the severity and neutrality of the bathroom in its early phase of hospital cleanliness.

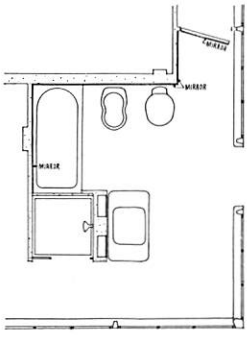
20. Thomas Hines has noted that Neutra's use of Fuller's bathroom was rhetorical: the Brown residence was an otherwise costly project and the use of the bathroom on the basis of economy is dubious. *Richard Neutra and the Search for Modern Architecture* (New York: Oxford University Press, 1982), 157.

21. Richard Guy Wilson, Dianne H. Pilgrim, and Dickran Tashjian, *The Machine Age in America, 1918-1941* (New York: Brooklyn Museum, 1986), 194.

"Neuvogue" bathroom fixtures designed by Henry Dreyfuss for Crane in 1936. The Neuvogue was one of the few toilets designed with any awareness of ergonomics: the backward slope of the seat encouraged the bowels in elimination by approximating a squatting position. Visually, Dreyfuss emphasized the verticality of the toilet by creating straight lines that joined the tank and bowl. The squared base became a sculptural pedestal on which the curving forms of the toilet perched. The rectilinear emphasis in the lavatory and bathtub produced a geometricized ensemble, introducing a deliberately modern form of styling to bathroom fixtures.



The lavatory and faucets at left were designed by George Sakier, c.1936. The lavatory recalls the use of tubular steel in modernist European furniture. The supply pipes and hardware of the plumbing are used as machine-age design motifs in the faucets and sink supports. From *Industrial Design*, Harold Van Doren, 1940.



The above bathroom is from Richard Neutra's 1935 Von Sternberg House in Northridge, California. The porcelain, metal trim, and floor-to-ceiling mirrors heighten the reflective atmosphere of the bathroom. The fixtures, from Crane, include a bidet, more common in Europe than America. Designed for the film director Josef von Sternberg, the house, like most of Neutra's work, presents a theatrically clean and austere modernism. The sanitary aesthetic of the modern bathroom—its seamless materials, built-in furnishings, and machine-made forms—resonates throughout Neutra's buildings. From *Architectural Record* Vol. 86 No. 1 (July 1939): 53.

THE ARCHITECT SAID...—"and for the kitchen floor I have specified the new Adhesive Sealex Linoleum. It has a perfectly smooth surface with no cracks and crevices to catch dirt—exceptionally sanitary and easy to clean. And the factory-applied adhesive on the back gives a stronger, extra long-wearing installation."

The modern, inlaid flooring

ADHESIVE SEALEX LINOLEUM

TRADEMARK REGISTERED

beautiful... perfectly smooth and sanitary ... extra long-wearing

Everything that makes this modern kitchen beautiful makes it superlatively easy to clean, too. Built-in equipment, without legs to clean around. Washable walls of Sealex Wall-Covering No. 1124. Above all, the lovely floor and counter tops of Adhesive Sealex Linoleum—smooth and sanitary, like a china plate! The pattern is "Nite," No. A7388.

Built for beauty and extra long life, is this modern, inlaid floor—Adhesive Sealex Linoleum!

The perfect smoothness—which makes this linoleum so sanitary and easy to clean—also makes it specially wear-resisting.

Still more important, Adhesive Sealex Linoleum insures you a stronger, more durable installation. Why? It is the only inlaid linoleum with *adhesive on the back!* This protects you, automatically, from the use of inferior cements, which often permit linoleum to pull loose in a short time. And this special adhesive is unusually strong. It is applied at the factory under pressure with absolute evenness. So, every square inch of the linoleum grips your floor like a vise.

Then, too, Adhesive Sealex Linoleum is laid on any smooth, dry floor without felt lining. Naturally, this saves time. A floor is ready for use in 2 to 3 hours!* Saves money, too—up to 20% of the cost of a finished job.

See this patented** inlaid linoleum—with its adhesive back and beautiful, *smooth* patterns at your dealer's. Choose from the many smart designs. Not only new texture effects but gay tiles and richly marbleized Veltones. Go today!

*Estimate based on average floor of 15 sq. yds. ** Patent 1,970,503.

SEND 10c to Congoleum-Nairn Inc., Kearny, N. J., for our helpful, new 20-page decorating book, "Building Color Schemes from the Floor." 20 illustrations in full color, showing smart interiors that may be achieved with Sealex Linoleum Floors. Many of these rooms also feature the modern, permanent wall treatment—Sealex Wall-Covering.

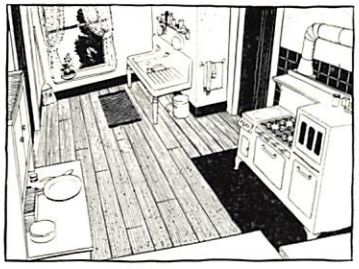
ADHESIVE SEALEX LINOLEUM

The modern Inlaid Linoleum made by Congoleum-Nairn Inc... world's largest manufacturer of smooth-surface floor-covering

THE MODERN KITCHEN
At Home in the Factory

The room depicted in the 1936 linoleum ad at left embodies the ideal of the continuous kitchen. A single-height work surface unites the sink, stove, and a casual eating area, while the wall cabinets establish another parallel but independent plane. The refrigerator, which does not appear in this ideal view, often failed to coordinate with the seamless ensemble of the continuous kitchen, because its height and depth didn't match that of the other appliances. In the foreground of the image is an office chair and desk, an executive overlook for managing the labor of consumption.

The pair of drawings below compares a "bicycle era" kitchen with the modern version, as up-to-date as a "motor car." *American Architect*, 1936.

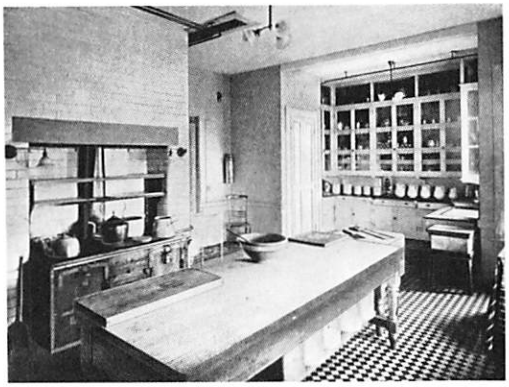


The modern kitchen emerged at the end of the nineteenth century out of campaigns for sanitary and social reform, the expansion of the suburban middle class, the growth of water, gas, and electric utilities, and the rise of the corporate food industry. The flexible but rule-bound grammar established by the end of the 1930s can be called the *continuous kitchen*. It merges architecture and furniture—once conceived as distinct, oppositional entities—into the new form of the *fixture*, a hybrid type borrowed from the modern bathroom. The continuous kitchen aspires to synthesize cabinets and equipment into a seamless, coordinated organism: sink, stove, and countertops form a unified horizontal plane, parallelled by a second layer of wall cabinets. Like a modern factory, the continuous kitchen aims to enable an unbroken series of chores to pass through its sequence of specialized work stations. The labor performed in this factory, however, centers around *consumption* rather than *production*; like a biological organism, the continuous kitchen supports a rhythmic cycle of ingestion and waste: *a process of elimination*.

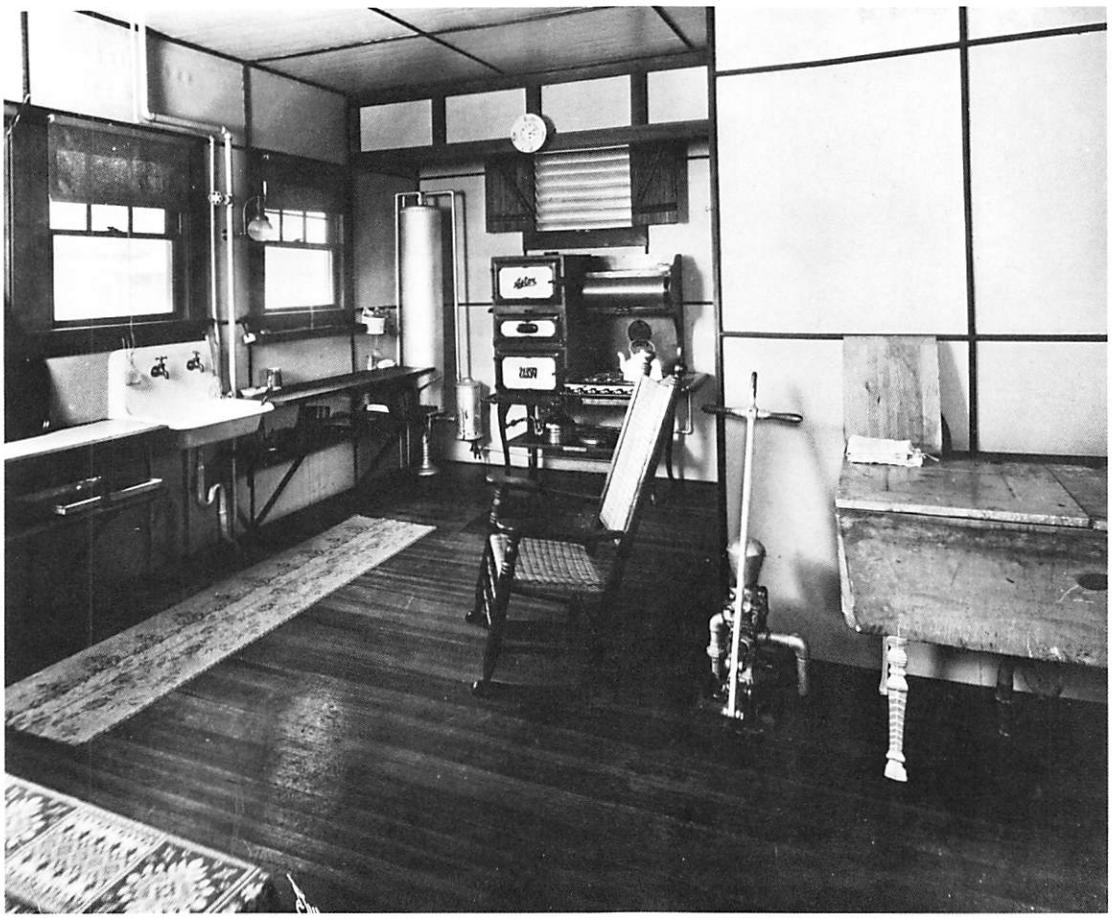
While the ideal of the continuous kitchen remains today a powerful norm, many of its standard features are now being rethought. The use of a standard height for countertops and appliances is economical for builders and manufacturers, but creates a hostile setting for anyone but the idealized inhabitant of the modern kitchen: the so-called "average female." Flush cabinet doors discourage working in a seated position, while corner cabinets create deep, hard-to-organize storage spaces. The insistence on a uniform bank of appliances locates broilers, ovens, and dishwashers uncomfortably close to the floor, making them inaccessible to disabled or less-than-limber adults. The compulsion to conceal tools and supplies behind opaque doors wastes time and energy, as compared to glass-fronted refrigerators, cabinets, and ovens, and open racks for frequently used cookware. The changing social climate of the kitchen calls for new products and planning—and sometimes a return to old customs banned by the logic of the continuous kitchen.

Westinghouse model kitchen, with view onto a pastoral landscape, 1930s. Collection of Baltimore Gas and Electric Company.

Right, tiled kitchen, courtesy *House and Garden*, copyright 1907 (renewed 1935 by The Condé-Nast Publications Inc.).

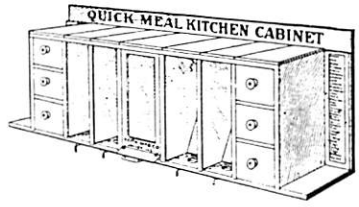


Below, kitchen in the home of Mrs. Helen Terry Potter (New Rochelle), 1909. While the early modern *bathroom* was a luxury space for prosperous households, the same homes viewed the *kitchen* as an extension of the servants' quarters. The kitchen below is expensive yet uncomfortable. Museum of the City of New York, Byron Collection.



Right, photos from an ad for Sani-Onyx, 1928. From the turn of the century through the 20s, ceramic tile walls, floors, and ceilings were promoted as a way to bring the hygienic features of the modern bathroom into the kitchen.

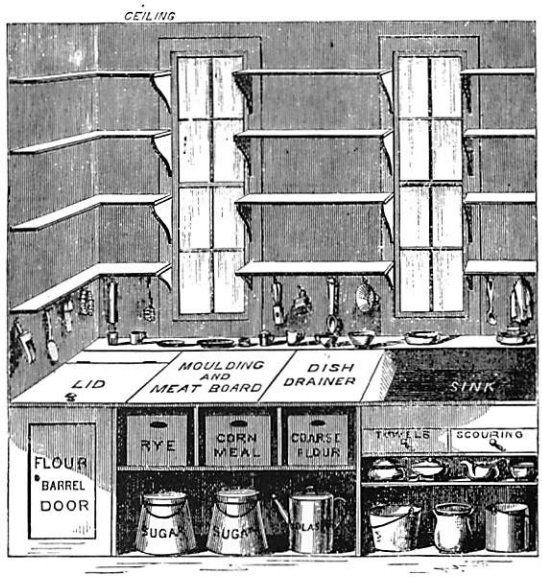
Work and Storage Furniture



Left, Quick Meal Kitchen Cabinet, advertised in 1900, anticipates the wall-mounted cabinets of the 1920s and 30s. *American Kitchen.*

The most powerful element in the grammar of the continuous kitchen is found not in its technology but in its storage and preparation furnishings.[1] In the 1860s Catharine Beecher published drawings of a built-in unit which she called a "cook form," combining a work surface, storage unit, and sink. The "moulding board" for kneeding dough flips over to cover the sink, and the surrounding walls are lined with open shelves. Beecher's design is commonly recognized as a precursor of the modern continuous kitchen, although it was not widely adopted at the time. In the 1890s, cabinets and tables combining drawers, flour bins, and other features became popular in American kitchens; they carried forward Beecher's concept of concentrating work and storage functions in a single piece of specialized furniture.

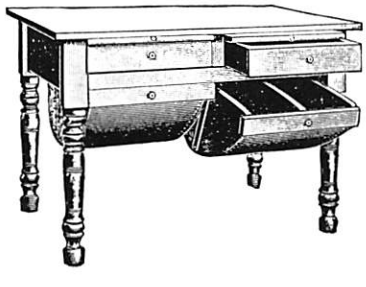
1. Siegfried Giedion asserts the importance of cabinetry in determining the logic of the built-in kitchen in *Mechanization Takes Command.* Major authors on kitchen design and technology are cited in previous chapters: Cowan, Giedion, Hardyment, Hayden, Sparke, Strasser, and Wright.

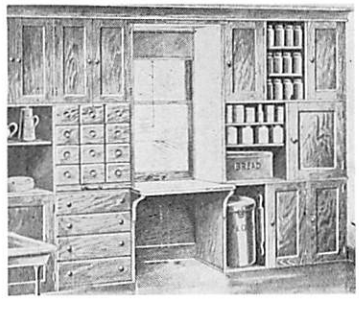


Catharine Beecher's design for a built-in work and storage unit. *American Woman's Home,* 1869.

