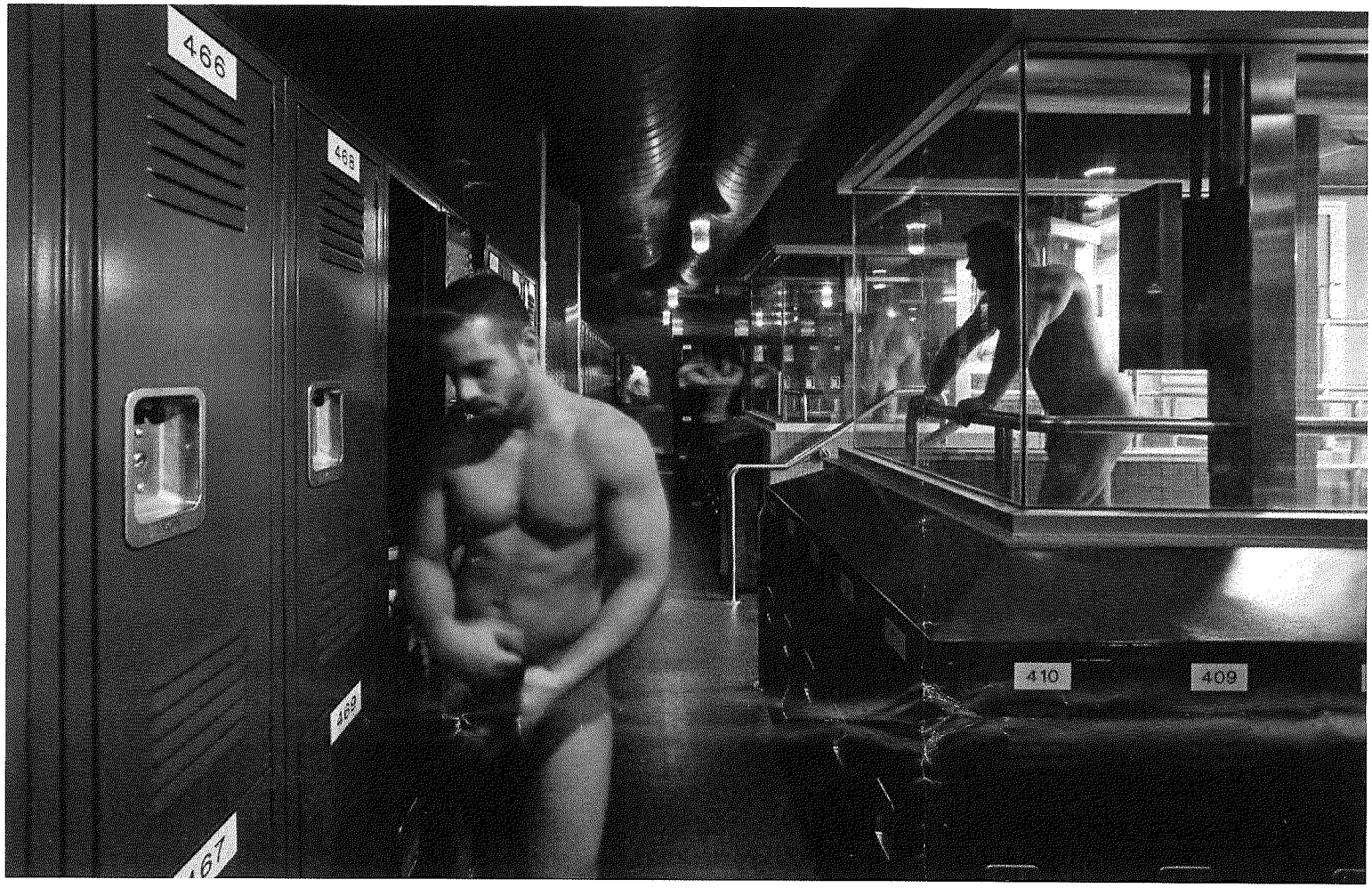
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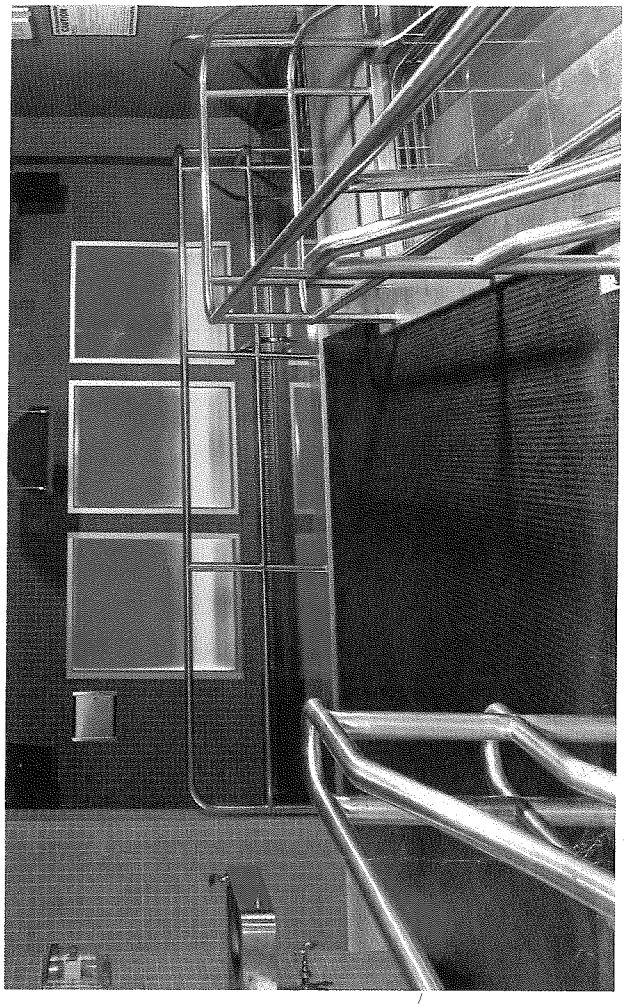
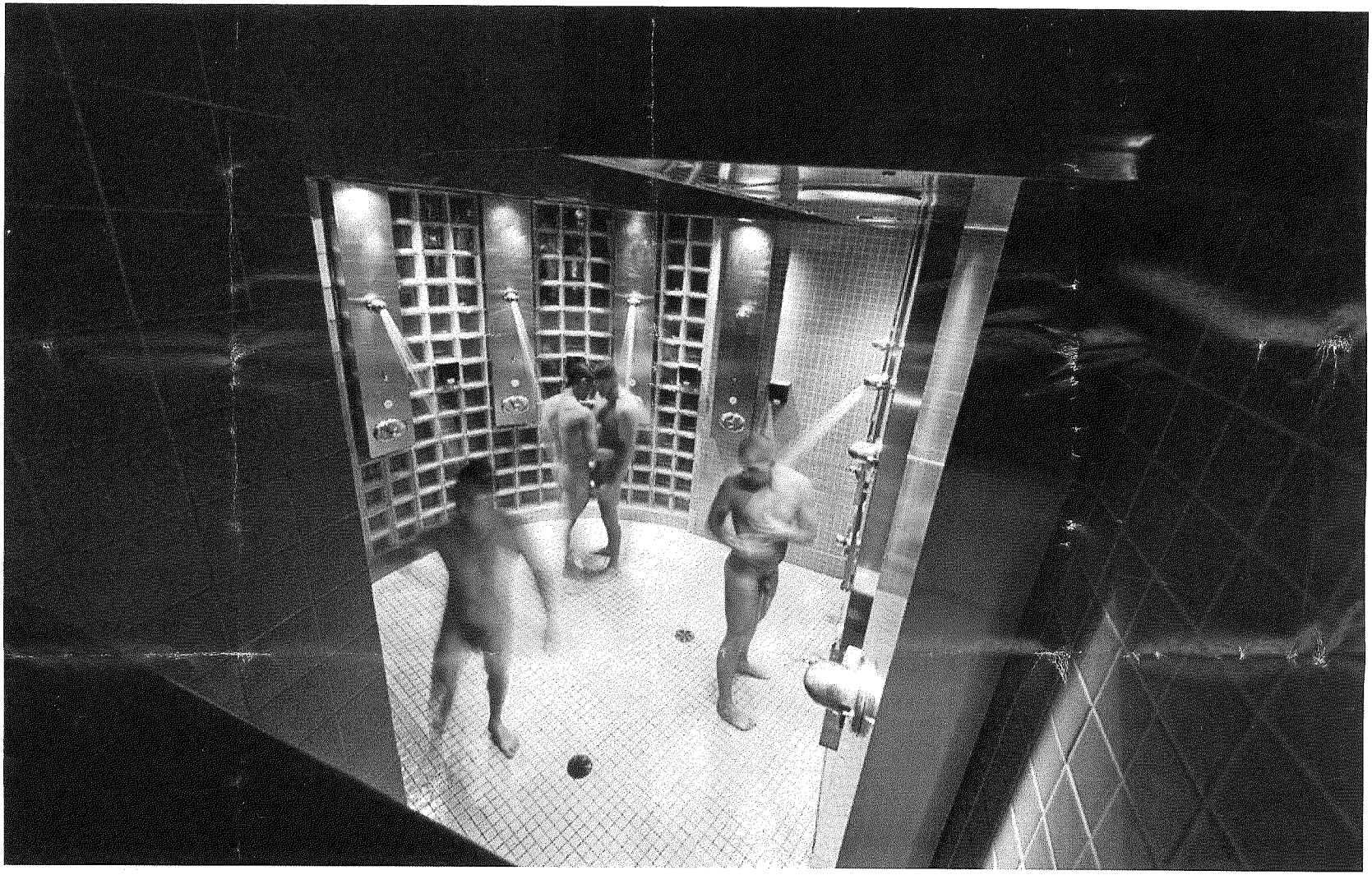


Steamworks, Canada

Pool and shower area.

Image credit: https://www.mcintoshporis.com



Steamworks, Boytown, Chicago

Image credit:

http://www.steamworksbaths.com

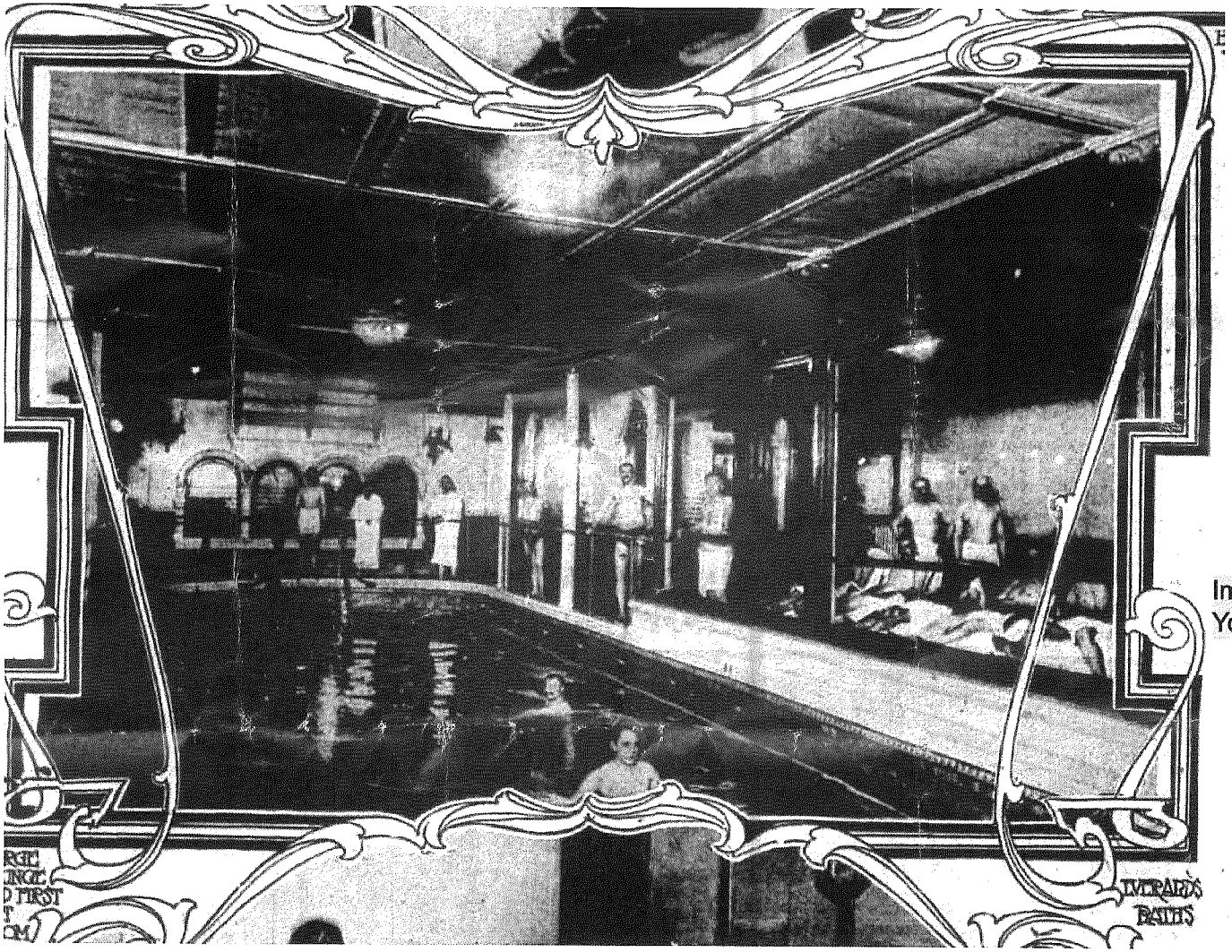


Image of bathhouse on the inside/ New York Herald/ January 22, 1905

Everard Baths, New York

EVERARD'S TURKISH BATHS.
No. II.*

(Continued from page 20.)

BATHS AND DETAILS.

THE Russian bath, shown in Fig. 5, is seven feet sleep d twenty-five feet long by ten feet wide, exclusive of the ni-circular extension of about six feet radius. The bath lined with delicately-tinted light-colored ceramic tiles, th a dark green band at the upper edge. A silver-plated ling (not shown in cut) protects and encloses the bath, d steps lead down to the bottom, which slopes about thteen inches to the lower end, where the water is usually sintained at a depth of about five feet. The main supply this and the Turkish plunge bath is pumped in at the ttom through the pipes shown in Fig. 1, page 20, and as has to traverse the entire length of the bath before reach- g the outlet, the body of water is kept uniformly heated d changed.

The upper overflow opening is shown in the end wall; the other end two small streams of water supplied from e gravity tank are continually running in and create a gular overflow that carries off any floating matter.

The Russian bath room is paved in mosaic, and has a de border of white marble around the edges of the bath. se walls are paneled with polished Italian marble, decon- ted by an upper band of Mexican onyx and two of black rble. The ceiling is richly frescoed in colors and admits ht through skylights in two alcoves, one each side of at occupied by the bath extension. Either electric or s light can be supplied by numerous electroliers. Each le of the door is a tepid shower-bath, operated by a pull thin the bather's reach. At the ends of the room and in e alcoves are terraced marble divans, heated by steam- pes underneath.

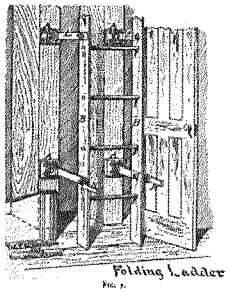


FIG. 7.

The Turkish bath apartment is similarly finished in rble and mosaic; the central part, over the plunge, is vered by a vaulted ceiling set with stained glass and eminated by natural and artificial light. Ten lenses are t in the sides of the plunge-tank. Behind these lenses t two-candle power incandescent lights that brilliantly eminate the entire volume of water. Along the sides of e room are arranged the shampooing alcoves, Fig. 6, ch about seven feet square, partitioned off by marble nels and having oaken screen doors. Each alcove has a pour bath and a hose spout, both supplied with hot and ld water, controlled by the knobs shown on the wall. The or is slightly concave to the middle where the water is sired off through a strainer-plate into drip-pipes that trapped into the sewer.

All exposed pipes and metal fixtures in the cafe, barber op, toilet-rooms, closets, and urinals on the various ors are silver plated.

The ladder from the upper floor to the roof is neatly sned in the thickness of an ordinary partition, and entirely ncealed when the door, Fig. 7, is closed. The ladder B is iron and hinged by several pairs of links L L, to st legs A A screwed to the studs. The lower links pro- t, forming handles, H H, by which the ladder can be ned from the position shown and folded snugly against e wall, when L L will have been carried through more an 90° past a vertical position, and will secure the ladder nly as left.

(To be continued.)

* No. 1 of these articles, plumbing, appeared June 5.

SOME DETAILS OF STEAM-WORK IN THE CENTRAL TRUST COMPANY'S BUILDING, NEW YORK CITY.

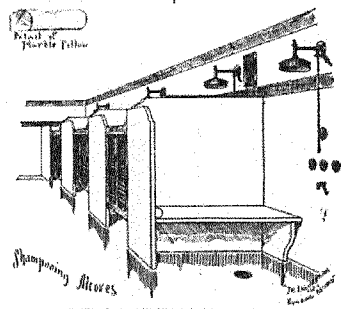
A FEATURE of the steam plant in this building is the reheating of the exhaust steam before it enters the coils for warming purposes, or the superheating of the live steam direct from the boiler on its way to the engines and pumps.

A Haney reheater is placed in the smoke-flue just on top of the boilers as shown at A in the plan, Fig. 1. The reheater consists of a box-coil, with upper and lower headers, and it is placed in the flue lengthwise so the products of combustion pass over and between the pipes on their way to the chimney.

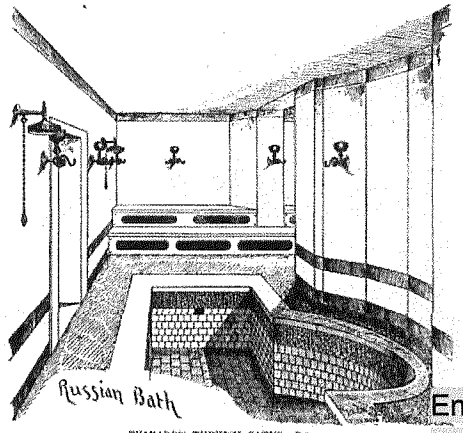
The steam, either live or exhaust, is made to pass into the heater at the lower header and escape at the upper one, so that during its passage through the pipes it absorbs a comparatively large quantity of the lost heat that is on its way to the chimney.

In winter time, or when steam is required for heating, the exhaust steam is passed through the coils of the reheater. All the exhaust steam from the engines and pumps is carried to the feed-water heater at F; thence it passes through the pipe f f and valve f' to the lower header of the reheater at o, and after passing through the pipes at A, escapes through the upper header at h, going through the pipe C and valve C' to the main steam heating pipe M; the end of this pipe (m) leading to the main building for warming and the branch (o) leading to a smaller division of the premises.

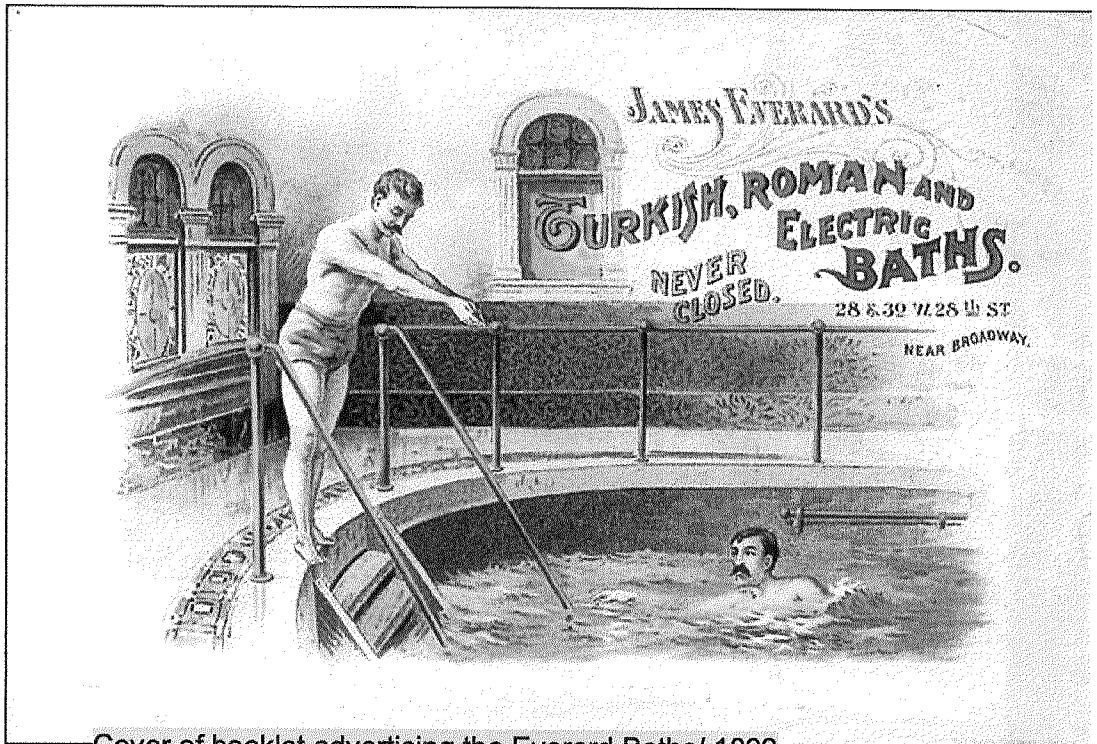
At times when exhaust steam is used for heating it may not always prove ample. To provide for the admission of live steam direct from the boiler into the heating-mains to reinforce the exhaust the pipe e and valve e' are used with a reducing-pressure regulating-valve V. At such times the main steam-valve M' is closed and the steam from the boiler passes through the regulating-valve, thence through the pipe e and valve e' to the pipe f, entering the reheater



EVERARD'S TURKISH BATHS.—FIGURE 6.