Capitalizing on the widespread interest in domestic efficiency and "home economics" at the turn of the century, Christine Frederick sought to rationalize existing kitchen equipment through her experiments in domestic Taylorism, sponsored by the *Ladies' Home Journal* beginning in the 1910s. While Beecher's design proposals went largely unheeded, Frederick's experiments had a profound impact on the modern kitchen, both in the United States and in Europe. Her most influential recommendations dealt with the layout of storage units and work surfaces, which she modeled on the assembly line of the modern factory.

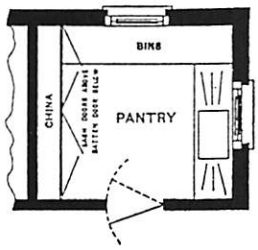
Right, "Quaker kitchen cabinet," advertised in 1897. It combines drawers, flour bins, and a work surface. *New England Kitchen Magazine.*



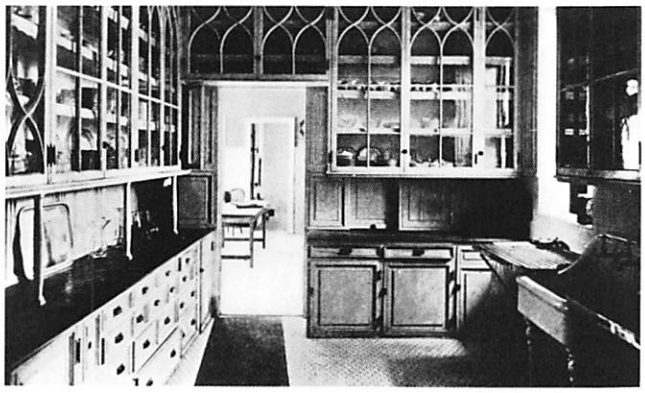


Left, design for built-in kitchen cabinets, *Carpentry and Building,* 1907.

Right, 1907 pantry design showing built-in cabinets and a continuous countertop and sink. *Carpentry and Building.*

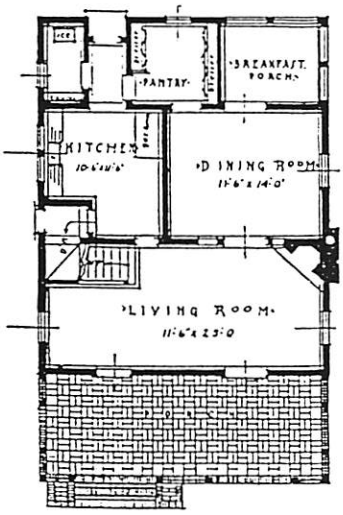


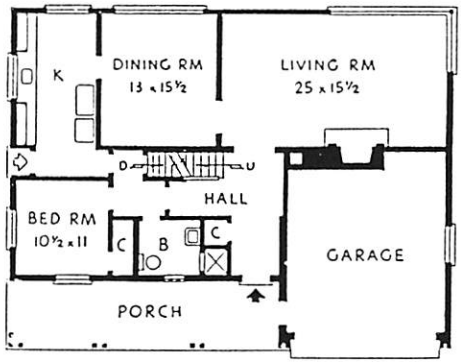
Cleaning Up the Pantry



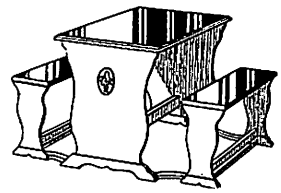
Butler's pantry with built-in cabinets and running water. Courtesy *House and Garden*, copyright 1907 (renewed 1935 by The Condé-Nast Publications Inc.).

One of the conventions of house-planning which Frederick challenged was the traditional pantry, conceived of as a distinct room (or rooms) attached to the kitchen. A proper middle-class house at the turn of the century had at least two pantries: one for storing utensils, food, and fuel, and another located between the kitchen and the dining room, for storing dishes and serving meals. The latter, called a butler's pantry, could range from a tiny niche or hallway to an elaborately outfitted room. One of the chief functions of the butler's pantry, whatever its size, was to shield the dining area from the noises and odors of the kitchen: the butler's pantry was a valve controlling the flow of traffic between the service zone of the kitchen and the public zone of the dining room, which needed protection from the sounds and smells of household labor. In an upper-middle-class home, the pantry might be located without consideration for convenience, because its user was assumed to be a hired servant. The disappearance of the butler's pantry marked the kitchen's gradual conquest of public domestic space.

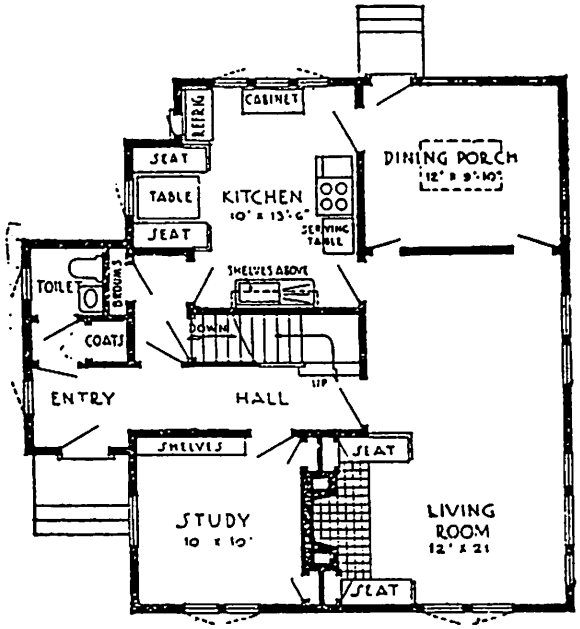


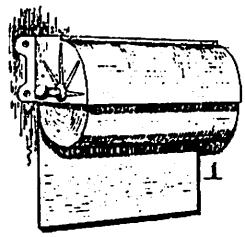


House plans, 1916 and 1939.
As represented in the elite shelter magazine *House and Garden*, the butler's pantry separating the kitchen from the dining room remained an inviolable feature of house planning—even in so-called "modest" homes—well into the 1930s. The 1939 home at right has no pantry, but it has made space for a new appliance of middle-class suburban life: the automobile.



One way to modernize a kitchen in the 1910s and 20s was to replace an old pantry with a built-in "breakfast nook" or "Pullman."

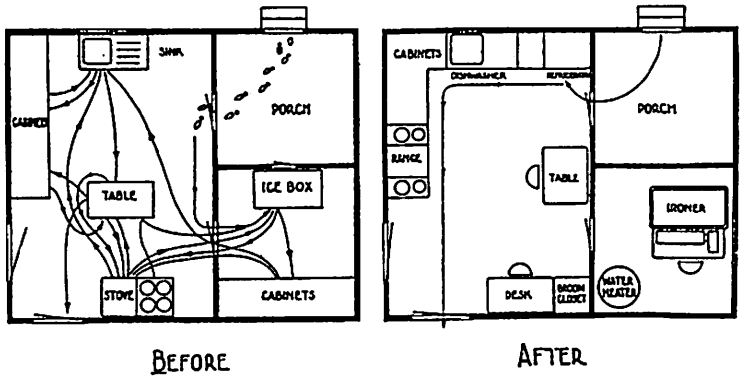




Christine Frederick was an early advocate of paper towels. What they waste in materials, she argued, they save in time.

Frederick called for reducing the over-articulated kitchen to a single open room, replacing pantries with built-in cabinets and "dressers" located in the kitchen. She proposed obliterating distinct architectural spaces in favor of centralized storage units: "An improved construction plan would be to take some of the pantry space and use it for cupboards and shelves built into the kitchen itself" (20). Frederick pointed out that the modern food industry, which encourages "frequent marketing" over buying in bulk, had rendered obsolete the detached pantry for storing large quantities of food. Although Frederick's book *Household Engineering* (1919) includes some house plans having butler's pantries, she argued that proper ventilation in the kitchen, along with built-in dish cabinets in the dining room, would eliminate the need for this protective zone.

In Frederick's plan for a "No Servant" house, shown above, the kitchen has immediate access to the living room, entrance hall, and a dining/living porch, glassed in for the winter months; the plan includes no distinct pantries. The built-in "breakfast nook" makes the kitchen a place for family eating and relaxing as well as working.



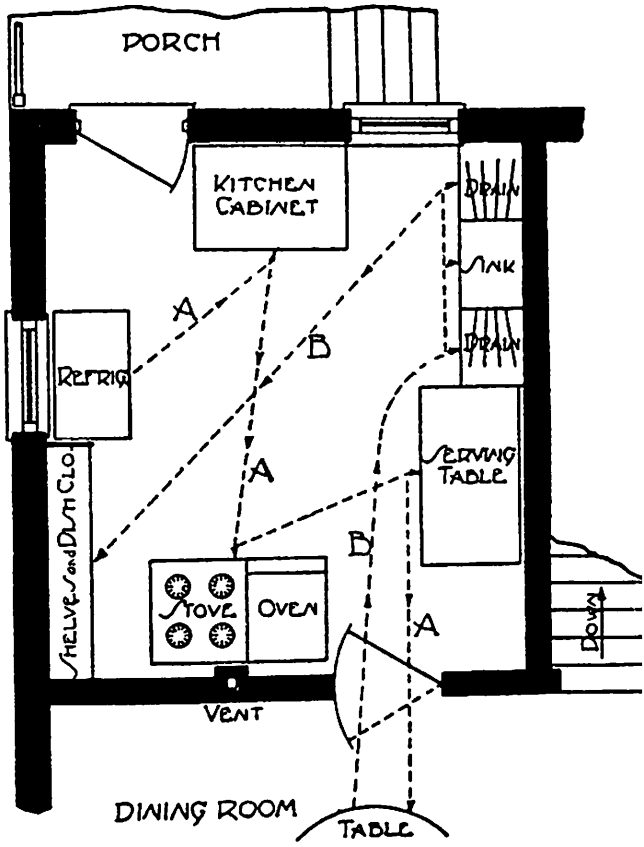
Before-and-after kitchen plans, 1936, show the conversion of an old-fasioned kitchen and pantry into a continuous kitchen with built-in storage and a separate laundry room. *American Home.*

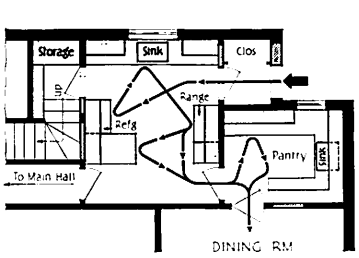
Diagramming the Rational Kitchen

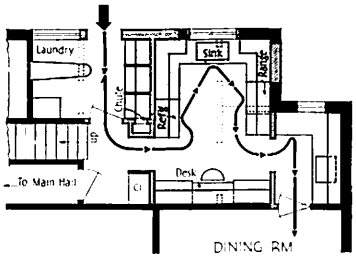
Following the example of numerous domestic theorists since Catharine Beecher, Frederick classified the heterogeneous tasks of cooking into general phases, each tied to specific furnishings and appliances. Frederick reduced kitchen work to two basic procedures: *preparing* and *clearing away*. The plans shown at right compare an efficient and inefficient kitchen plan, each inscribed with two paths (A and B, one for cooking and one for cleaning up). In the inefficient kitchen, the cook must walk greater distances and continually recross her path, while the revised kitchen enables a coherent, linear series of operations: appliances and work surfaces are laid out in a continuous row, like stations in an assembly line.

While grouping work surfaces and appliances according to their use *can* make cooking easier, Frederick has reduced kitchen labor into an ideally coherent and linear process. By analyzing the cook's duties into generic phases, Frederick hoped to make the unpredictable paths of housekeeping resemble the regulated and continuous routines of factory work. Numerous tasks have been omitted, such as putting away groceries, setting the table, consulting a cookbook, tending a child, stirring the sauce, wiping the counter-tops, adjusting the stove, discarding empty packages, or preparing anything more complex than a single-dish meal.

Christine Frederick's Inefficient Kitchen



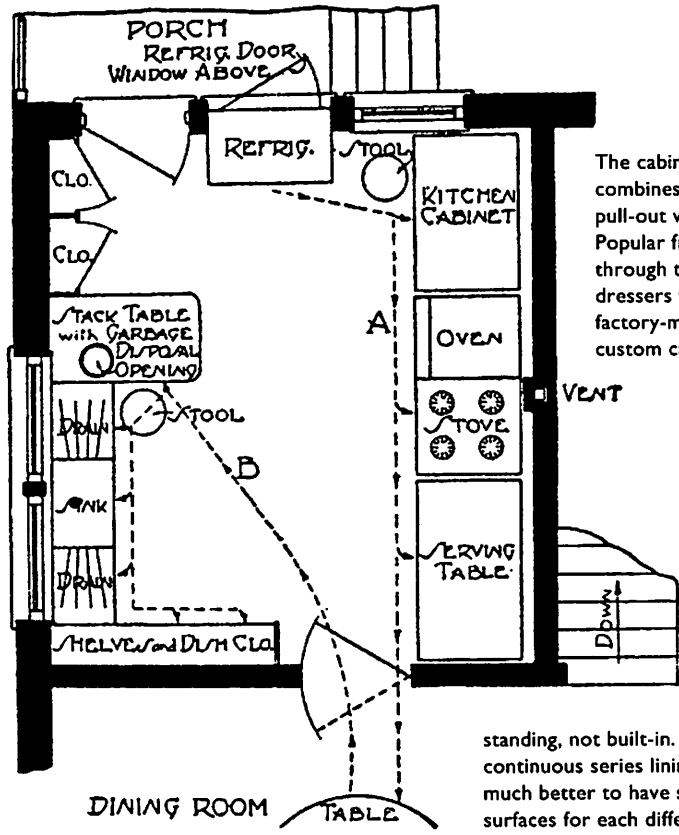




Left, diagrams of an efficient and inefficient kitchen, in which the chaotic, unpredictable process of cooking is reduced to an idealized path, picturing housework as a one-way sequence of choreographed steps. Like a grand diva, the housewife enters and exits her kitchen in a single, continuous motion. Before-and-after diagrams of irrational and rationalized kitchens are common in the domestic design literature of the 20s and 30s. *American Architect*, 1936.

Christine Frederick's Efficient Kitchen

The refrigerator (which is not electric) opens from both the kitchen and the porch, so that the ice man can deliver ice without entering the house.

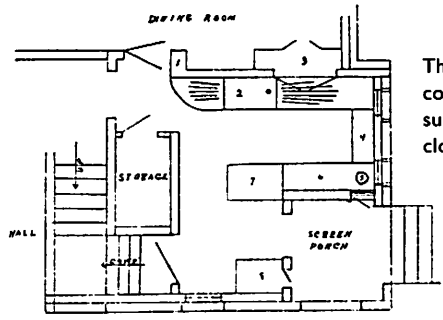


The cabinet or "dresser" combines storage with a pull-out work surface. Popular from the 1890s through the 1930s, dressers were a cheap, factory-made alternative to custom cabinets.

Frederick's rational kitchen design maintained the nineteenth-century custom of storing utensils on open shelves, resisting the more "modern" impulse to conceal everything behind closed doors, as dictated by the continuous kitchen of the 1930s. The shallow open shelves for pots and pans in Frederick's kitchen are modeled after the mechanic's bench: "There are no doors to open and take up valuable work space, no waste of motion pulling out drawers, no confusing or blunting of one tool with another" (34). A stool on wheels allows the cook to work sitting down.