EVERARD'S TURKISH BATHS.—FIGURE 5.

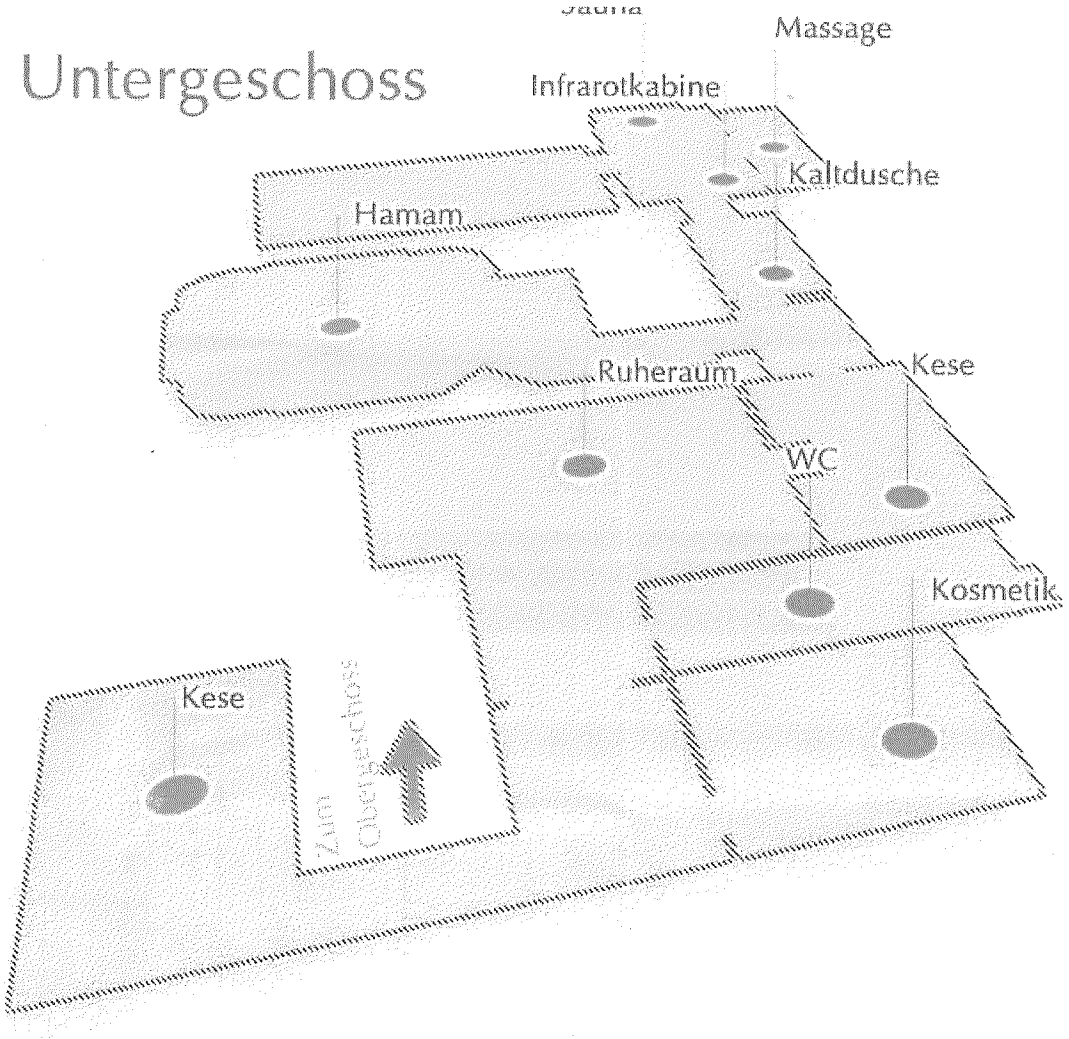


Cover of booklet advertising the Everard Baths/ 1892

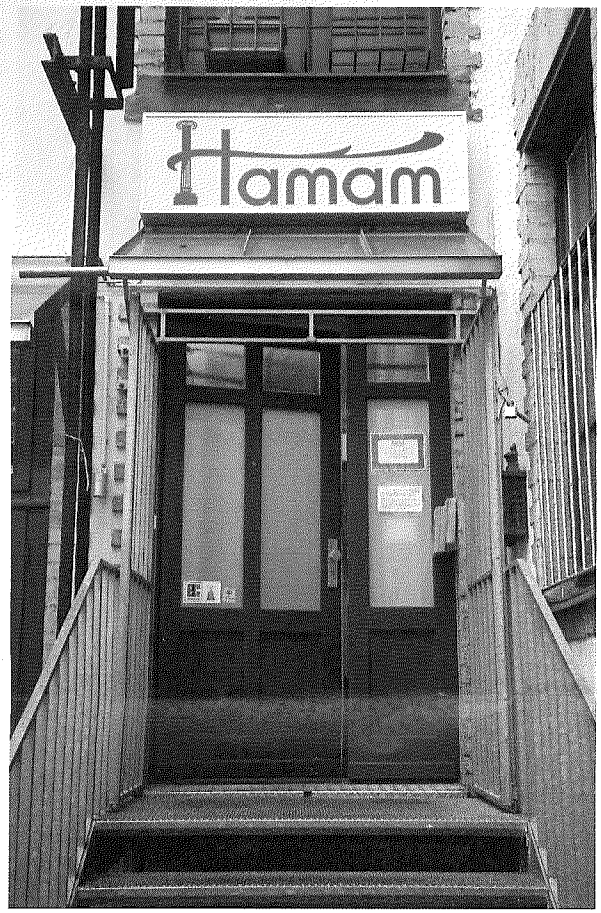
Engineering Record, Building Record and Sanitary Engineer, Volume 18/ page 31/ June 19, 1888/ Charles Frederick Wingate