The kitchen has direct access to the dining room, with no intermediary pantry.

Most of the furnishings in Frederick's rational kitchen plan are free-standing, not built-in. They form a continuous series lining the walls: "It is much better to have several small surfaces for each different process or special work, than to have one large surface on which miscellaneous work is performed" (27). By dividing the kitchen into work stations, Frederick imitated the assembly line of the factory. These domestic tasks, however, are performed by a single person and address consumption rather than production.



This 1916 plan is an early proposal for a continuous kitchen. The sink, stove, and work surfaces form an unbroken U-shape. The dish closet over the sink has doors opening onto both the kitchen and dining room. The designer, anticipating the enclosed base cabinets and appliances of the 30s, suggests raising the stove, refrigerator, and cabinets on a solid platform, "to avoid the dust trap which usually exists in the space underneath." Louise Stanley, "A Convenient Kitchen," *Journal of Home Economics* Vol. VIII No. 9 (September 1916): 493-494.

Cooking with the Avant-Garde

Frederick's *Scientific Management in the Home* was translated into German in 1922, where it was enthusiastically received by progressive designers. Several German architects in the 1920s applied Frederick's research to kitchens featuring built-in, continuous-height cabinets and work surfaces organized in a coherent L-shape. The architects who participated in the German Werkbund exhibition *The Home*, held at Weissenhof in 1927, were each given guidelines on proper kitchen design prepared by Erna Meyer, a domestic theorist who was probably familiar with Frederick's book.[2]

"We cannot leave the placing of the sink, stove, doors, and cupboards entirely to the architect. The reason why so many kitchens are work-making is soley because...equipment is commonly placed wherever there happens to be space left after cutting out all the doors and windows." Christine Frederick, 1919 (23).

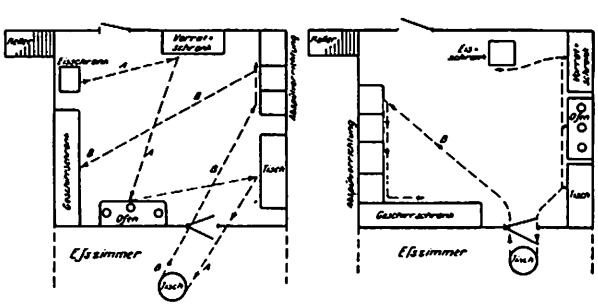
Whereas in Europe the continuous kitchen was promoted by the design avant-garde, in America it grew out of the writings of domestic theorists and reformers and the subsequent response of builders and manufacturers. American domestic writers commonly viewed the architect as an *enemy* to good kitchen design, a figure obsessed with walls, windows, and tidy plans, and ignorant of women's work. Domestic literature provoked women to study the latest theories of home economy in order to become more demanding architectural consumers; at the same time, domestic writers formed mutually profitable relationships with industry. Their magazine articles were published alongside ads for cabinets and appliances, bringing theory and products into convenient proximity.

The Good Housekeeping Institute, founded in 1900, was a watchdog for effective products, while at the same time validating goods advertised in its own magazine. Christine Frederick worked as a consultant to industry, and she made numerous celebrity endorsements for household goods.[3]

The modern kitchen in America was shaped by the commercial circle of consumers, journalists, manufacturers, and advertisers rather than by a critical architectural avant-garde.

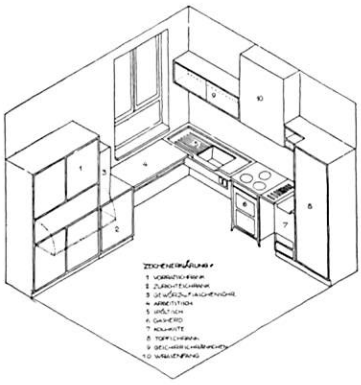
2. Karin Kirsch, *The Weissenhofsiedlung: Experimental Housing of the Deutscher Werkbund, Stuttgart, 1927* (New York: Rizzoli, 1989). John Heskett assesses the importance of Frederick to European modernism in *Industrial Design* (New York: Oxford University Press, 1980), as does Sparke in *Electrical Appliances*.

3. Frederick's product endorsements include Hoosier kitchen cabinets (1915) and Vollrath's enamelled cook ware (1922).



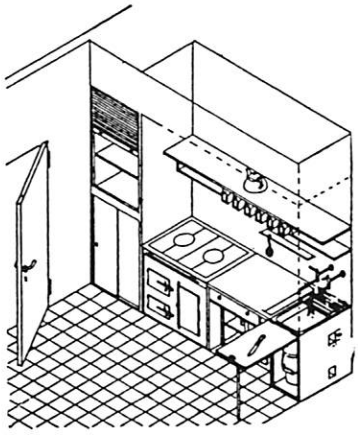
Christine Frederick's diagram of the rational and irrational kitchen was reproduced by the German architect Bruno Taut in 1926. Note that the L-shaped corner of Frederick's efficient kitchen plan has been further simplified. From *Die Neue Wohnung: Die Frau Als Schopferin* (Leipzig: Verlag Klinkhardt and Bierman, 1926).

Below, Frankfurt Kitchen, 1925, Margarete Schutte-Lihotsky. Frederick's book *The New Housekeeping* was a theoretical "Bible" for the designers of the modernist "Frankfurt kitchen" (Heskett 84). Functional details include pull-out work surfaces, a built-in rack over the drain board, and leg room for sitting down while working.

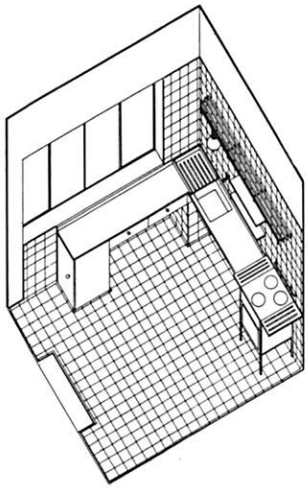


Above, kitchen designed by Erna Meyer, consultant to the 1927 Weissenhof exhibition. Meyer shared Frederick's conviction that kitchen work should be done sitting down. Leg room is one of the casualties of the standard American kitchen established at the end of the 1930s, which insists on concealing the base cabinets behind a continuous skin flush with the edge of the countertop.

Right, kitchen prototype by the Soviet designers Mikhail Barshch, Mosei Ginzburg, and Vyacheslav Vladimirov, 1928-29. The stove is wood-burning.



Right, J. J. P. Oud's kitchen for the Weissenhof exhibition, 1927. Oud's design includes a pass-through to the dining room, which can be closed off with sliding glass doors. The doors prevent kitchen odors from drifting into the dining area, while at the same time allowing the mother to watch her children while she works. Erna Meyer preferred Oud's kitchen design over all those designed for the Weissenhof exhibition (Kirsch).

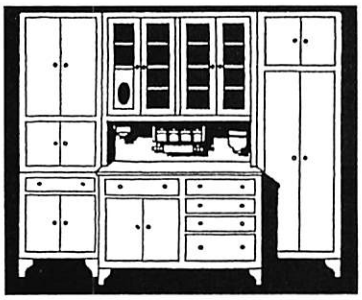


Prototype for the Continuous Kitchen: The Kitchen Dresser

Steel kitchen cabinet, Bisk, 1922.

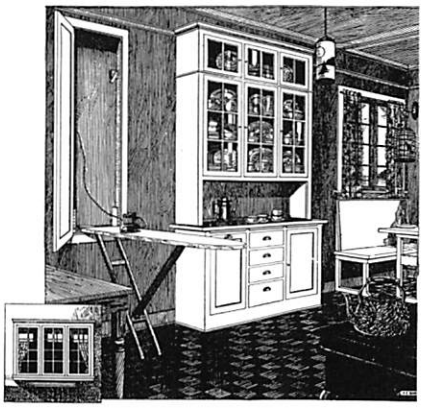
Built-in cabinets were part of the Victorian bourgeois pantry, but were limited to those who could afford custom woodwork. The standard continuous kitchen emerged out of factory-made kitchen "dressers," marketed from the 1890s onwards. The typical kitchen dresser at the turn of the century consisted of a single vertical unit, divided into a shallower top level and a deeper base; a pull-out counter could further extend the work surface and provide leg room for sitting down.

The Hoosier Manufacturing Company was the most famous maker of kitchen dressers—the name "Hoosier" became a generic name for tall cabinets. The Hoosier reflected contemporary theories of home economy by concentrating preparation and storage functions into a single unit. The cabinets were designed to hold both food and utensils; the more elaborate models were equipped with flour dispensers and revolving racks for jars of condiments.



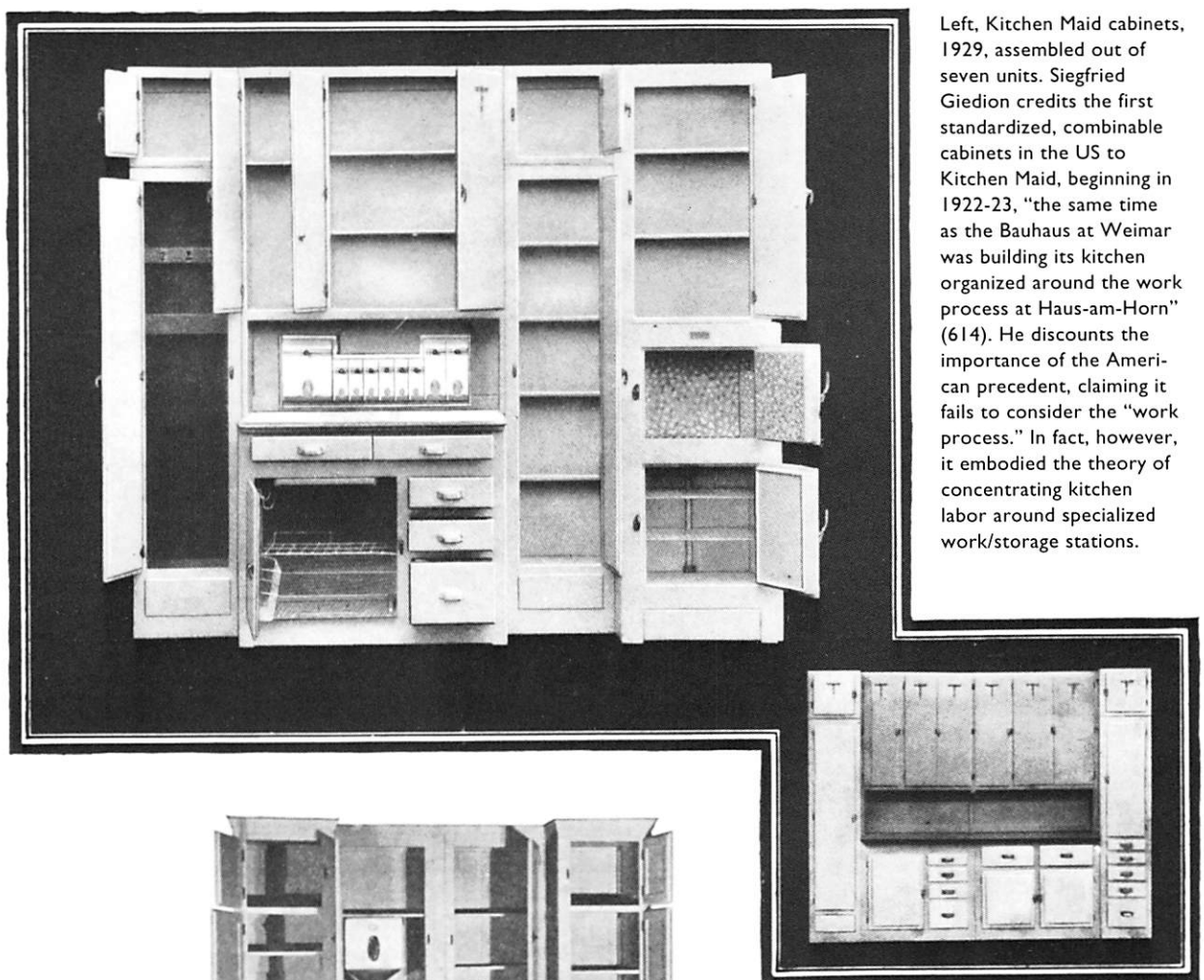
White House Line steel kitchen, 1930; available by 1918.

Beginning in the late 1910s, the concept of the single kitchen dresser expanded to encompass modular systems of combinable units. The most common arrangement consisted of a wide central cabinet with a projecting work surface, flanked by two narrower vertical closets. Such designs were classically symmetrical, consisting of a closed A-B-A sequence of vertical bays. More complex, open systems of cabinets were advertised in the late 20s, which combined horizontal as well as vertical units in asymmetrical, expandable configurations. These manufactured wall systems, whether used singly or in combination, were usually treated as freestanding furniture, although catalogues from the 20s include renderings of built-in units as well, connected to the ceiling with dry-wall soffits.



Kitchen furniture advertised by Curtis Woodwork, 1924. The ad describes this cabinet as "labor-cheering, step-saving built-in furniture." Other built-in features in this kitchen include a fold-out ironing board and a breakfast nook.

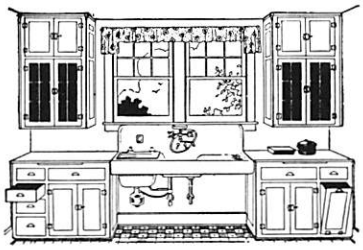
Left, kitchen cabinet advertised by Hoosier Manufacturing Company, 1916. The "Hoosier" was the most popular brand of kitchen storage furniture. A 1915 product endorsement by Christine Frederick asserted, "The Hoosier has no frills. It is a scientific labor-saving kitchen machine." *You and Your Kitchen* (New Castle, IN: Hoosier Manufacturing Company, 1915), 29.



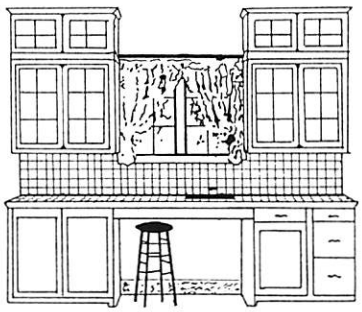
Left, Kitchen Maid cabinets, 1929, assembled out of seven units. Siegfried Giedion credits the first standardized, combinable cabinets in the US to Kitchen Maid, beginning in 1922-23, "the same time as the Bauhaus at Weimar was building its kitchen organized around the work process at Haus-am-Horn" (614). He discounts the importance of the American precedent, claiming it fails to consider the "work process." In fact, however, it embodied the theory of concentrating kitchen labor around specialized work/storage stations.

Left, the "Vari-Uni-Cab," advertised in 1928 by the Variable Unit Cabinet Company. The product is described as "a new idea in kitchen cabinets. Made up in units...packed knock-down, in natural wood." Modular, factory-made cabinet systems, designed to be assembled against a wall, expressed the domestic theories of the 1910s and 20s. They also reflected modern principles of standardization and modularity, although by the end of the 30s they were superseded by the norm of horizontal base cabinets and wall cabinets.