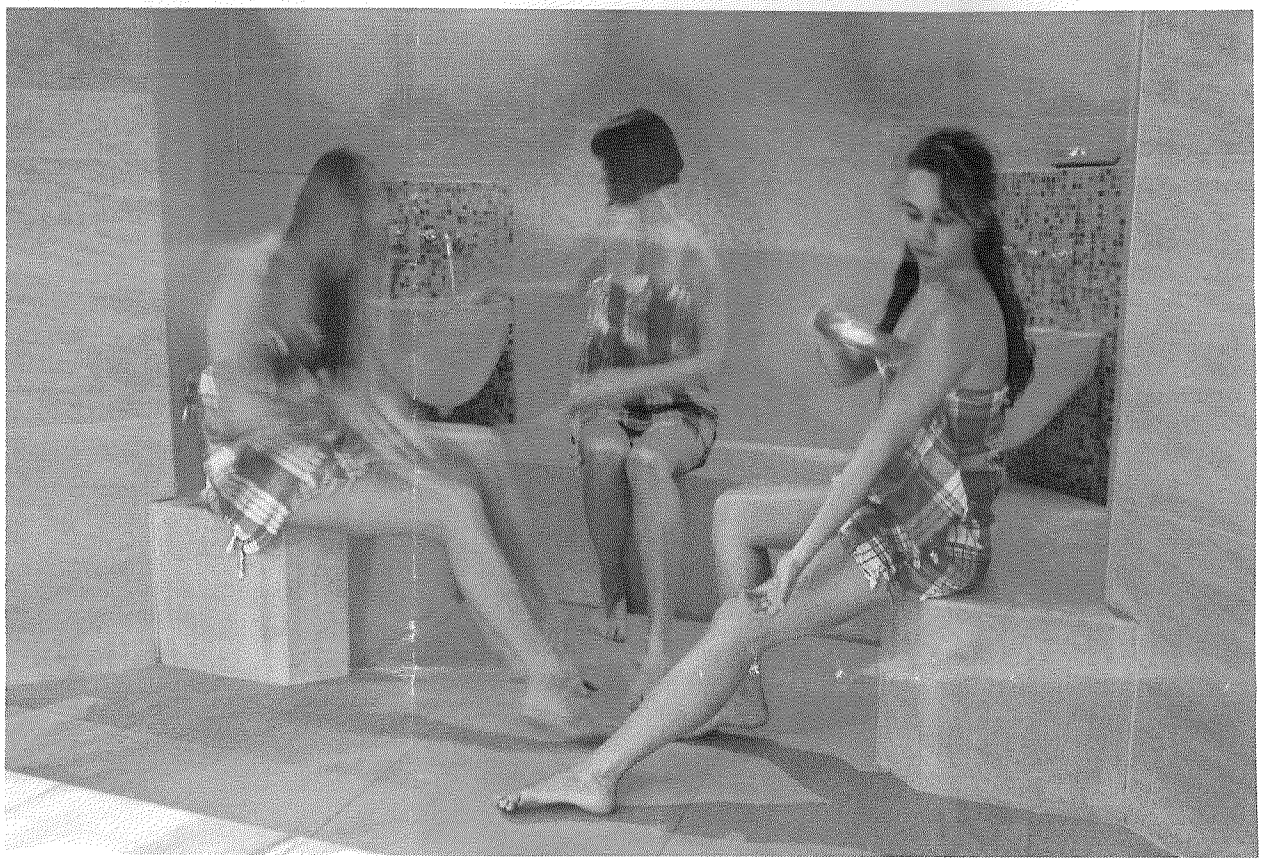
Digitized by Google

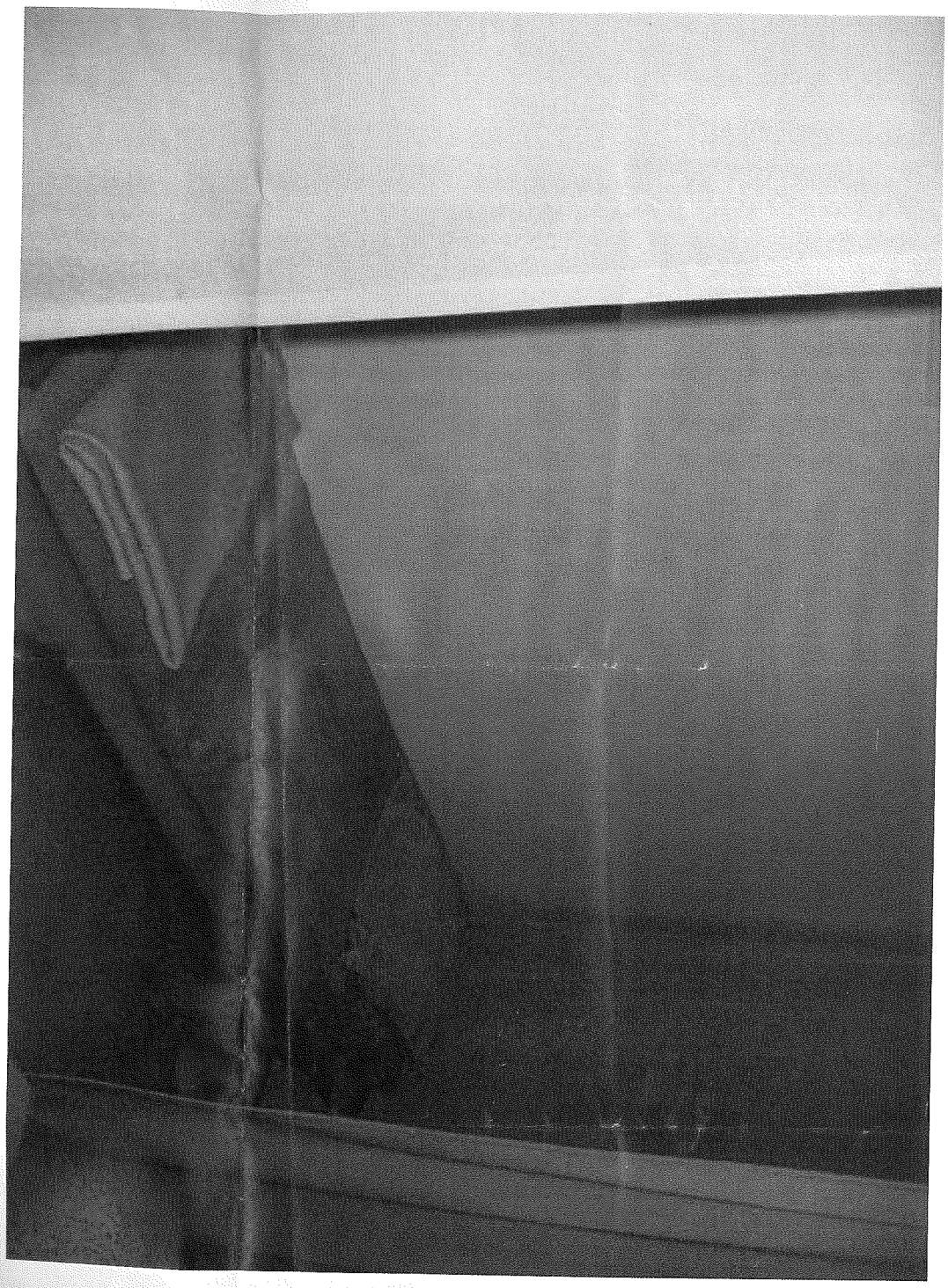
Floor plan underground



chokofabrik, Audre Lorde's woman center. This woman center includes a bath house called Hamam (for full info about chokofabrik, scroll down the bathhouse history section). Image credit: https://www.hamamberlin.de/EN/

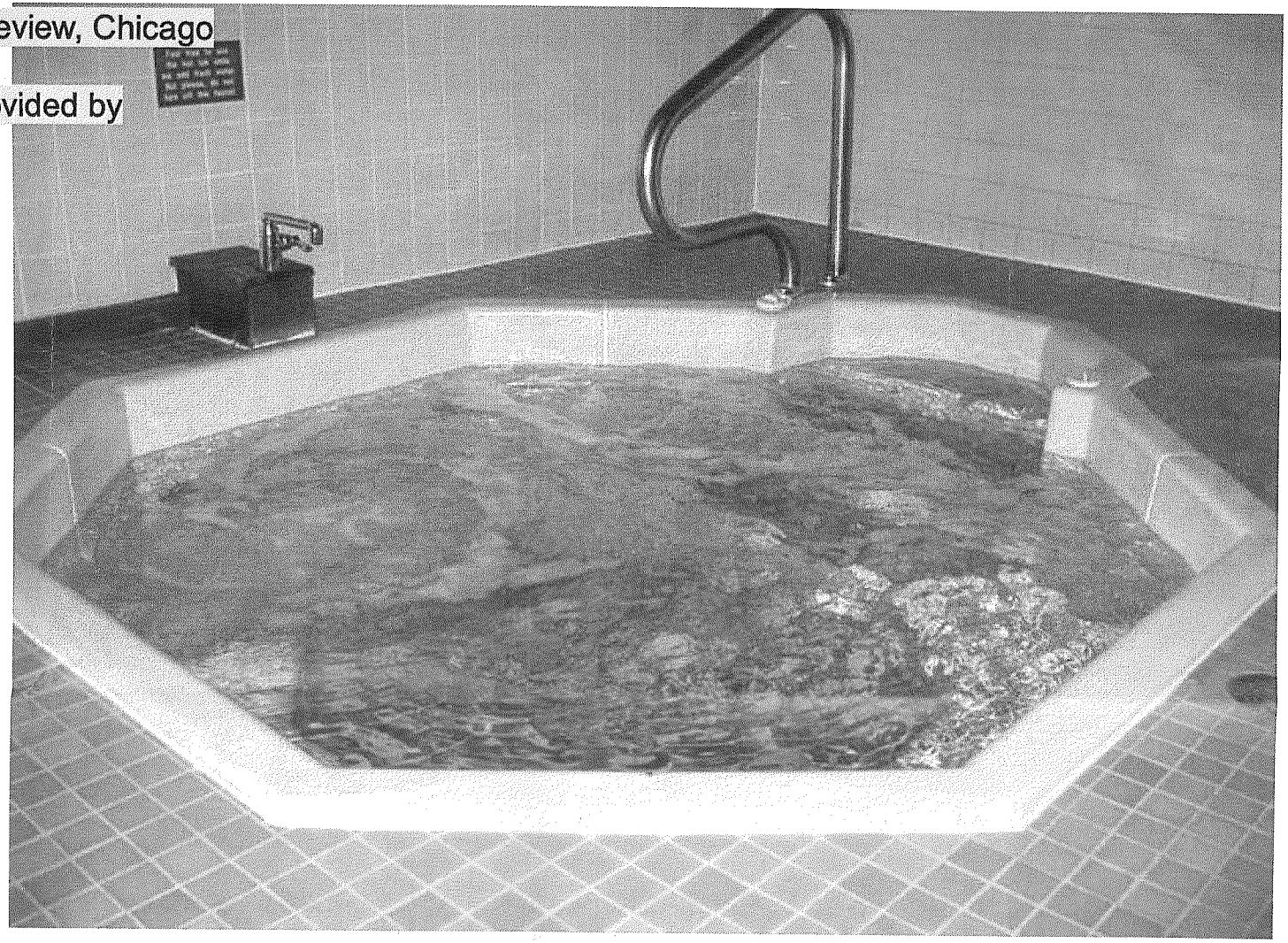






Thousand Waves spa, Lakeview, Chicago

Image credit: yelp.com, provided by Thousand Waves owner



Album cover. Live at the Continental Baths, Eleanor Steber, produced by RCA Red Seal, vinyl, LP, Album , 1974,

https://www.discogs.com/Eleanor-Steber-Live-At-The-Continental-Baths/release/9699002

Continental Bath, New York

Film still. Saturday night at the baths, directed by David Buckley. , produced by Steve Ostrow, David Buckley, and B. T. O. Films. , FilmRise. Alexander Street.

Bathhouse Architecture

Underground networking

Above ground, plants compete for life-giving sunlight, but below the surface a more complex picture emerges. **John Whitfield** explores the role of mycorrhizae in plant ecology.

Under the deep shade of northern forests in North America and Europe, a tiny plant ekes out an existence. *Orthilia secunda*, the serrated wintergreen, is found huddled in the understorey of pines and birches, sending up a drab bundle of yellow-green flowers. Beneath ground, however, this meek plant hides a secret. Starved of sunlight, *Orthilia* has found another source of nourishment. Its roots tap into a network of soil fungi, taking up to half the carbohydrates it needs from organisms that normally form mutually beneficial relations with plants but giving nothing back.

"You could say that the plant is eating the fungus," says Marc-André Selosse of the Centre of Functional Ecology and Evolution in Montpelier, France, one of the team that detected *Orthilia*'s thieving[1]. But *Orthilia* is also, indirectly, eating other plants — probably the very trees that tower over it. After all, it is their photosynthetic efforts that the fungus is feeding on. Indeed, *Orthilia*'s freeloading may reveal the actions of an invisible hand in ecology; that is, the fungal network that underlies the forest and participates in a cooperative give-and-take with hundreds of plants.

Emerging clues suggest that this covert subterranean interplay influences many aspects of the forest community, including which plants live, which die, the effects of physical stresses such as heat and drought, and what happens after the introduction of new species. Add the controversial possibility that fungi mediate resource sharing between different plant species and a picture emerges of a Robin Hood of the soil, subsidizing those less able to make food, and by so doing, helping its own cause by promoting a diverse range of plant partners.