Prototype for the Continuous Kitchen: The Sink and Cabinet Ensemble

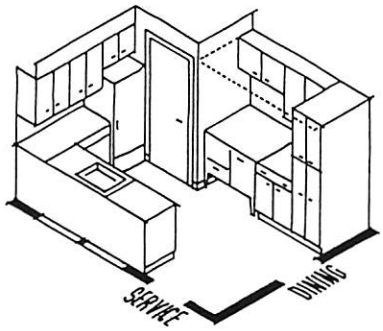


The modular wall system, although it was an effective response to the domestic theories of the period, did not become an established norm. Instead, another conventional cabinet arrangement formed the seed for the standard modern kitchen. In the 1910s and 20s it was common to position the sink beneath a window, and to flank it on either side with tall cabinets—either freestanding "Hoosiers" or built-in units (top). Initially, such cabinets were insistently *vertical* in design, conceived as two tall units separated by a distinct sink, which commonly stood on painted metal legs modeled after lathe-turned wooden furniture.



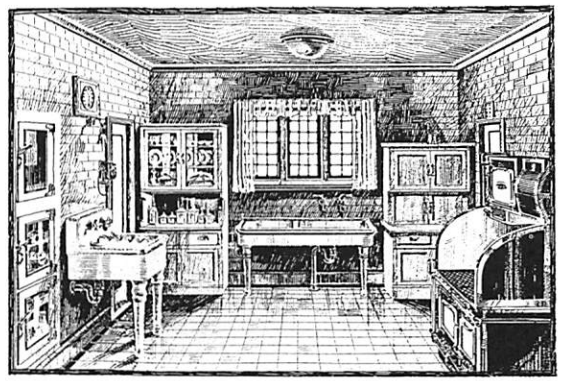
In another variation of this typical cabinet/sink/cabinet pattern, a unified countertop and sink formed a bridge between the two base cabinets. Designs of this type appeared in the 1910s and became common—but not standard—during the 20s. While the ensemble was still conceived in terms of a matched pair of vertical cabinets, the sink and work surface became a single horizontal plane (middle).

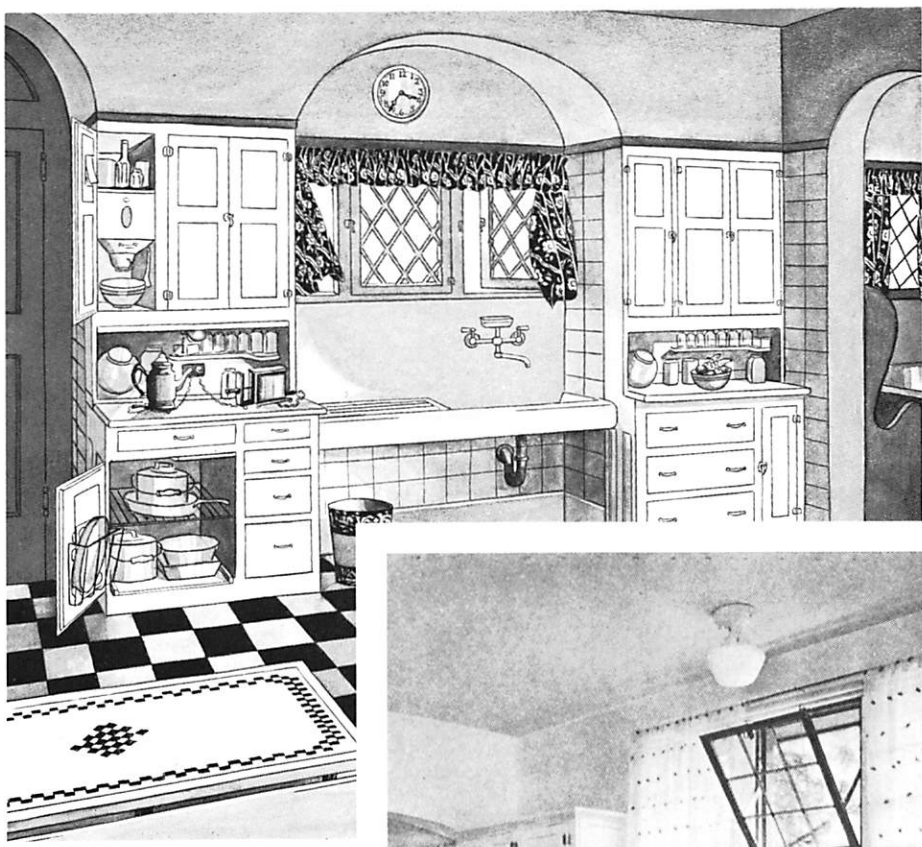
This horizontal configuration opened the way to conceiving the kitchen as two separate layers: the base cabinets, disengaged from the wall cabinets, could now freely wrap the walls of the room (bottom). Designs of this type appear in custom-built kitchens and pantries early in the century, but became a mass-produced reality in the late 20s and 30s, when kitchen cabinets were manufactured as modular, combinable systems. The most typical modern plans are the L, the U, the strip, and the galley; in the increasingly open plans of the 30s, banks of cabinets could also form partial room dividers between cooking and eating spaces. The horizontal bands of modern cabinets became a powerful grammar governing kitchen planning and appliance design.



Top, Premier Standardized wood work, 1929; collection Baltimore Gas and Electric Company. Middle, cabinet design redrawn from *American Home*, 1930. Bottom, drawing of a "compact kitchen," *Architectural Record*, 1939.

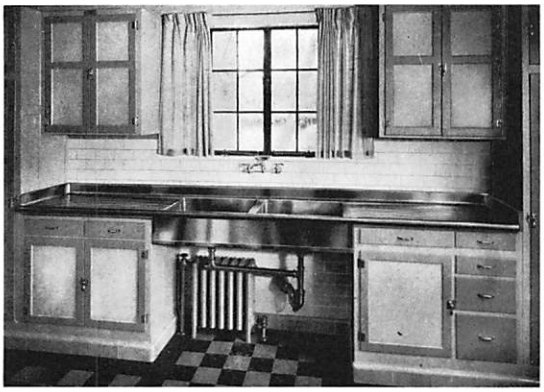
Right, kitchen furniture advertised by Crane, 1920, including vertical work/storage cabinets. The tile walls and exposed plumbing emulate the ethos of the modern bathroom, with "its alluring cleanliness and...carefully designed sanitary features."



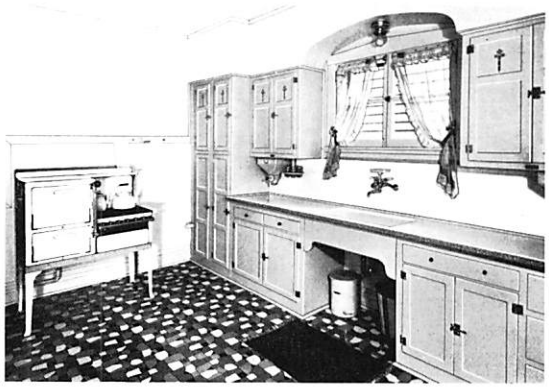


Above, kitchen furniture advertised by Napanee, 1928. Although the tall cabinets flanking the sink are built-in to the wall, each cabinet is conceived as a vertical unit—the top and bottom elements are linked by side panels.

Right, kitchen pictured in *American Home*, 1930. Again, the two tall cabinets are designed as vertical units. (One of them is only partially in view.) The sink is equipped with a Kohler electric dishwasher, introduced in 1925.



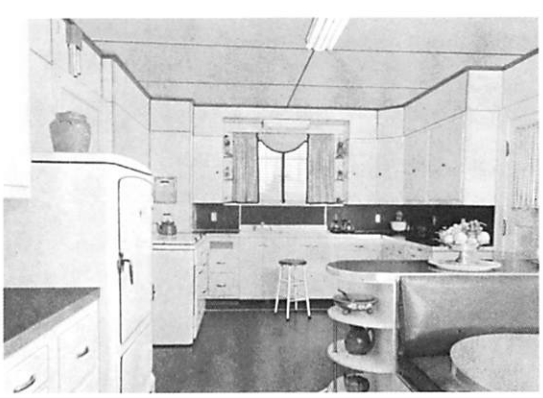
Left, kitchen featuring Monel Metal sink, advertised by the International Nickel Company, 1930. The sink forms a horizontal bridge between the two vertical cabinets. The sink and countertop consist of a single, seamless piece. Monel Metal sinks were heavily advertised throughout the 1930s.



Above, kitchen furniture from an Oxford Millwork catalogue, late 1920s. A porcelain-enamel metal sink forms a horizontal bridge between the two vertically aligned cabinets. The plumbing is enclosed behind screened doors, ventilating the space beneath the sink while concealing it from view. Collection of Baltimore Gas and Electric Company.

Left, kitchen furniture advertised by Hoosier Manufacturing Company, mid-1920s. The sink is dropped into a continuous countertop. Collection of Baltimore Gas and Electric Company.

Left, drawing of a "kitchen to come," from *House Beautiful*, 1934. Captioned as "a new angle on placing equipment," the design depicts base cabinets and wall cabinets as two independent, horizontal planes. The sink, stove, dishwasher, and base cabinets are united by a continuous-height work surface.



Above, Westinghouse kitchen interior, c.1940. White metal base and wall cabinets form two independent series. All the cabinet doors are finished with the same material, unlike the ensemble shown on the facing page, where screen doors ventilate the space beneath the sink. The only item which fails to be integrated is the refrigerator.

Left, kitchen interior advertising Armstrong's Monowall, 1942. The panelled wall and ceiling emphasize the modularity of the furniture and appliances. As usual, the refrigerator sticks out as a misfitted box.

Above, illustration from ad promoting "modern gas cookery," 1936, featuring the Magic Chef stove.

The Stove

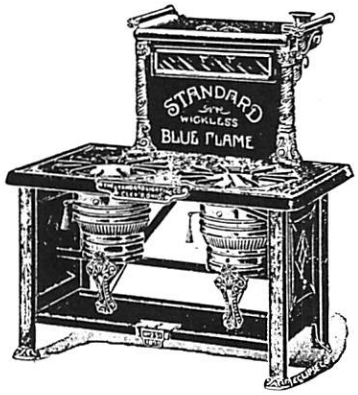
The traditional architectural hearth was reconceived as a manufactured appliance with the introduction of the cast-iron range around 1830.[4] Instead of burning fuel in an open space, the range concentrated the heat source inside a closed box. The principle of a metal box with a hot top and enclosed chambers for baking continued with the gas range, which gained public acceptance after 1880.

Like the open hearth, the solid-fuel range served for heating as well as cooking, a double-function appreciated in the winter months and resented in the summer. The intense heat generated by the cast-iron range could be further tapped by fitting it with a hot water tank, while the fuel-burning chamber provided a convenient method of garbage disposal. The multi-functionality of the coal range was especially valued in rural areas. "Combination ranges," which burn gas or oil as well as coal, were manufactured from the 1880s onward, and they continued to be advertised to farming households into the 1940s.

Early gas stoves emulated the heavy, bulky forms of the cast iron range. Around 1914, a stove was introduced in which the burner and oven stand on slender cabriole legs, a design which exploited the lighter mechanics of the gas stove, presenting it as a piece of elegant and independent furniture. This style became the dominant form of the 1920s, and was the pattern followed by the first practical electric stoves, introduced around 1930. The 30s were a period of intense competition between the manufacturers of gas and electric stoves, who introduced inventive new range types in hopes of materializing the elusive ethos of "modernity."[5] Out of the various solutions offered by designers, a standard type was established by the end of the decade: a flat-topped box which linked the stove to the continuous horizontal work surface established by the base cabinets.

4. The best account of stove design and technology remains Siegfried Giedion, *Mechanization Takes Command*, 527-547. See also Christine Hardyment, *From Microwave to Mangle*, 113-132, and Gordon Bock, "Stove Love," *Old House Journal* Vol. 47, No. 4 (July/ August 1989): 27-31.

5. Jane Busch, "Cooking Competition: Technology on the Domestic Market in the 1930s," *Technology and Culture* Vol. 24 No. 2 (April 1983): 224-45.



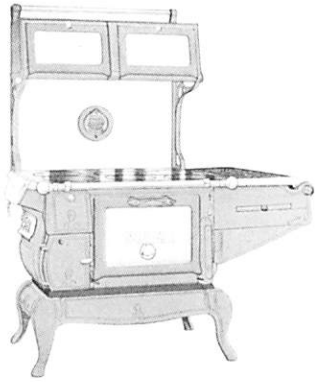
Right, Magee cast-iron coal range, advertised in 1897. The squat, heavy range offered a pattern for early gas stoves. At the turn of the century, less densely ornamented, more "sanitary" iron ranges became popular.

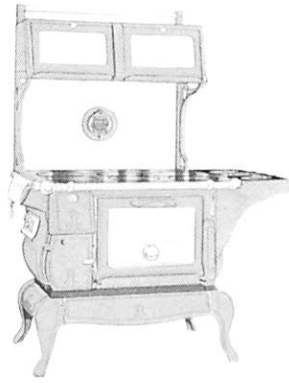
Far right, Howes oil stove, advertised in 1899. Oil stoves were used on farms, where homes were not hooked up to municipal gas lines.

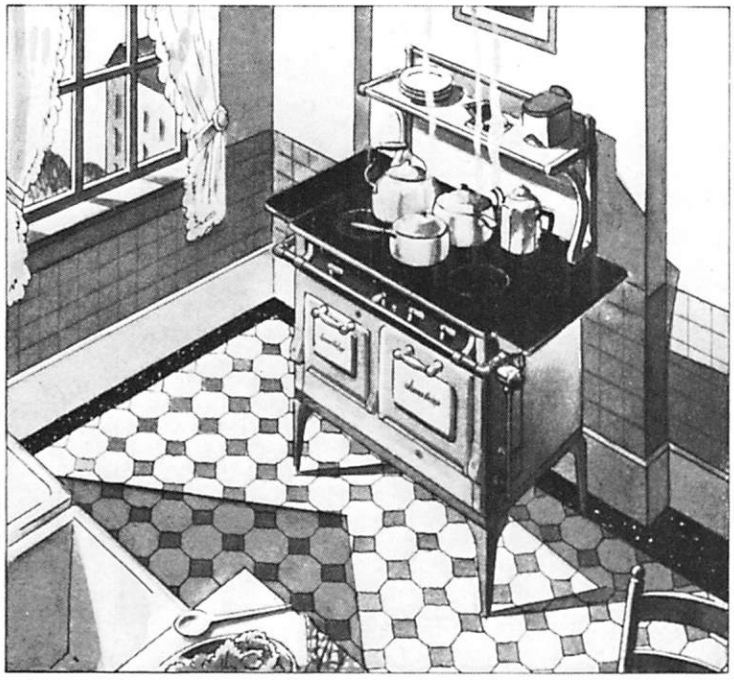
Multi-Function Ranges

"Combination ranges" burning more than one kind of fuel were marketed through the 1940s. Below, the Loki Oil Gas Burner could be added to a solid-fuel range, advertised in 1897.

Right, coal/gas and coal/electric stoves were both manufactured by Excelsior Stove in 1931. The styling of the two stoves is nearly identical.

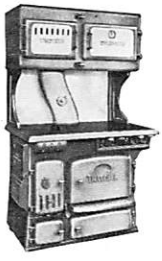


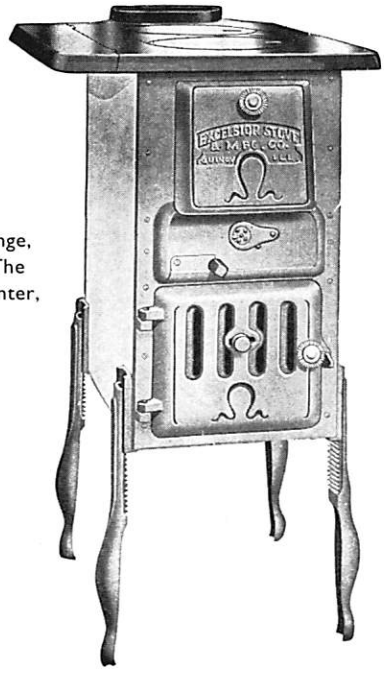




Above, the Smooth Top gas range, advertised in 1928, was an early example of a single-level range. The continuous top was compared to that of a coal range. Thus, while appearing "modern" in its design, the Smooth Top recalled an older type.

Below, combination coal/gas range, advertised by Thatcher, 1928. The coal would be burned in the winter, and gas in the summer.



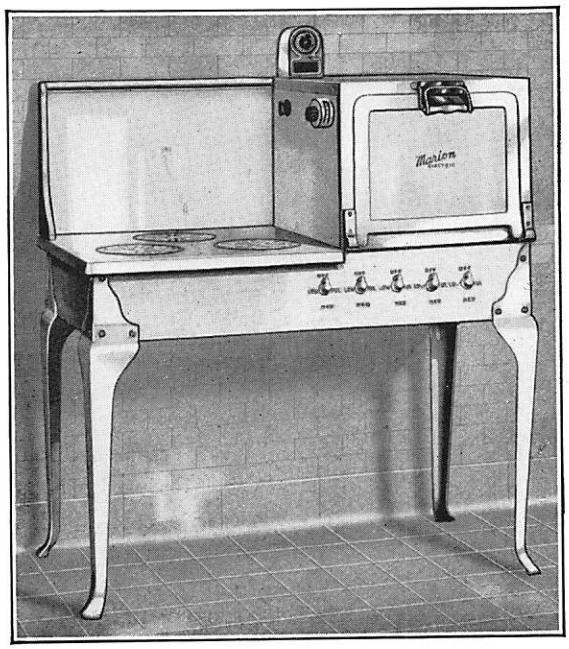


Left, this narrow coal-burning stove, advertised in 1931, was designed to add on to a gas or electric range, providing heat in the winter and a handy incinerator for garbage.

The Stove as Furniture

After 1914, the most popular type of range exploited the light, compact mechanics of gas technology: the burner and oven stand on slender cabriole legs, modelled after domestic furniture (below left). Early electric stoves followed the same pattern (below right). Unlike the single-level stoves which became standard by the end of the 30s, the split-level stove allows the cook to open the oven and broiler without stooping over. Advertised by Excelsior Stove and Manufacturing Company, 1931.

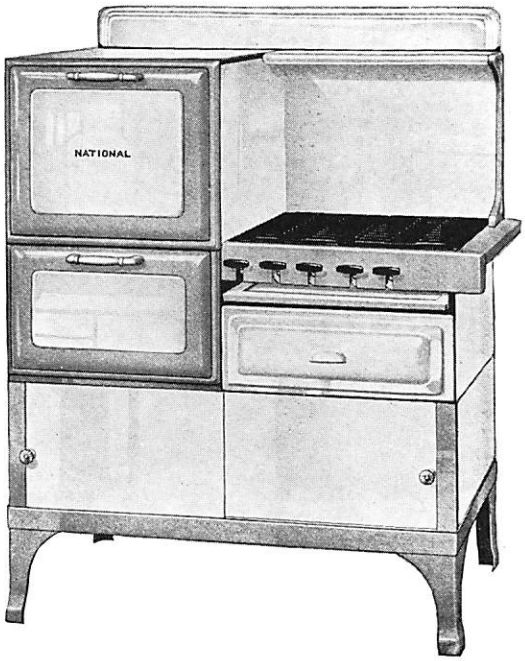
Left, compact unit combining an electric cook-top, oven, and refrigerator, 1930. Collection of Baltimore Gas and Electric Company.



The split level stove was the basis for numerous design variations.

Right, the open space beneath the legs is enclosed for storage.

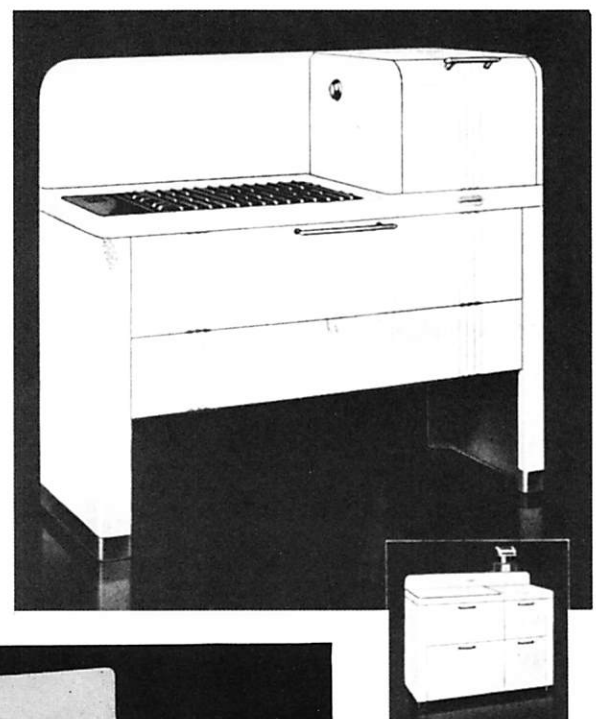
Far right, the stove is a cubic volume clad in faux marble. Storage is provided beneath the cook top.

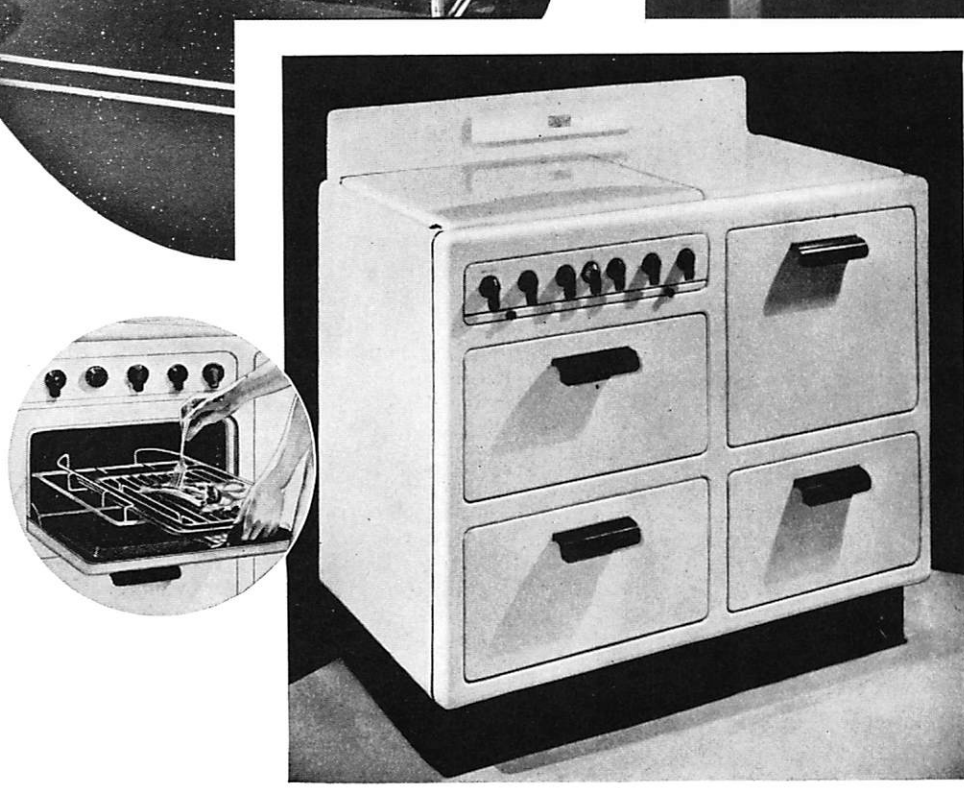


The Streamlined Stove

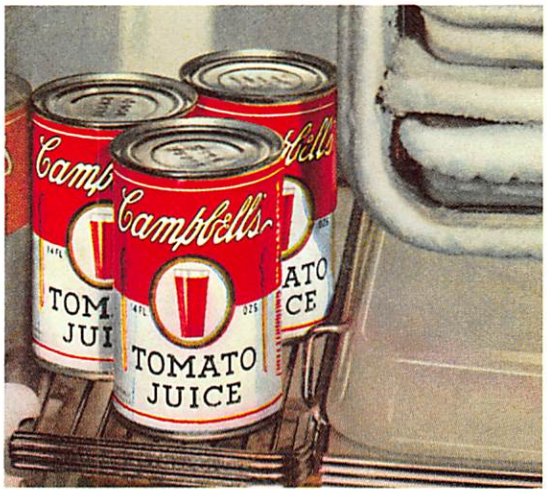
During the 1930s designers tried to reinvent the stove according to the principles of streamlining. Left, the Magic Chef stove, advertised in 1936, consists of metal boxes suspended in a chrome frame. The furniture-style legs of the 1920s have been replaced by an abstract grid.

Below, the Perfection Oil-Burning Stove is a less imaginative solution: the volumes of the standard range have been encased inside a rounded shell, marked with graphic "speed lines."





Left, Norman Bel Geddes's 1933 design for Standard Gas Equipment Company became the basis for the modern stove. Modular panels are clipped to a steel frame, allowing assembly of several models from one kit of parts. The single-level stove coordinates with the base cabinets of the continuous kitchen.



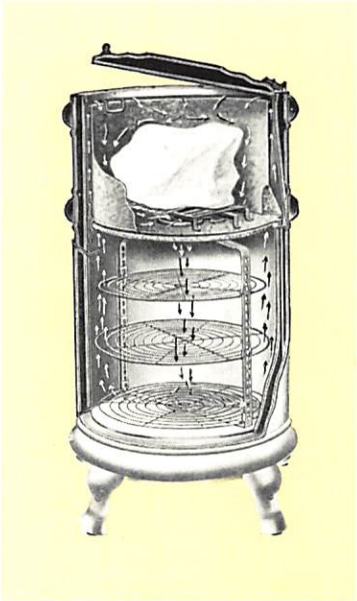
Above, an ad for Campbell's Tomato Juice (1940) links the product to its refrigerated environment.

The Refrigerator

By 1940, mechanical refrigerators were installed in 64 percent of electrified homes.[6] The electric refrigerator was preceded by the ice box, deemed more necessary in the hot and humid US than in cooler Great Britain and northern Europe. To this day, Americans are known for their conoisseurship of the ice-cold drink. Commercial ice-making machines were introduced in the 1860s, enabling the rise of cold-storage warehouses, refrigerated railroad cars, and the delivery of ice for home use. The non-mechanical refrigerator was an insulated chamber made of wood or metal stocked with melting ice; cold air circulating through the box absorbed heat from the stored food. The mechanical refrigerator evaporates and recondenses a liquid such as amonia or alcohol to cool the air inside the box. Domestic mechanical refrigerators were introduced in the US in 1916; at $900 per unit, they were beyond the reach of all but the wealthiest families. As mass manufacturers such as General Electric and General Motors (parent of Frigidaire) entered the business, prices dropped, ensuring a growing market for mechanical food coolers in the 20s and 30s.

6. Carolyn Bell Shaw, *Consumer Choice in the American Economy* (New York: Random House, 1967) 32. On the technology of refrigeration, see Giedion, 596-605; Hardyment, 137-144; and Sparke, *passim*. See also Grace T. Hadley, "Refrigeration at Home," *House and Garden* Vol. 37 No. 1 (January 1920): 59, 66.

The styling of the refrigerator more or less followed that of the stove: cabriole legs and furniture-style fittings were gradually absorbed into a white monolithic box stamped with the motifs of streamlining. The tall, massive refrigerator failed to conform, however, to the seamless horizontality established by the cabinets, sinks, and stoves of the late 30s. Upscale kitchen manufacturers recently have discovered the market appeal of flush, built-in refrigerators with custom doors fitted with the same material as a kitchen's cabinets.

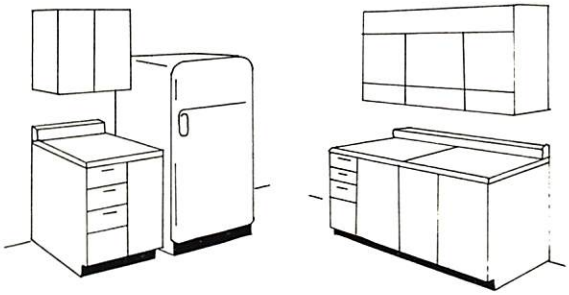


Non-mechanical refrigerators exploit the natural circulation of hot and cold air. As the cut-away drawing of the Great White Frost refrigerator (c.1908) explains at left, air enters the top of the refrigerator, where its warmth is absorbed by the melting ice. This cold, heavy air then travels downward, where it absorbs heat from the stored food material. As the air grows warmer, it rises back up to the ice chamber, and is cooled again.

Although simple in principle, the ice box could become an elaborate, high-maintenance appliance with many parts requiring frequent cleaning.

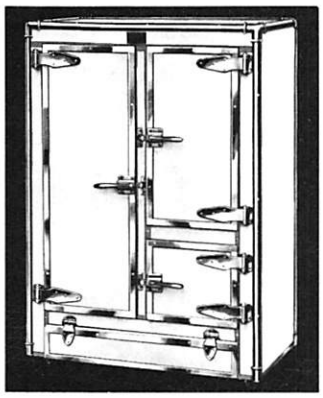
Left, the White Mountain refrigerator, 1900.

GE's "wall refrigerator," marketed in the mid-50s, was an ingenious if absurd attempt to make the refrigerator conform to the horizontal, modular ideal of the continuous kitchen. The ice box is installed like a wall cabinet, placing "all foods at eye level." The ergonomics of the design are dubious—as in wall cabinets, the top shelves of the refrigerator would be too high for a child or small adult. Collection Baltimore Gas and Electric Co.



Right, non-mechanical refrigerators advertised by Seeger, 1925. They could be hooked up to an external compressor, located in the basement.

Below, GE introduced the Monitor Top in 1926. Because the compressor is located above the box, the refrigerator could stand off the floor on cabriole legs. The Monitor Top was manufactured until the mid-1930s.