Page 1 / 3

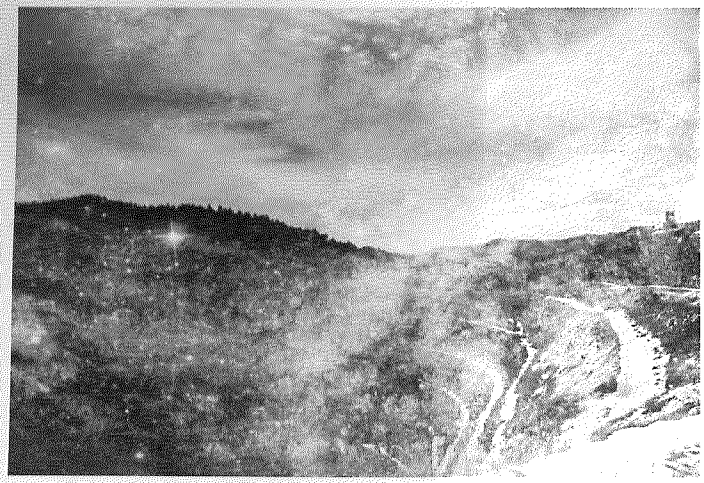
Underground Networking_John Whitfield_ Nature no. 449, 136–138_Sep 12, 2007_DOI 10.1038/449136a

This article also points out the benefit of mycorrhizae system in forest to help plants receive mutual benefit. What is interested though is the fact that fungi and plant roots networks can produce a wild spectrum of result, from positive, neutral to negative benefit/interaction. It is too early to generalize or idealise this mycorrhizal network system as a model of cooperative economy in nature.

THE QUIETEST PLACE IN THE UNIVERSE

Digging for dark matter in an abandoned mine

By Kent Meyers



Rick Gaitskell and I first met over lunch in Deadwood, South Dakota, back in the summer of 2012. An astrophysicist who had quit investment banking because he found the mathematics of finance too basic, Gaitskell had just emerged from an underground laboratory that was once among the nation's richest gold mines. He was now sitting across from me and talking, quite literally, about everything in the universe.

He swooped in great conversational arcs from his English boyhood to the best method for extracting a single recorded voice from a babble of background noise, from the nature of weakly interacting massive particles (WIMPs) to the shocked reactions from his Brown University students when they first hear his profane language in the classroom ("I don't *think* it's Tourette's"). He described a computer program he had written for his cell phone, which allowed him to measure the g-forces exerted on the core of a dark-matter detector as the device was moved underground, since its

Kent Meyers's most recent book is Twisted Tree *(Houghton Mifflin Harcourt), a novel.*

Composite photographs by Tatiana Gulenkina. This page: The Open Cut at the Homestake Gold Mine, Lead, South Dakota, (Tatiana Gulenkina) and the Whirlpool Galaxy (NASA)

This abandoned mine is transformed into a scientific research center to measure and identify dark matter. Since the research center is deep underground, it filters out unnecessary particles that can alter the experiment result.

Excerpt from the article:

"With Earth itself as part of the instrument, underground labs simply receive. Designed into them is the knowledge that everything floats on a sea. And then there is the tank of water, and deep within it, the core of transparent xenon. The method of an underground lab is less-from-too-much.

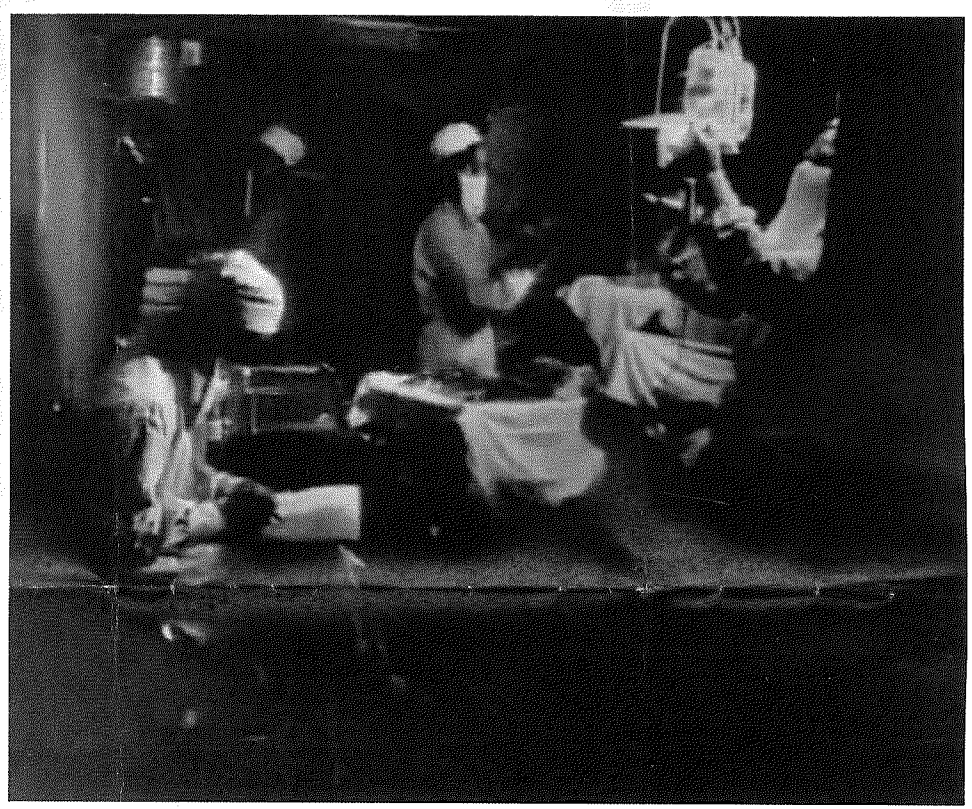
One feels that lovely lessening in spite of all the money invested—science as introversion and withdrawal, setting up the conditions of silence and waiting for the smallest voice of the universe, the voice of its conception [dark matter and neutrinos are being compared to the whisper of the universe]. It's this poetry I appreciate, the womb of the universe in its dark bigness, its amniotic sea of particles touching that smaller womb we have recognized our tiny Earth to be."

"How trees talk to each other | Suzanne Simard"_ youtube video_TED_August 30, 2018"

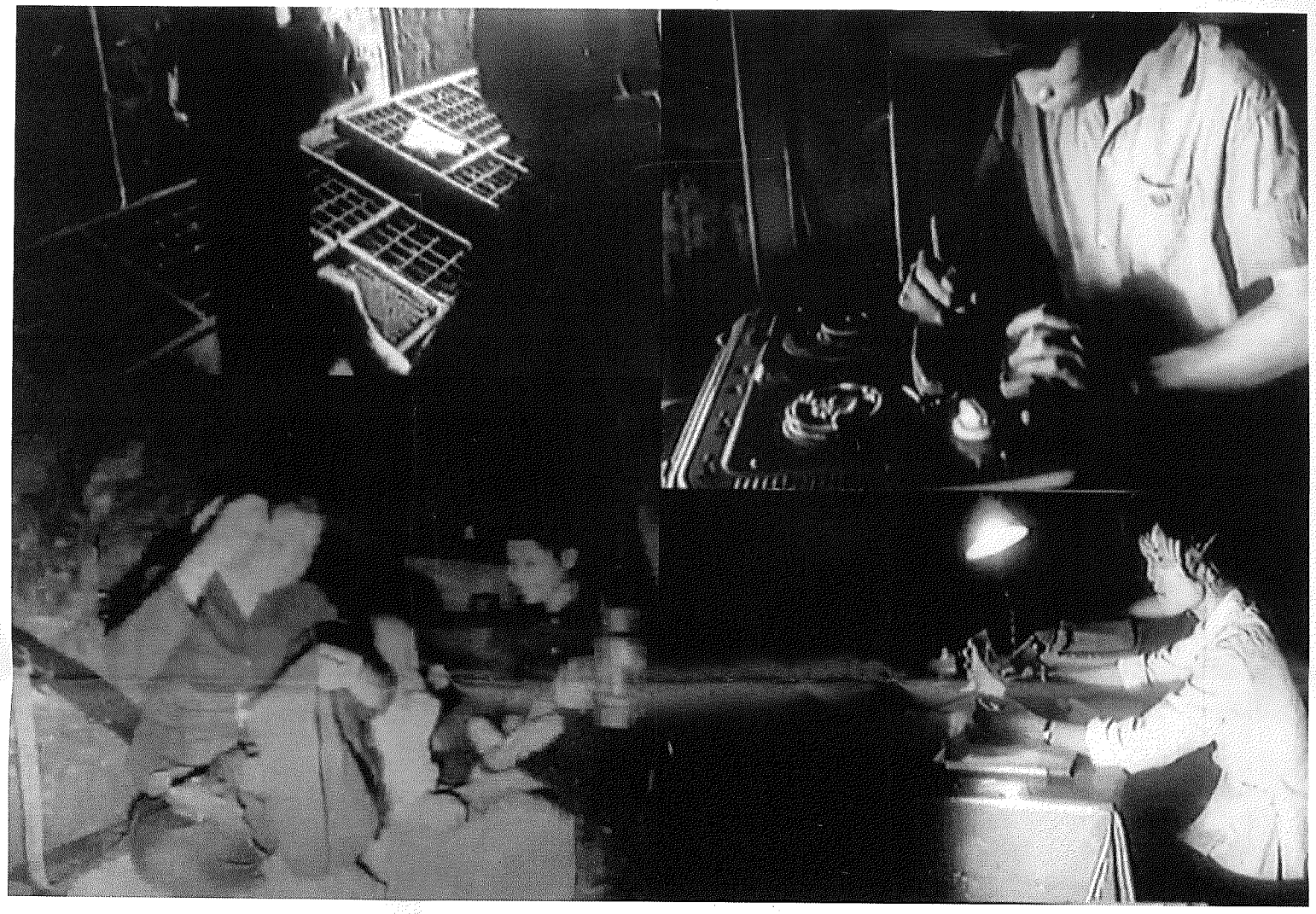
In forest, trees develops a system of interconnected tree roots and fungus roots to create an underground communication network (mycorrhizal network). In this network, mother tree (older tree) can send carbon to other trees to aid them. Before the mother tree dies, they can even send defense signal to youngers seedlings. This underground biological network symbolizes a new way of communication, communicating through chemical substance, through senses, not just words.

How can we model the underground bathhouse after this ingenious natural system?