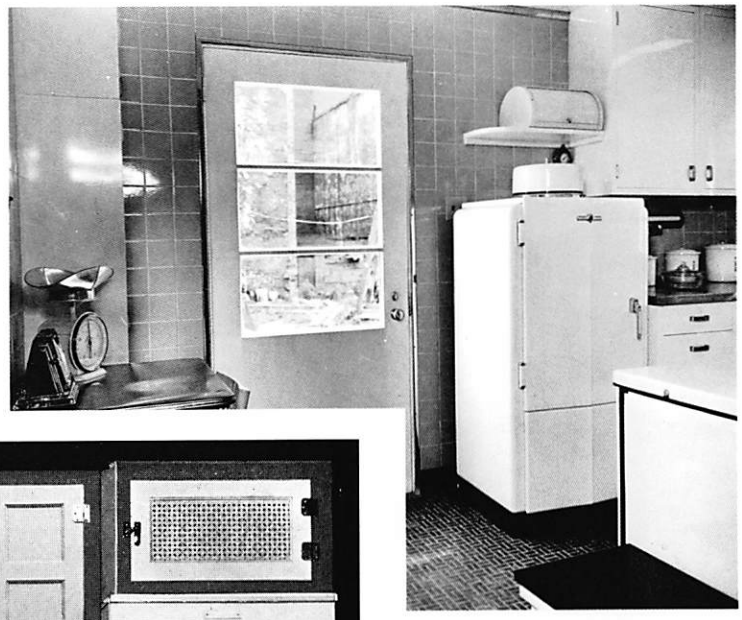
Below, General Motor's Frigidaire, advertised in 1938. Penny Sparke has pointed out that a refrigerator, like a car, is a bulbous metal box with a motor (20).

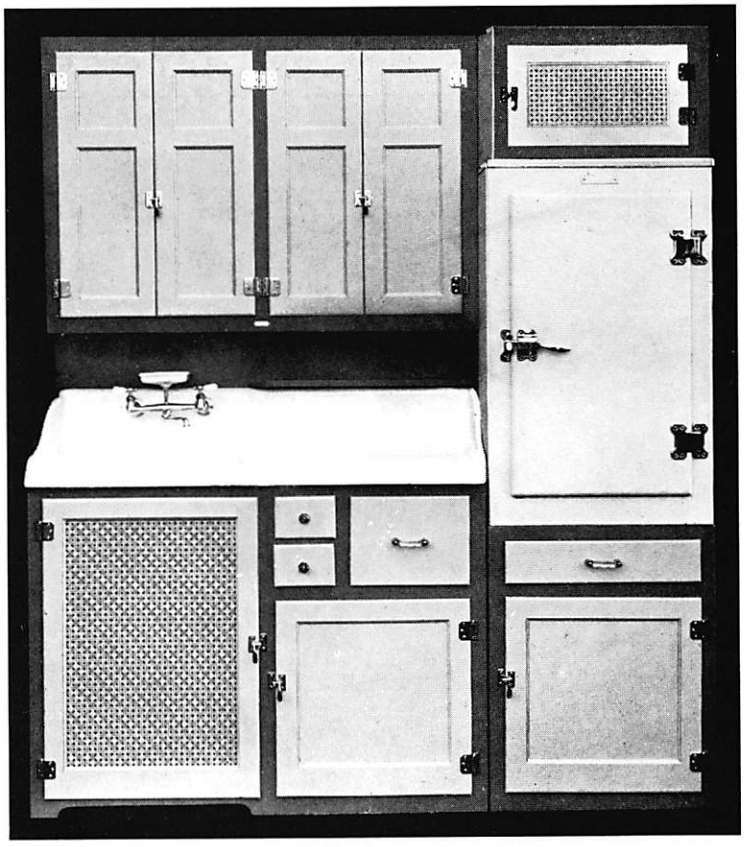
Right, Kelvinator refrigerator, advertised in 1930. The compressor is located in the base.

The Refrigerator and its Environment

The dimensions of the refrigerator in the kitchen at right, 1940, fail to co-ordinate with the modular elements of the interior.

The cabinet system below, advertised by Oxford Millwork in the late 20s, includes a built-in refrigerator. It is, however, a non-mechanical ice box.





Left, Frigidaire, 1925. A conventional ice box could be fitted with an external motor, installed in the basement and connected to the refrigerator through the floor. Frigidaire offered either to sell only the mechanism, or a complete system. The cabinet and the mechanism were conceived as separate units.

Right, Frigidaire, advertised in 1920. The compressor is located in the large base, bringing the refrigerator cabinet to roughly the same height as the base kitchen cabinets. The overall height, however, is unrelated to the surrounding cabinets.

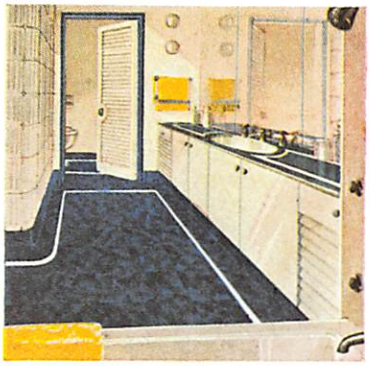
Left, Kelvinator, 1928, installed flush with the wall; an unusual attempt to make a built-in electric refrigerator.

All images on this page, collection of Baltimore Gas and Electric Co.

Lyle Wheeler* — famous designer shows you a new, simpler way to room loveliness

*** 1. IF YOU SAW** "Intermezzo," "Rebecca," or "Gone with the Wind," you will remember the beautiful rooms by Lyle Wheeler, Art Director of Selznick-International.

On this page, Lyle Wheeler shows you how Pabco "Luxury Floors" of genuine Inlaid Linoleum make it easy for *you* to achieve charming and unusual effects, even in your strictly utility rooms. Remember, Pabco "Luxury Floors" of inlaid squares, far superior in decorative effect, cost no more than ordinary linoleums.



2. "THE RIGHT BLUE can do wonders for a bathroom," says Lyle Wheeler. "Look how Pabco's swirl marbled squares highlight the chaste beauty of this bathroom. The same rich blue linoleum covers the dressing table. Feature strips are Pabco's white linoleum."

3. "EVEN YOUR LAUNDRY can have glamour," says Lyle Wheeler. "Here I selected Pabco's swirl marbled squares (the Silver Fox pattern) —beautiful, smart, and practical. Feature strip is Pabco's white linoleum." Ask your dealer for Pabco's new "Decorative Hints" booklet.

4. "IT MAY SEEM DARING," says Lyle Wheeler, "but here's a white linoleum that you can put on your kitchen floor. It's Pabco's 'Whitest White' (No. 2623) with ready built-in fleur-de-lis insets. It doesn't show foot marks like ordinary linoleum. I have used this pattern with a feature strip of Pabco's red linoleum (No. 124) and coved base of black linoleum. The matching linoleum working surfaces are a perfect decorative touch—and extremely practical."

PABCO LINOLEUM

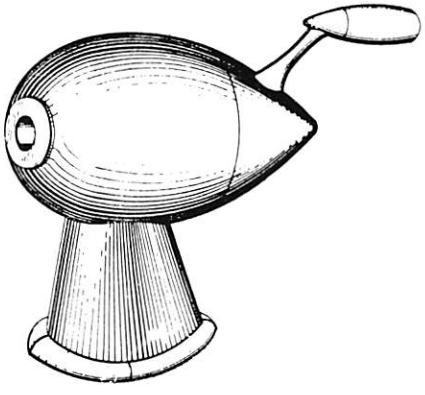
LUXURY FLOORS AT REGULAR LINOLEUM PRICES

The Paraffine Companies, Inc., New York, Chicago, San Francisco, Makers, also, of Pabco "Stainless Sheen" Floor Coverings

STREAMLINING
The Aesthetics of Waste

The dream kitchen shown in the 1940 ad at left confronts its user with the conflicting ideals of the modern factory and the private home. The rounded forms and consistent metal surface of this kitchen suggest an organism cast out of a single material.

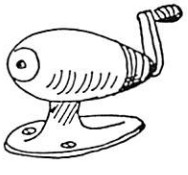
During the 1920s and 30s, the modern bathroom and kitchen consolidated out of disparate collections of furniture and appliances into coordinated structures built-in to their surroundings. The bathroom became a compact organism lodged at the core of the home, while the kitchen became a miniaturized, open plan factory. The bathroom and kitchen formed twin temples to the processes of elimination, offering technological environments for the care of biological and economic consumption. We suggest that streamlining, the design style which enveloped innumerable American products in the 1930s, took shape out of the compelling ethos of bodily hygiene and domestic discipline embodied in the modern bathroom and kitchen. The industrially finished yet organically modeled forms of streamlining functioned, in part, as an excretory aesthetic, a plastic celebration of waste.



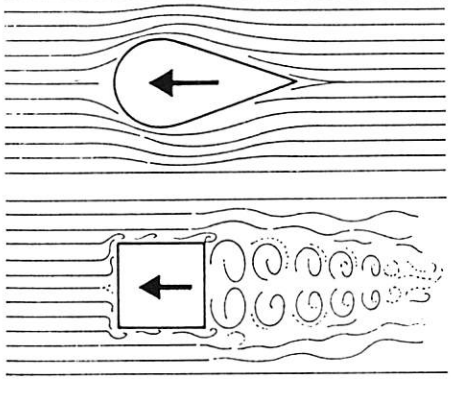
Raymond Loewy, patent drawing for a streamlined pencil sharpener, 1934.

The technical term *streamline* refers to the path of a particle in fluid as it passes beyond a solid body. The study of streamlining began in the late nineteenth century as part of the new science of aerodynamics. The verb *to streamline*, dating from 1913, means to design or construct with a streamline: to modernize, to organize, to make more efficient and simple.[1]

Streamlining initially was applied to aircraft, ships, locomotives, and automobiles in order to reduce the friction encountered as the vehicle passes through air or water. It quickly became a stylistic code evoking "speed" and "modernity," applied to immobile objects for whom aerodynamic engineering is more fictional than functional. Raymond Loewy's teardrop pencil sharpener of 1934 (above) became a mythic object lesson in the misapplication of streamlining, cited by later critics as styling at its most absurdly theatrical.

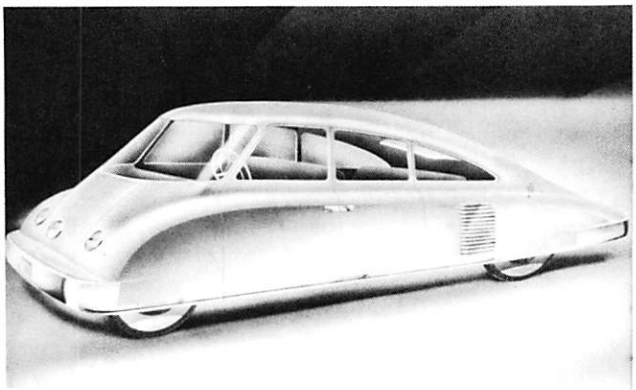


Below, diagram of streamlined and non-streamlined forms moving through a fluid. From Donald Bush, *The Streamlined Decade*.



1. On the origins of streamlining, see Donald J. Bush, *The Streamlined Decade* (New York: George Braziller, 1975) and Harold van Doren, *Industrial Design: A Practical Guide* (New York: McGraw-Hill Book Company, 1940), 137-152. On American industrial design, see Richard Guy Wilson, Dianne H. Pilgrim, and Dickran Tashjian, *The Machine Age in America, 1918-1941* (New York: Brooklyn Museum, 1986) and Jeffrey L. Meikle, *Twentieth Century Limited: Industrial Design in America, 1925-1939* (Philadelphia: Temple University Press, 1979).

The industrial designer Henry Dreyfuss looked back at streamlining as a "strange detour" in modernism, and he singled out Loewy's pencil sharpener for attack: "Hearses and fountain pens and pencil sharpeners were stupidly modeled after the teardrop... Some critics pointed out that fountain pens and...baby buggies seldom stir up much of a breeze, and a streamlined pencil sharpener couldn't get away if it tried..." His drawing emphasizes the screws holding the object to the table. *Designing for People*, 1955.



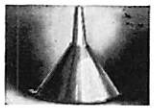
Walter Dorwin Teague, car design, 1938. Teague wrote, "No matter how complicated our products may be...their parts must relate themselves so closely that our minds need not deal with them as separate details, but can perceive them all at once as a body having an individuality and identity of its own." *Design this Day: The Technique of Order in the Machine Age* (New York: Harcourt Brace, 1940), 104.

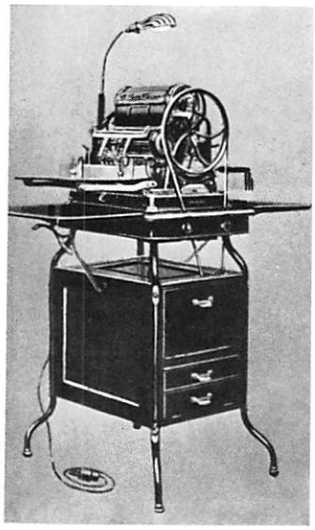
The continuous, sculptural forms of streamlined objects seek to minimize mechanical joints and eliminate visible hinges, bolts, and screws. This aspiration towards seamless construction was achieved by applying the processes of stamping, molding, and extrusion to metals and plastics such as steel, aluminum, bakelite, and beetleware.[2] Each of these techniques depends on the existence of a "body" from which the finished product will take its shape. In stamping, a sheet of material is struck against an exterior form; in molding, a formless substance replicates the interior contours of a vessel; in extrusion, a malleable material is forced through a shaped aperture. Stamping, molding, and extrusion each impart a clear, definitive form to a shapeless material.

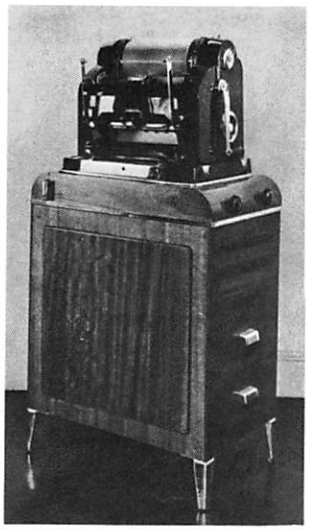
2. Clark N. Robinson, *Meet the Plastics* (New York: MacMillan Company, 1949) and J. Beresford-Evans, "British Industrial Plastics Limited," *Design* No. 60 (December 1953): 11-17.

Streamlining generalizes an object, enveloping its constituent parts inside a continuous body. The industrial designers of the 1920s and 30s sculpted shells to conceal the mechanical organs of objects, initiating a distinction between inside and outside, structure and skin. Numerous examples of product design primarily engage the outer casing of a device, not its working parts; many industrial designers began their careers in packaging, a medium whose built-in disposability offered a model for the planned obsolescence of so-called "durable" goods. The continual stylistic update of consumer items such as refrigerators, toasters, and cars shortened their life span and ensured their rapid replacement by new models.

By masking the machine's internal operation, the designer domesticated and humanized it. Raymond Loewy was certainly aware of the bodily, anthropomorphic quality of his design; in his autobiography he invokes the body of Betty Grable, "whose liver and kidneys are no doubt adorable, though I would rather have her with skin than without" (220). Loewy courts a coy Freudianism by titling a chapter of his book "Sex and the Loco-







Left, Gestetner duplicator, redesigned by Raymond Loewy in 1929; introduced in 1933. Loewy's redesign served to enclose the working parts of the equipment inside a container or shell. In his autobiography, he describes swaddling the client's existing device with a hundred pounds of modeling clay, creating the prototype for the product's new industrial skin and introducing a distinction between inside and outside (81-84).

Above right, stages in the stamping of an aluminum funnel, 1922.

Raymond Loewy standing on his steam engine, from *Never Leave Well Enough Alone*. Loewy played upon the conventional association of trains with phallic penetration. Loewy also rhapsodized on the Coke bottle: "Even when wet and cold, its twin-sphered body offers a delightful valley for the friendly hold of one's hand, a feel that is cozy and luscious. It is interesting to watch the almost caressing, affectionate way with which the average teenager fondles his Coke bottle" (297).

motive," and he reveals that it was on a train that he was first kissed; such phallic innuendos resurface in publicity shots of Loewy astride his steam engines.

Within the literature on streamlining, phallic symbolism is an accepted subtext: for example, the first chapter of *The Streamlined Decade*, by Donald Bush, is titled "The Science of Penetration." Streamlining's evocation of movement, agency, and progress, and its propensity for tapered, conical, and cylindrical forms, makes it a susceptible carrier for masculine sexual connotations.[3] Yet the reduction of streamlined imagery to a phallic theme overlooks another bodily process: *the process of elimination*. Streamlining presents a surreal conflation of the man-made and the natural; it yields industrial objects whose complex curvature conforms to notions of the organic rather than the mechanical. By engaging the system of deliberate obsolescence with forms that are biologically curved yet industrially hard and incorruptible—and products that are agressively "clean" yet designed to be thrown away—streamlining embodied an aesthetics of waste, a material style for expressing the logic of consumption.

In his 1918 essay on anal eroticism, Ernest Jones described two possible reactions to excrement, carried into adult life from childhood experiences of pleasure and shame around the act of defecation.[4] One reaction, largely negative, results in disgust for all forms of waste, from dust, dirt, and soiled

3. Richard Pommer acknowledges the sexual, yet strictly phallic, implications of streamlining in "Loewy and the Industrial Skin Game," *Art in America* (March/April 1976): 46-47.

4. Ernest Jones, "Anal-Erotic Character Traits," in *Papers on Psycho-Analysis* (New York: Beacon, 1961; first published 1918), 413-437.

Left, corset ad, 1939. The female body is another site for the molding action of streamlining.

Right, streamlined appliances, advertised in 1938. The styling of a high-speed train is applied to small household objects.

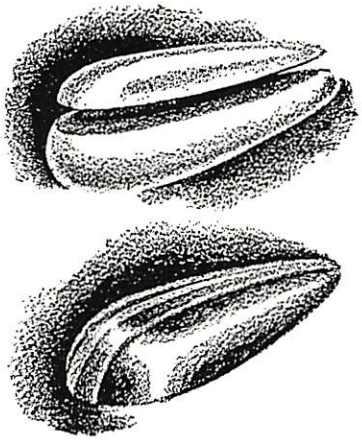
Graphic from an ad for Fels-Naptha laundry soap, 1932. The copy exhorts, "Sounds funny, maybe, to buy soap with your nose. But millions of women do. They smell the big golden bar—smell the generous amount of naptha in it—and realize that Fels Naptha soap offers not one helper, but two. Not soap alone, but soap *and* naptha..." This ad appeals to the sublimated, bodily sense of smell, rather than to the intellectual faculty of sight.

linen to wasted time. In behavior, the hatred of filth manifests itself in extreme stinginess, fastidiousness, and organizational compulsiveness—a general "witholding" or "holding in." This first reaction to dirt is expressed in modern design's imperative for cleanliness and enclosure, as evidenced, for example, in continuous kitchen cabinets, built-in bathtubs, seamless food packages, and streamlined office equipment. The modern obsession with dirt *affirms* filth even as its seeks to eradicate it: the attention to dust, sweat, bad breath, cooking odors, and the innumerable germs hiding in the cracks and crevices of the home was a process of *objectification* as well as elimination, making visible what had once been invisible, bringing to the surface impurities that once had passed unnoticed.

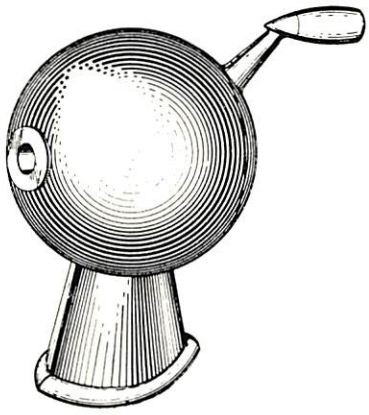
Jones describes a second response to anal eroticism, which acts upon symbols of waste in a *productive* manner: here, waste becomes the material of art, generosity, and a general "giving out." Similarly, in the enthusiastic vocabulary of consumerism, phrases like Christine Frederick's "creative waste" elevated the rhythmic disposal of goods to a form of positive *making*. The seemingly "natural" life cycle of objects was propelled forward by streamlining, whose organic yet industrial forms marked the coexistence of a fetishized cleanliness with an economy dependent on waste.

As Stuart Ewen has pointed out, the marketing and advertising industry was familiar with Freud's manifesto of sublimation, *Civilization and its Discontents*. For example, Egmont Arens noted in his 1932 text *Consumer Engineering* that *touch* is one of the "sublimated" senses of modern culture—touch is a primitive faculty that has been culturally supplanted by the more intellectual, "objective" senses of sight and sound. Arens encouraged designers of products and packages to appeal to the forgotten pleasures of tactility.[5] The sense of touch demands direct contact between body and product; like taste and smell, touch *incorporates* the object of perception—physically *consuming* it—rather than observing it from a neutral distance.

5. Stuart Ewen, *All Consuming Images* (New York: Basic Books, 1988), 49.



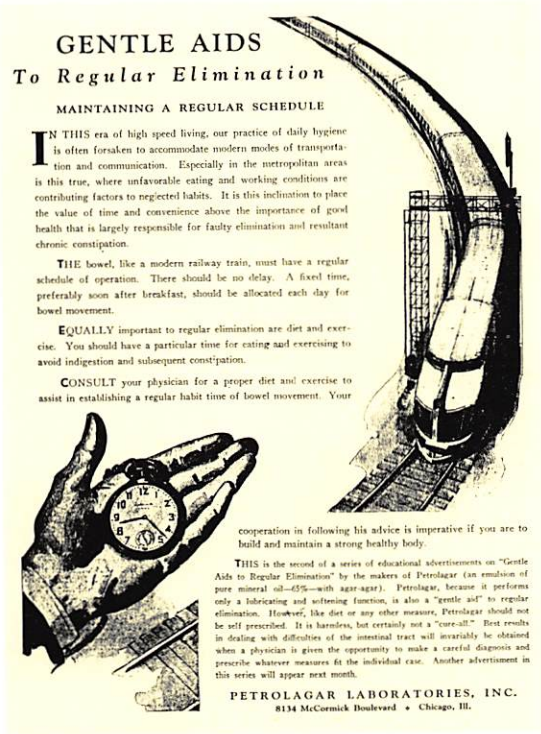
Recalling a child's pleasure in playing with clay (and earlier feces), the industrial designer Harold van Doren identified the preferred substance for modelling as a "grayish-green clay which works readily in the fingers." Favoring manual tactility over the intellectual abstraction of drawing, Van Doren described the design process as a movement away from the objective sense of sight to the forgotten sense of touch: "as you gain experience, you will find yourself depending more and more on clay and less and less on paper" (208). At right, variations on the "airfoil solid," created by slicing the volume with cuts parallel to its long axis. *Industrial Design*, 1940.



We argue that modern design's appeal to the sublimated sense of touch participated in a larger excretory aesthetic. As described by Sandor Ferenczi, tactility is part of a child's pleasure in handling his or her own feces. Excrement, a convenient but socially offensive toy, is displaced during the child's development by a series of progressively abstract substances: from clay, sand, and rubber to pebbles, marbles, and coins.[6] The organically curved yet slick, inpenetrable surfaces of streamlined merchandise embody a similar progression from soft to hard, dull to shiny, porous to non-porous, formless to formal. The prototypes for streamlined products typically were molded out of clay and then cast or stamped out of metal or plastic. Each object thus narrates a transformation from pliable, organic matter to a rigid, inpenetrable form impervious to change and resistant to grime. The hard surface of the finshed product retains the direct trace of its soft, globular origins, lodged in its contours like a childhood memory.

6. Sandor Ferenczi, "The Ontogenesis of the Interest in Money," in Ferenczi and Otto Rank, *Sex in Psycho-Analysis* (New York: Dover, 1956; first published 1914), 269-277.

Raymond Loewy's much maligned pencil sharpener expresses a contradictory aesthetic of waste: its bulbous form reflects a pleasure in manipulating plastic matter, as well as a fastidious interest in hiding a messy interior behind the hard, clean physique of a "streamlined" body. Loewy's pencil sharpener, born out of soft, dull clay and then cast into a hard, shiny rigid, recalls the biological extrusions of feces, the child's first work of art; by engaging the policy of planned obsolescence, the pencil sharpener participated in the cycle of economic consumption as well. Streamlining conflates the life of the product with the life of the body, compacting into one form the *processes of elimination*: biological, economic, and stylistic.



GENTLE AIDS

To Regular Elimination

MAINTAINING A REGULAR SCHEDULE

IN THIS era of high speed living, our practice of daily hygiene is often forsaken to accommodate modern modes of transportation and communication. Especially in the metropolitan areas is this true, where unfavorable eating and working conditions are contributing factors to neglected habits. It is this inclination to place the value of time and convenience above the importance of good health that is largely responsible for faulty elimination and resultant chronic constipation.

THE bowel, like a modern railway train, must have a regular schedule of operation. There should be no delay. A fixed time, preferably soon after breakfast, should be allocated each day for bowel movement.

EQUALLY important to regular elimination are diet and exercise. You should have a particular time for eating and exercising to avoid indigestion and subsequent constipation.

CONSULT your physician for a proper diet and exercise to assist in establishing a regular habit time of bowel movement. Your cooperation in following his advice is imperative if you are to build and maintain a strong healthy body.

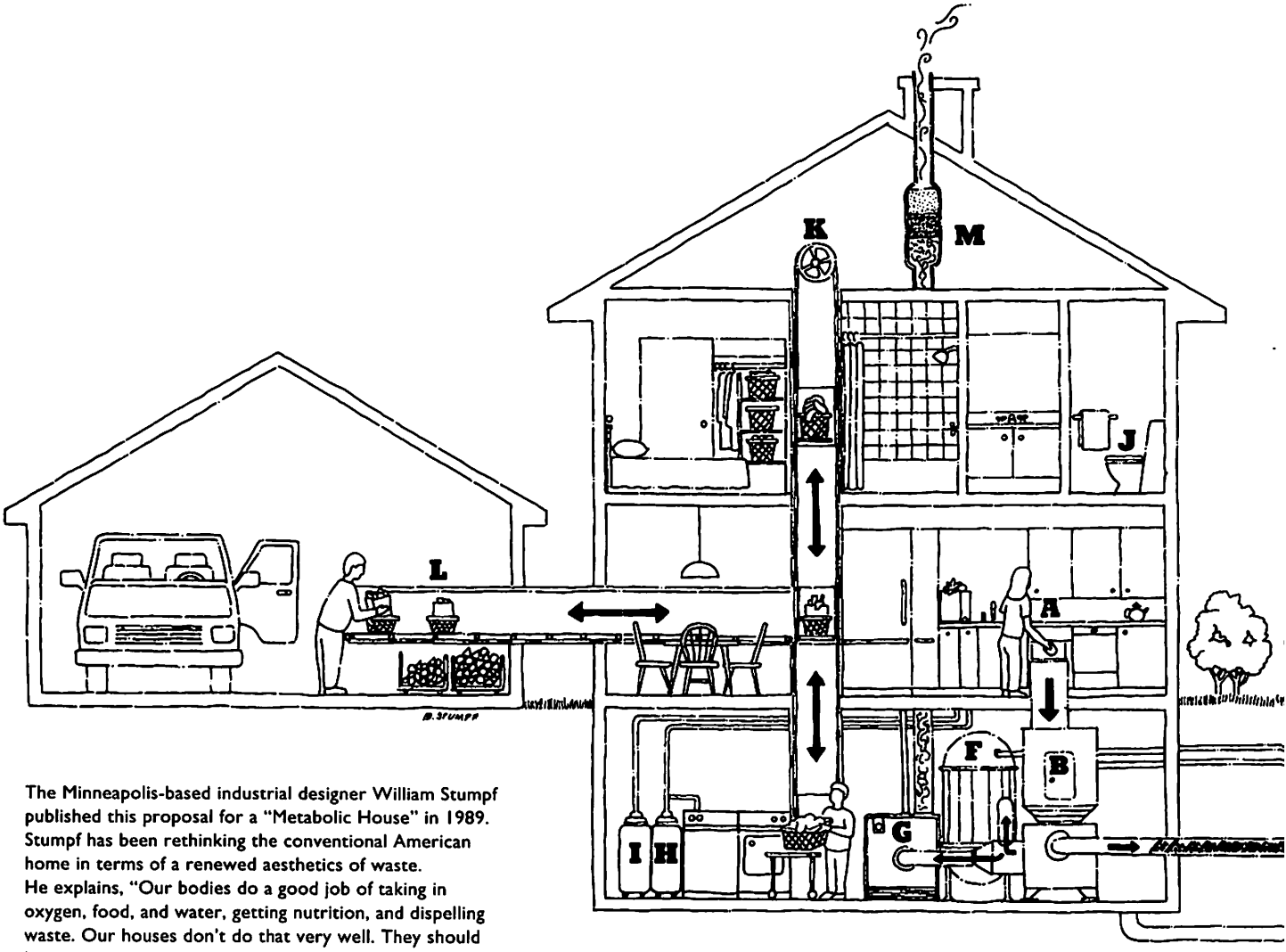
THIS is the second of a series of educational advertisements on "Gentle Aids to Regular Elimination" by the makers of Petrolagar (an emulsion of pure mineral oil—65%—with agar-agar). Petrolagar, because it performs only a lubricating and softening function, is also a "gentle aid" to regular elimination. However, like diet or any other measure, Petrolagar should not be self prescribed. It is harmless, but certainly not a "cure-all." Best results in dealing with difficulties of the intestinal tract will invariably be obtained when a physician is given the opportunity to make a careful diagnosis and prescribe whatever measures fit the individual case. Another advertisment in this series will appear next month.

PETROLAGAR LABORATORIES, INC.
8134 McCormick Boulevard • Chicago, Ill.

Streamlining, as an aesthetic and an ideology, conflated hygiene, waste, and efficiency, a nexus of values brought together in this 1937 ad for Petrolagar, a gentle laxative. The text describes a modern metropolis where "high speed living" and "unfavorable eating and working conditions" make unhealthy demands on the human body: "The bowel, like a modern railway, must have a regular schedule of operation."

The Metabolic House

WILLIAM STUMPF



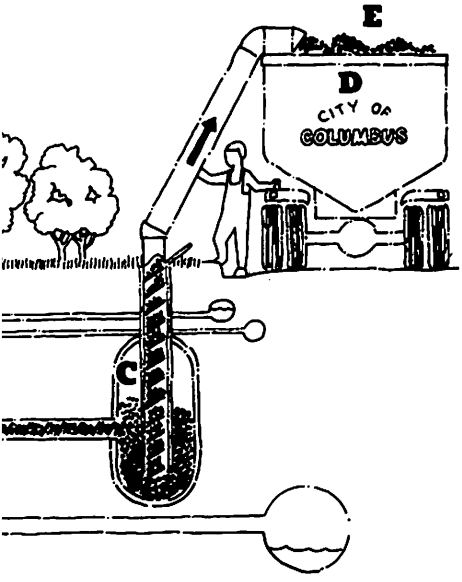
The Minneapolis-based industrial designer William Stumpf published this proposal for a "Metabolic House" in 1989. Stumpf has been rethinking the conventional American home in terms of a renewed aesthetics of waste. He explains, "Our bodies do a good job of taking in oxygen, food, and water, getting nutrition, and dispelling waste. Our houses don't do that very well. They should have a digestive system just like we do." The kitchen in Stumpf's Metabolic House is a highly articulated garbage center, with chutes for sorting recyclable and mulchable trash; paper is burned to heat the building. The bathroom features a "paperless toilet," a bidet-like fixture available in Japan and Switzerland.