Digging tunnels



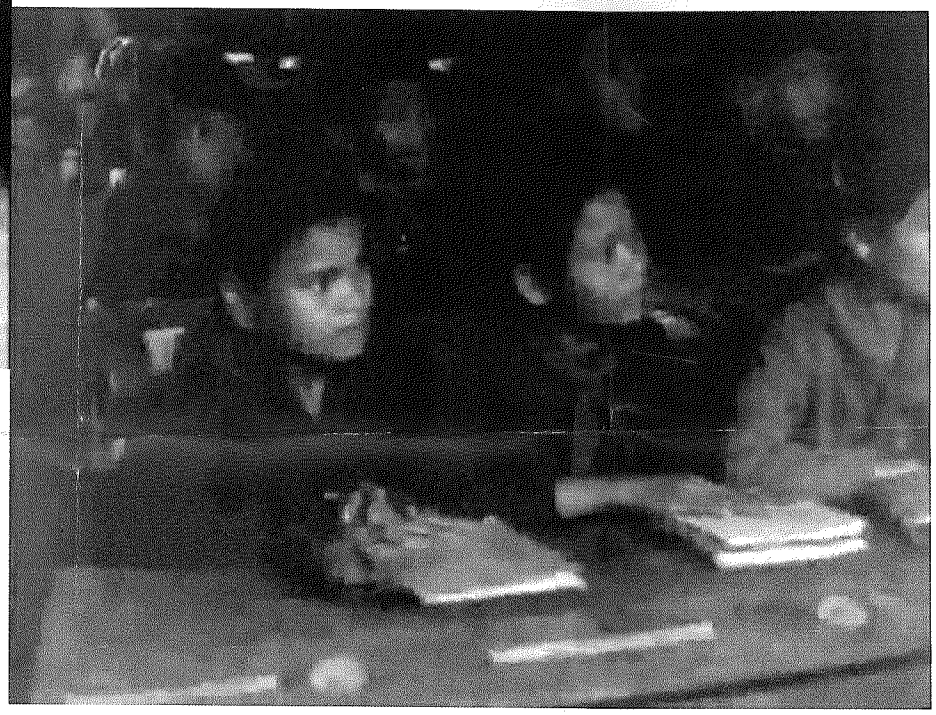
Fabric shop (left) / clinic (right)



Top left: printing news paper
Top right: repairing machine
Bottom left: sewing
Bottom right: reading

Baby cribs under ground (left) / tending baby underground (right)

Stills from "A World Beneath the War: The Secret Tunnels of Vietnam." , directed by Janet P. Gardner. , produced by Janet P. Gardner. , Filmakers Library, 1997. Alexander Street, https://video-alexanderstreet-com.proxy.artic.edu/watch/a-world-beneath-the-war-the-secret-tunnels-of-vietnam.



Jnderground theater (left) / underground classroom (right)

Guerilla subterranean tunnel developed by Vietnamese people, particularly Vietnamese Communist party soldiers and civilians that ided with the Vietnamese Communist party. Due to heavy bombing from the U.S side, people had to find a way to survive, resist and amouflage, tunnel structures were developed out from a survival necessity.

Notes from the documentary, ""A World Beneath the War: The Secret Tunnels of Vietnam." , directed by Janet P. Gardner. , produced by Janet P. Gardner:

At the DMZ border between North and South Vietnam during the Vietnam War, the area that was supposed to be demilitarized Vĩnh Mốc, Quảng Trị province (central Vietnam) impacted heavily from U.S bombing. People developed strategy to dig underground tunnels to live and shelter. Inside these tunnels, there were classroom, kitchen with air tunnels to defuse smoke, sleeping spaces, and even theater for performances and cinema. Life underground was far from comfort. People developed vitamin deficiency, arthritis and uncomfort with light since they were used to underground dark space. Babies were raised underground. Wedding was also done underground after the bombing died down. Underground living can still be subjected to bombing. Many witness in the documentary shared testimony of how they themselves or their loved ones were injured because of bombs that were targeted directly into the ground floor. A solution for this is that people digged really deep underground, up to and beyond 10 meters deep.

An interesting point for me in the documentary is that civilians while living underground sang or read poem loudly when they heard bombing sound in order to drive out the sound of the bombing. The tunnel became an echo chamber.

Notable relics in Rani-ki-vav

God Vishnu reclines on Sesa Naga or Enternal Snake. Also, Rani-ki-vav is positione facing almost directly East. The sun will shine directly onto Vishnu relic in the morning. Rani-ki-vav dedicates to Vishnu, the Solar Deity.

2. VIṢṆU : VARIOUS FORMS

Viṣṇu is the supreme Lord who sustains the whole creation, after all he is the source of the entire creation. Brahmā, the creator himself is born from a lotus emerging from viṣṇu's naval, which we shall see in the three Śeṣaśāyī images sculpted in the step-well. Queen Udayamati, who was gifted with great artistic sensibility, dedicated the step-well to Him.

The theme of Viṣṇu reclining on the several hooded Eternal Snake or Ananta Nāga or Śeṣa, the indivisible one floats on the cosmic waters is very popular in Indian Iconography, ancient lores or purāṇas, and the Indian literature of all languages. Such is the fascination of this wonderful image, that it went beyond Indian shores. We find Coleridge and Shelley profoundly moved by it.

I should much wish
Like the Indian Viṣṇu to float along an infinite ocean
Cradled on the flower of the lotus and wake once
In million years for a minute
And go to sleep again. (Coleridge).
Therefore from natures inner shrine
Where gods and fiends in worship bend
Majestic spirit, be it Thine
The flame to seize the veil to rend
When vast snake Eternity
In charmed sleep doth even lie.

(Shelley : Daemon of the World, pg. 21)

The vast "snake Eternity" is the *anantanāga*. The rending of the veil is the removal of the veil or curtain of Māyā which is attained by worshipping in the inner shrine. What could be more suitable a place than the Queen's step-well to install these beautiful images !

The images of Viṣṇu reclining on the *anantanāga* has been described by three names, Jalaśāyī, Śeṣaśāyī, Anantaśāyī. In Gujarat Jalaśāyī and Śeṣaśāyī reclining on the coiled glossy cushioned bed of the Śeṣa-Nāga floating on ocean-waters is very common. The image of Jalaśāyī-Viṣṇu is very popular in Kuṇḍas or reservoirs, and

on the walls of the wells and step-wells. Thus a direct link of Śeṣaśāyī or Jalaśāyī Viṣṇu is established with Viṣṇu. Hence its importance in Queen's step-well is such that as many as three panels have been sculpted one over the other, facing east wherein each image is facing the respective window of each storey.

Viṣṇu is shown as reclining on the cosmic waters holding conch in his left hand, right hand is broken, probably it held the lotus. The other right hand supports the head with the mace lying nearby. Brahmā is shown as seated on the lotus connected by the stalk emerging from Viṣṇu's naval. The whole body of the Śeṣa Nāga is lying like a couch. The hoods of the serpent do not hover like a canopy over the reclining head of Viṣṇu as is commonly seen but they roll in like a pillow to give support to Viṣṇu's head. Lakṣmī the divine consort, is sitting near His feet ever serving the supreme. She is the creative faculty of the Lord or Mahā Māyā, the ever active principle that pulsates in the entire creation. She is also called Bhūdevī or the earth goddess where the poets have described the wavy ocean as her dress. The great Lord Viṣṇu is the supreme artist *"Kalānidhi"*. This is so beautifully narrated by Śrī Vallabhācārya.

नमामि हृदये शेषे लीलाक्षीरब्धिशायिनम् ।
लक्ष्मीसहस्रलीलाभिः सेव्यमानं कलानिधिम् ॥

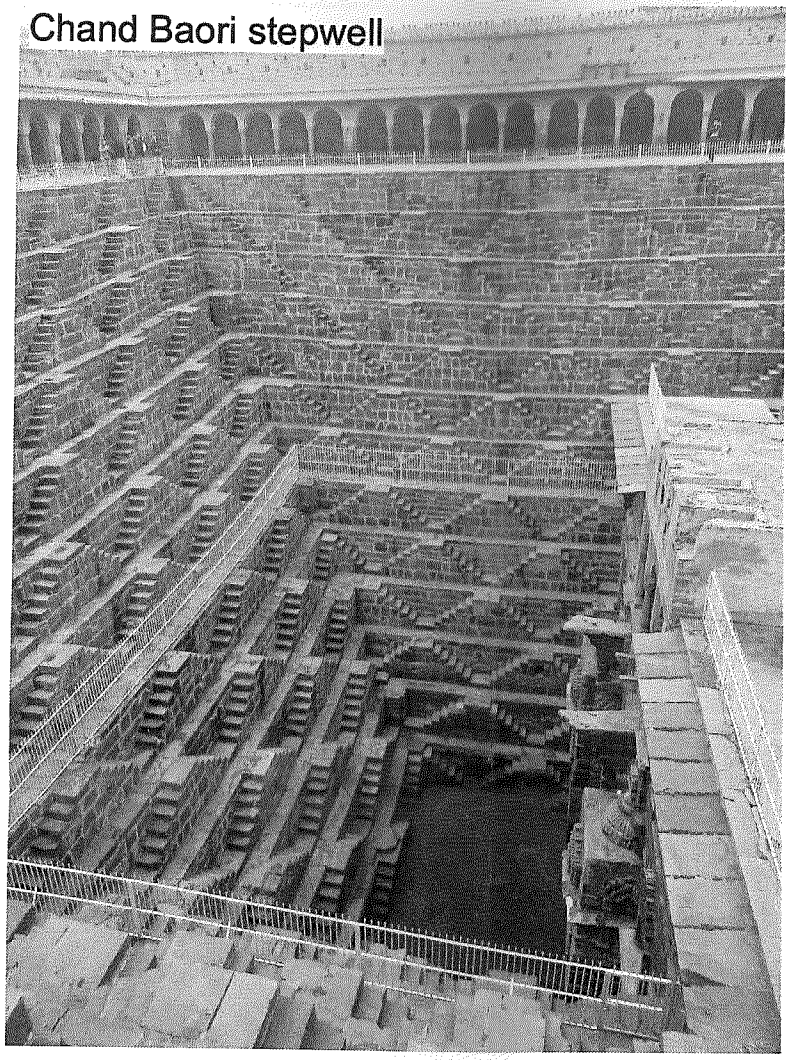
Just behind the image are carved the demons and gods engaged in a fierce battle. There are five warriors on each side. Above this rectangle panel is another paṭṭikā showing the 9 planets popularly called the Navagraha Paṭṭikā. Over this panel is a serene image of Lord Viṣṇu sitting absorbed in a deep meditation. He is Yogeśvara seated in the Padmāsana pose or sitting in lotus pose. This reminds us of the hallowed image of Lord Badarīnātha where Viṣṇu is meditating for the welfare of his creation. This is a unique conception of God who is highly concerned for His creation and mankind at large.

This panel of Śeṣaśāyī Viṣṇu is repeated thrice keeping in view the astronomical position. When the light of the Sun enters through the respective windows facing these images it lights the panels directly. Michel Pastel tells us, "The step-well is almost due East since it is oriented 87.23° on the compass (without magnet correction). The Sun on or about the equinox must light up Viṣṇu, across the forest of pillars at a precise time, perhaps three times, since it is super imposed in three niches. It is to Him that the shrine is dedicated. He is originally the Solar Deity."

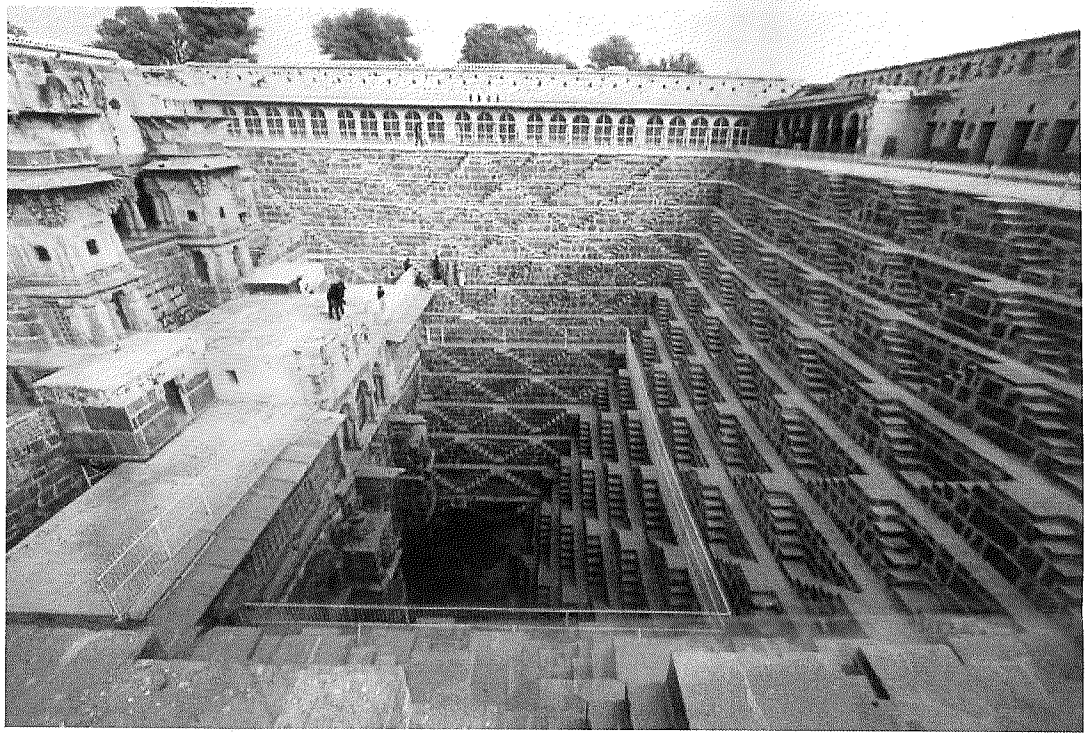
Though Jalaśāyī Viṣṇu's images are common in the Jalāśayas or water reservoirs, in Nepal a large image of Viṣṇu is supine reclining on the water itself. But we have several other reclining images of Viṣṇu worshipped in the temples or shrines

Underground shrine : Queen's step-well at Patan_Jaikishandas Sadani_Ahmadabad : B.J. Institute of learning & Research_998.

Chand Baori stepwell



On the left: unknown photographer, Smithsonian Magazine
On the right: Ramon, chandbaori.org



Subterranean Architecture

GUIDING QUESTIONS

What are the components of a space (architecturally and socially) that allow us (bipoc, queer people) to feel able to express ourselves? To feel free?

How is anti-oppressive community accountability, safety and exploration structured?

What is "the descent"? (Related to the steamwork bath house's architectural layout) What exists in the underworld of ourselves? What is it to share this space with others?

What is it to be relegated to darkness?

Who gets to feel safe?

Within contemporary U.S. society what is the difference between being seen and being watched (surveilled)?

---

bathhouses as a jammer space, a farday cage, a protected portal, a playground, an underworld, an overworld, a subaltern ethereal plane, a safehouse, a bomb shelter

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Architecture of underground spaces: From isolated innovations to connected urbanism ☆

Monique Labbé

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Opportunities
Tools
Zoning
Mixed uses

ABSTRACT

This article provides an introduction to an architectural approach of subterranean space, presenting its properties and principles of development. It then analyzes some subsurface experiences of the 20th century and, by looking at their successes and failures, shows how a renewed human and dynamic vision could help move from developing isolated structures towards a connected form of urbanism. Such a transition would provide an adequate response to the challenges of modern metropolises, for instance in the Paris area. On the strength of these realizations, a national transdisciplinary research program was deemed necessary and this is how *Ville 10D – Ville d'Idées* came to be in 2013. This article thus recaps the history and reflection that led to the creation of the Ville 10D project, and explains how it emerged as a systemic approach to subterranean development.

Method: Conception and development of a change of paradigm: consider the living and motion as primary, unifying agents between the underground and the city above it; play with and act on the subsurface in order to reinject mixed uses and complexity into the city through a systemic approach of the underground in the urban eco-system.

Method: Creation of a research project whose organization reflects these concerns; in order to take the living into account, make the study as cross-disciplinary as possible, mixing competences and points of views.

Method: Four-fold organization – socio-economical, environmental, psycho-social, cognitive (knowledge and management of the underground) – corresponding to four main themes plus two transversal themes (legal and urban planning). Unfolding in four stages of 18 months each, these thematic approaches are casting converging light onto token sites chosen for their diverse typology. Around a hundred professional players are involved in the Ville 10D project.

Study results: Beyond the data gradually obtained through the project studies themselves, and without anticipating those to come, the first results so far have shown a growing awareness of and interest in the reality of underground potential. There has been a genuine gradual involvement of the development players, researchers and academics in elaborating the project.

Study results: For us, gaining support from the players is an essential stake to "unlock" the underground in the minds first, then in reality thanks to tools built by Ville 10D in all the fields of development.

Conclusion: Research reports are issued upon completion of each of the stages and posted on the website http://www.ville10d.fr. We are planning to present and publish the final reports at an international colloquium in 2017.

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1. Introduction

In contrast with aerial space, which is pre-existing, transparent and immaterial, underground space (apart from natural caves) only exists if it is dug by man and his tools, and thus only as it is "invented", so to speak. This specificity could make it a dynamic space connected to action and to the living. In each cavity that is hollowed out, there is, originally, humanness.

Is this human, dynamic dimension found in our subterranean city spaces or have they been frozen in their progress, at some stage, left soulless and unfinished? If the human, dynamic dimension fails to put its mark on underground development, if those

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Architecture of underground spaces: From isolated innovation to connected urbanism/ Monique Labbe/ Tunneling and Underground Space Technology

Notes from essay "Beneath Ground" by Angus Carlyle in City Levels, edited by Nick Barley and Ally Ireson, Basel : Birkhäuser, London, August , c2000.

- Everytime we did an action on the ground, such as open the water faucet, switch on the light or flush the toilet, there is a corresponding action happening beneath the ground, unbeknown to us. These underground actions are from the electricity system, water system, heat system, gas system, system that can be seen as represented the subconscious or the id. The underground also houses the transportation system, which can be seen as the superego.
- Graffiti in underground space cannot be seen as offending the space, instead, it could be seen as a practice that enrich and constantly shift the underground environment. Graffiti practice as a practice that requires high level of underground space navigation. As seen in how graffiti artists in New York have to navigate the surveillance system, steal access door keys, move through live rails and overheads cable, adopt to space with extreme light and extreme darkness.
- Underground space multi function: Vienna sewers repurposed for refugees from Nazi Germany, homeless shelter in Ulan Bator, Mongolia, atom bomb shelter in Beijing, London, living space for the the Vietnamese Communist party during the U.S/Vietnam war.
- Underground living space architecture in Tungkwan, Hunan Province, China and Cappadocian caves in Turkey
- Bunker mentality; the fear of catastrophe that leads people to result to isolated bunker as a solution to safeguard their life. This mentality perpetuates the isolation into the underground world.
- Underground interior design that embrace shadow and darkness, instead of light. This embrace of darkness align with the natural darkness of the underground. In another word, the space never fully reveals itself since it is always somewhat casts in darkness. Thinking about the seemingly bounded, finite underground and the infinity, both illusionary and real that it opens up.

Notes from essay "Into Darkness" by Andrew Smith in City Levels, edited by Nick Barley and Ally Ireson.

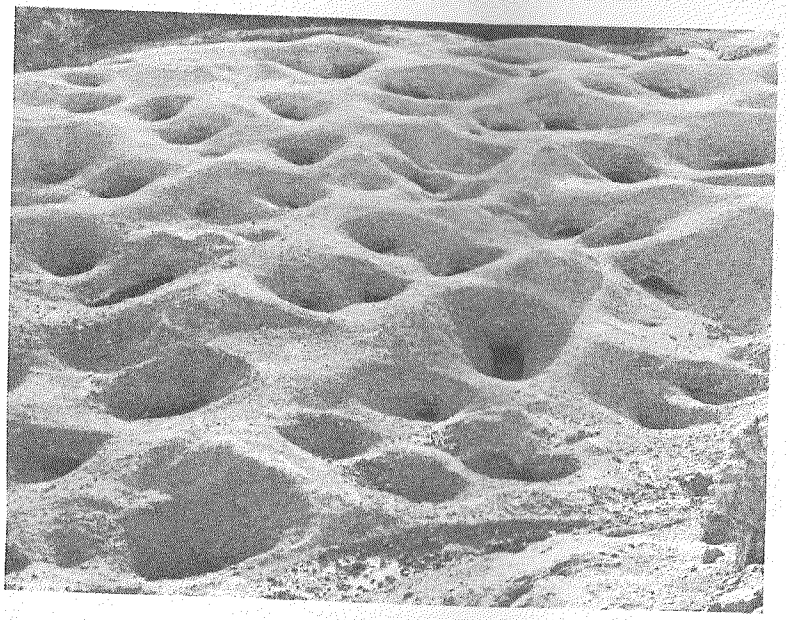
- Recount the experience of David O'Donnell, an team member of the London Underground Maintenance. The experience of in the underground infrastructure is that of highentended sensory. Rats at the size of cats. Mosquitoes evolve into its own advanced species, debris of human skins, clothes, weird chemical reaction, dead body, haunting soundscape compared to war veteran accounts of Burma jungle. A world that is messy, raw and real. Uncurated. And the same time, one suddenly encounter the sublime, looking down at the void of the gigantic London Ring Main, a system of massive, extremely deep pipes that delivers water throughout London.

Architecture without Architects_Bernard Rudofky_1964_Museum of Modern Art_

Troglodytism

Troglodytism does not necessarily imply a low cultural level. The picture of the caveman dragging his mate by her hair is a cartoonist's cliché, betraying nostalgia for bygone days, rather than a portrait of the kind of people who prefer to live below ground. Besides, troglodytic amenities vary as much as those of more conventional habitations.