Stumpf looks back at pre-twentieth-century architecture as one source of ideas. Before the age of disposable products, houses were equipped with built-in laundry chutes, dumbwaiters, and elaborate pantries. The modern continuous kitchen replaced many of these distinct architectural elements with manufactured cabinet systems, designed for easy access to packaged goods. The vertical and horizontal conveyor belts shown here were borrowed from the Shakers. See Patricia Leigh Brown, "Space for Trash: A New Design Frontier," *The New York Times* (July 27, 1989): C1, C12.

A Key to the Metabolic House

- **A** Recycling chute
- **B** Mulch processor
- **C** Mulch collector
- **D** Mulch pickup
- **E** Mulch
- **F** Paper/fuel processor tank
- **G** Furnace/boiler
- **H** Piped-in biodegradable detergent
- **I** Water recycling and distilling system
- **J** Paperless toilet
- **K** Vertical conveyor
- **L** Horizontal conveyor
- **M** Pollution control filters

THE FUTURE
A Renewed Aesthetics of Waste



The policy of planned obsolescence has dominated industrial design during the post-war period. The notion of a rhythmic cycle of product renewal and destruction, quickened by stylistic change, has continued to inform the practices of manufacturing, marketing, design, and consumption. Now, at the close of the twentieth century, the world's garbage dumps are filling up with the toxic artifacts of industrial culture, while the earth's atmosphere, water reserves, and other resources have been severely damaged and depleted. A shift towards a *new* aesthetics of waste is beginning to take shape: an ethos which values recycling and reuse over the stockpiling of discarded merchandise. The notion of "creative waste," promoted by Christine Frederick at the end of the 1920s, celebrated the deliberate disposal of goods as an economic imperative; her slogan must now be rethought in terms of an active confrontation with the problems of garbage, pollution, and diminishing resources.

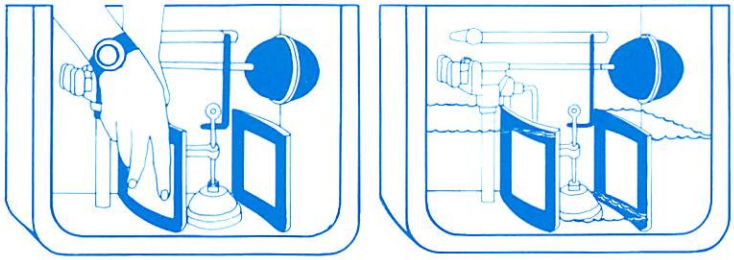
Freud, describing an infant's shift from an erotics of *orality* to an erotics of *anality*, narrated a move from passive consumption to active production. While the infant's first sensations of sexual pleasure are built upon the sucking of milk from the mother's breast—a condition of receiving—a later phase involves the recognition of feces as a valuable extension of the body, a situation in which the infant discovers his or her power over the outside world: the choice of when and where to defecate becomes a weapon. In this publication, we have linked the modern routines and technologies of digestion to the rise of a consumer economy, which defines waste as a form of positive production. The current interest in environmentally sound designs for bathrooms, kitchens, and products signals the appearance of a new activism of waste, a politics of garbage which views trash as a site for struggles over power. This new activism calls for informed consumers, responsive designers and manufacturers, and rigorous public policy, considered on global as well as local scales.

"The contents of the bowels...clearly are treated as a part of the infant's own body and represent his first 'gift': by producing them, he can express his active compliance with his environment, and, by witholding them, his disobedience."

Sigmund Freud

Three Essays on the Theory of Human Sexuality (52).

An existing toilet can be fitted with an inexpensive "dam," which seals off part of the reservoir in the tank, conserving water. Left, the "Superbowl" manufactured by Resources Conservation Inc., Greenwich, CT.



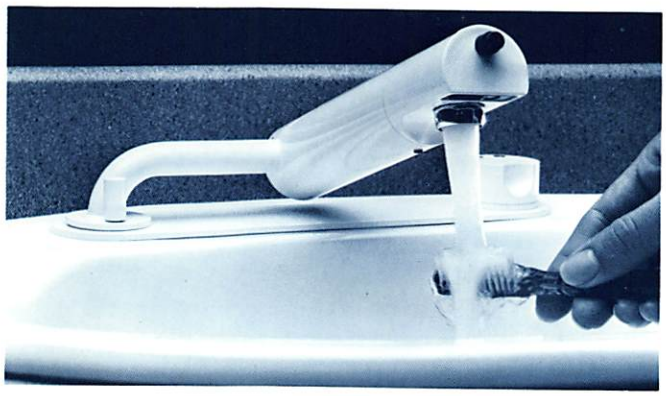
Ultra-low-flush toilets are designed to use a minimum of water (left); a ULF toilet can save between 18,000 and 26,400 gallons per year. Above, the Preserver II, manufactured by Eljer, Dallas, TX.

The bathroom and kitchen are major sites for water waste in the typical urban home. Environmentally aware design encourages its users to conserve water and heat, often through simple, readily available devices and intelligent placement of fixtures. For example, a faucet or shower head that turns on from a single handle, rather than from two separate knobs, encourages its user to shut the water on and off during the course of a task.

Toilets are an intensive source of waste. Silent, invisible leaks from the tank to the bowl result in tremendous water loss—a recent study found that the average three- to four-year-old toilet leaks up to 100 gallons a day. Standard toilets, even when working properly, use far more water for flushing than necessary.[1] An inventive approach to water waste in the bathroom is to install a sink over the toilet, which drains into the tank and provides water for flushing; arrangements of this type are available in Japan.

The kitchen is a site not only for water conservation but for managing consumer waste in general. The placement of garbage cans was not seriously considered during the evolution of the continuous kitchen; period views rarely show the can at all, which is assumed to be snugly stashed beneath the kitchen sink. Designers and publishers Jonathan and Patricia Poore have identified trash as the focus of the next design revolution: "In the past hundred years, social and technological changes have transformed kitchen design. Our absolute need to look at garbage differently will bring about the next sweeping change. Look for built-in composters and vented cabinets, chutes that carry used materials to storage bins in the cellar or yard, base cabinets that are actually rolling bins."[2] Solutions like these are found in the practical proposals made by designers such as William Stumpf and David Goldbeck, and by innovative consumers struggling to fashion answers out of the inadequate pool of equipment available for recycling at home. Stumpf suggests the human body as a model for domestic consumption: our houses "should have a digestive system just like we do."

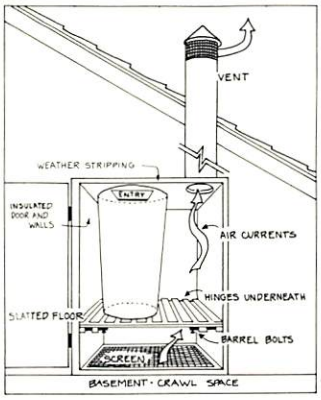
Any faucet or shower head that turns on from a single handle, rather than from two separate knobs, encourages its users to shut the water off while not in direct use. A more elaborate interpretation of this principle is the Capriccio faucet (right), whose electronic sensor turns the water off automatically when its sight line is clear. Manufactured by WaterFacets, Costa Mesa, CA.



1. Robert Kourik, "Tracking the Big Drip," *Garbage* Vol. III No. 2 (March/April 1991): 25-30.

2. Jonathan and Patricia Poore, "Kitchen Design for Recycling," *Garbage* Vol. I No. 1 (September/October 1989): 18-24.

All food waste in Goldbeck's kitchen is composted. An opening in the counter leads to a garbage can, accessed from the outside of the house. Drawing by Merle Cosgrove.



The Smart Kitchen

DAVID GOLDBECK

David Goldbeck has challenged the conventional modern kitchen by incorporating principles of recycling, composting, resource conservation, and universal access in his "smart" designs. Shown above is the kitchen in his own home (photography by Robert Perron); at left is a demonstration kitchen designed for the Health Valley food company in Irwindale, CA (photography by David Goldbeck). Both rooms reject the ideal of continuous cabinetry in favor of adjustable-height countertops and a mix of open and closed storage; a reveal at the base of the cabinets permits wheel-chair access. The recycling bins in the Health Valley kitchen rest on a pull-out platform. See David Goldbeck, *The Smart Kitchen: How to Design a Comfortable, Safe, Energy-Efficient, and Environment-Friendly Workspace* (Woodstock, NY: Ceres Press, 1989).

SELECTED BIBLIOGRAPHY

Arens, Egmont. "Imagination for Sale!" *Advertising Arts* (November 1931): 22-23.

Baker, Eric and Jane Martin. *Great Inventions, Good Intentions: An Illustrated History of American Design Patents.* San Francisco: Chronicle Books, 1990.

Banham, Reyner. *The Architecture of the Well-Tempered Environment.* Chicago: University of Chicago Press, 1969, 1984.

Berheide, Catherine White, and Sarah Fenstermaker Berk and Richard A. Berk. "Household Work in the Suburbs: The Job and its Participants." *Pacific Sociological Review* Vol. 19 No. 4 (October 1976): 491-518.

Beecher, Catharine, and Harriet Beecher Stowe. *American Woman's Home.* Hartford, CT: Stowe-Day Foundation, 1985.

Berch, Bettina. "Scientific Management in the Home: The Empress's New Clothes." *Journal of American Culture* Vol. 3 No. 3 (Fall 1980): 440-445.

Bock, Gordon. "Stove Love." *Old House Journal* Vol. 47 No. 4 (July/August 1989): 27-31.

Bose, Christine, and Philip L. Bereano and Mary Malloy. "Household Technology and the Social Construction of Housework." *Technology and Culture* Vol. 25 No. 1 (January 1984): 53-82.

Brown, Norman O. *Life Against Death: The Psychoanalytic Meaning of History.* Middletown, CT: Wesleyan University Press, 1959.

Brown, Patricia Leigh. "Space for Trash: A New Design Frontier." *The New York Times* (July 27, 1989): C1, C12.

Brown, Ray. "The Seat of Democracy: The Privy Humor of 'Chic' Sale." *Journal of American Studies* Vol. 3 No. 3 (Fall 1980): 409-416.

Burnham, John C. *How Superstition Won and Science Lost: Popularizing Science and Health in the United States.* New Brunswick: Rutgers University Press, 1987.

Busch, Jane. "Cooking Competition: Technology on the Domestic Market in the 1930s." *Technology and Culture* Vol. 24 No. 2 (April 1983): 224-45.

Bush, Donald J. *The Streamlined Decade.* New York: George Braziller, 1975.

Bushman, Richard L. and Claudia L. Bushman. "The Early History of Cleanliness in America." *Journal of American History* Vol. 74 (March 1988): 1213-1238.

Caplan, Ralph. "Circumstantial Evidence." *Industrial Design* Vol. 31 No. 4 (July/August 1984): 8-11.

Chandler, Alfred D. *The Visible Hand: The Managerial Revolution in American Business.* Cambridge: The Belknap Press of Harvard University Press, 1977.

Cowan, Ruth Schwartz. "The 'Industrial Revolution' in the Home: Household Technology and Social Change in the Twentieth Century." *Technology and Culture* Vol. 17 No. 1 (January 1976): 1-23.

—. *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave.* New York: Basic Books, 1983.

—. "Two Washes in the Morning and a Bridge Party at Night: The American Housewife Between the Wars." *Women's Studies* Vol. 3 (1976): 147-172.

Delaney, Janice, and Mary Jane Lupton and Emily Toth. *The Curse: A Cultural History of Menstruation.* Urbana: University of Illinois Press, 1988.

Douglas, Mary. *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo.* London: Ark Paperbacks, 1966.

Dreyfuss, Henry. *Designing for People.* New York: Simon and Schuster, 1955.

Ewen, Stuart. *All Consuming Images: The Politics of Style in Contemporary Culture.* New York: Basic Books, 1988.

Ferenczi, Sandor and Otto Rank. *Sex in Psycho-Analysis.* New York: Dover, 1956.

Forty, Adrian. *Objects of Desire.* New York: Pantheon, 1986.

Foucault, Michel. *Discipline and Punish: The Birth of the Prison.* Alan Sheridan, trans. New York: Random House, 1979.

Fox, Daniel M. *Health Policies and Health Politics, The British and American Experience 1911-1965.* Princeton: Princeton University Press, 1986.

Franken, Richard and Caroll B. Larrabee. *Packages that Sell.* New York: Harper and Brothers, 1928.

Frankl, Paul T. "Baths and Bath-Dressing Rooms." *House and Garden* (August 1927): 51-55.

Frederick, Christine. *Household Engineering: Scientific Management in the Home.* Chicago: American School of Home Economics, 1919.

—. *Selling Mrs. Consumer.* New York: The Business Bourse, 1929.

Freud, Sigmund. *Civilization and its Discontents.* James Strachey, trans. New York: W. W. Norton, 1961.

—. *Three Essays on the Theory of Sexuality.* New York: Basic Books, 1962.

—. *Totem and Taboo.* James Strachey, trans. New York: W. W. Norton, 1950.

Galbraith, John Kenneth. *Economics and the Public Purpose.* Boston: Houghton-Mifflin Company, 1973.

Giedion, Siegfried. *Mechanization Takes Command: A Contribution to an Anonymous History.* New York: Oxford University Press, 1948.

Gilbreth, Lillian. "Efficiency Methods Applied to Kitchen Design." *Architectural Record* Vol. 67 No. 3 (March 1930): 291-294.

Glassberg, David. "The Public Bath Movement in America." *American Studies* Vol. XX No. 2 (1979): 5-21.

Glazer-Malbin, Mona. "Housework." *Signs* Vol. 1 No. 4 (1976): 905-22.

Goldbeck, David. *The Smart Kitchen: How to Design a Comfortable, Safe, Energy-Efficient, and Environment-Friendly Workspace.* Woodstock, NY: Ceres Press, 1989.

Gowans, Alan. *The Comfortable House: North American Suburban Architecture, 1890-1930.* Cambridge: MIT Press, 1986.

Hardyment, Christine. *From Mangle to Microwave: The Mechanization of Household Work.* Cambridge: Polity Press, 1988.

Hayden, Dolores. *The Grand Domestic Revolution: A History of Feminist Designs for American Homes, Neighborhoods, and Cities.* Cambridge: MIT Press, 1981.

—. *Redesigning the American Dream: The Future of Housing, Work, and Family.* New York: W. W. Norton, 1984.

Heskett, John. *Industrial Design.* New York: Oxford University Press, 1980.

Hines, Thomas. *Richard Neutra and the Search for Modern Architecture.* New York: Oxford University Press, 1982.