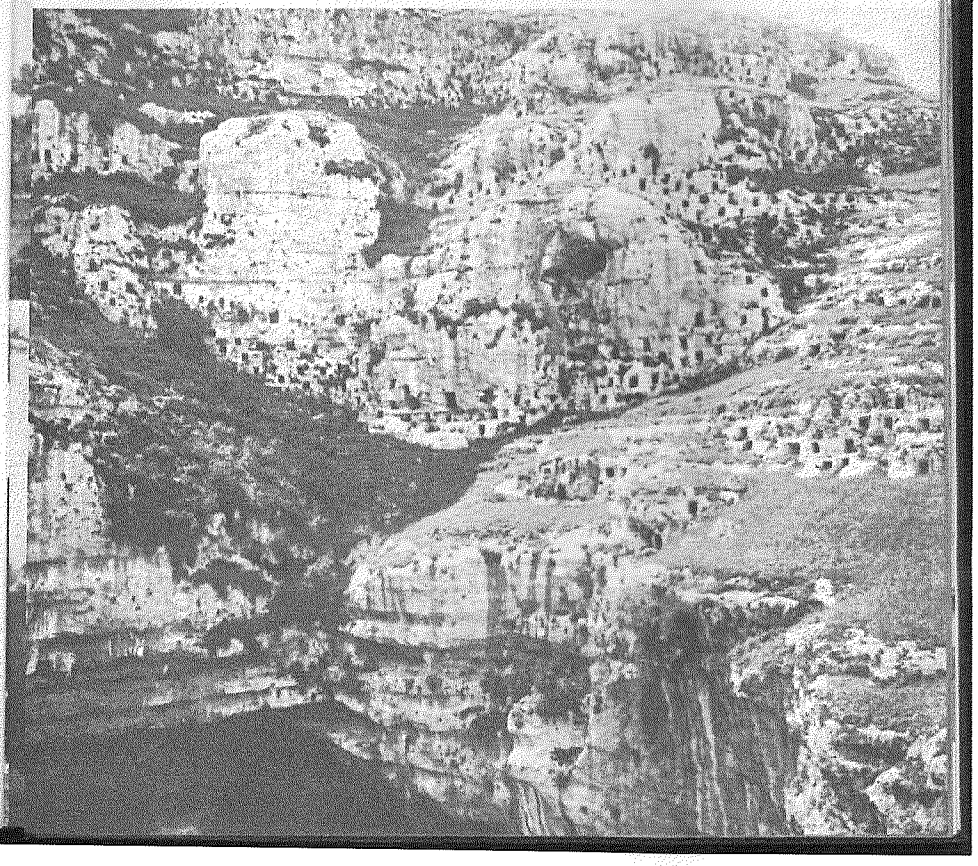
The irregular holes in the oasis of Siwa, Tunisia are entrances to a burial ground that has been converted into living quarters. Compared to them, the cave-dwellings on the opposite page are highly sophisticated architecture.



Opposite: a partial view of an underground village near Loyang in northern China. It takes a second glance to notice that what looks like flat roofs is earth, bare except for a few trees. Every room has a vaulted ceiling carved into the soil while the roof comes free.

The troglodytic town of Pantalica

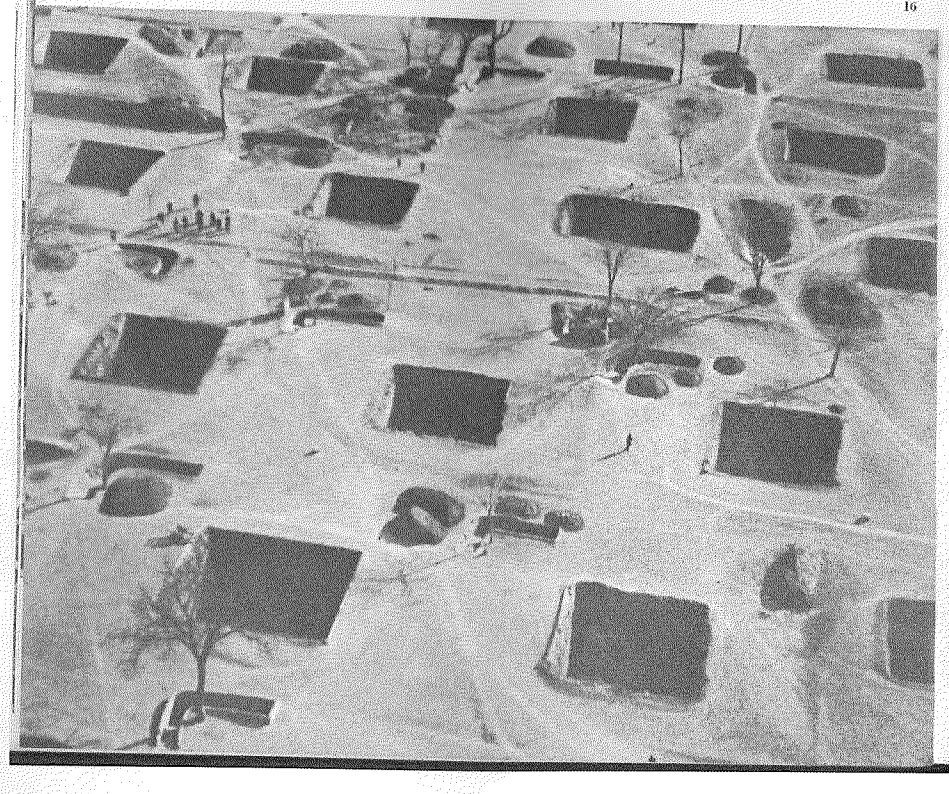
Durability and versatility are characteristic of vernacular architecture. The rude chambers whose doors can be made out in the picture were cut into the nearly perpendicular declivities of the Anapo Valley by the *Siculi*, who inhabited Sicily about 3000 years ago. Originally serving as burial grounds for an adjacent prehistoric town, they were converted into dwellings during the Middle Ages. As a rule, they form multistoried apartments connected by interior passages. Similar establishments are scattered all over Sicily—near Siculiano, Caltabelotta, and Raffadale; west of Mount Etna at Bronte and Maletto; between Siracusa and the Cape S. Croce; above all, in the valley of Ispica, near Modica.

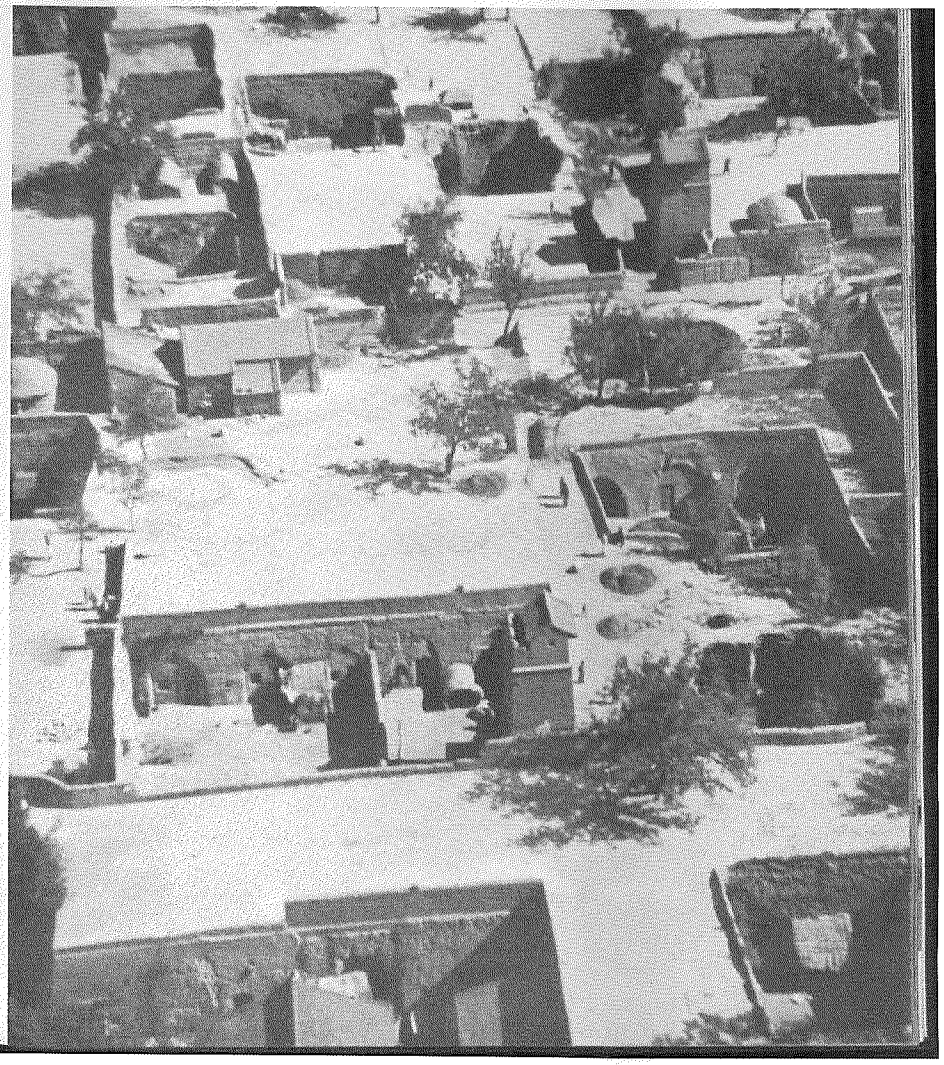


Dwellings below, fields upstairs

One of the most radical solutions in the field of shelter is represented by the underground towns and villages in the Chinese loess belt. Loess is silt, transported and deposited by the wind. Because of its great softness and high porosity (45 per cent), it can be easily carved. In places, roads have been cut as much as 40 feet deep into the original level by the action of wheels. In the provinces of Honnan, Shansi, Shensi, and Kansu about ten million people live in dwellings hollowed out from loess.

The photographs show settlements of the most rigorous, not to say abstract, design near Tungkwan (Honnan). The dark squares in the flat landscape are pits an eighth of an acre in area, or about the size of a tennis court. Their vertical sides are 25 to 30 feet high. L-shaped staircases lead to the apartments below whose rooms are about 30 feet deep and 15 feet wide, and measure about 15 feet to the top of the vaulted ceiling. They are lighted and aired by openings that give onto the courtyard. "One may see smoke curling up from





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the fields," writes George B. Cressey in his *Land of the 500 million: A Geography of China*, even though there is no house in sight; "such land does double duty, with dwellings below and fields upstairs." The dwellings are clean and free of vermin, warm in winter and cool in summer. Not only habitations but factories, schools, hotels, and government offices are built entirely underground.

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