realms of water
A journey of discovery to the sources of mineral water
Where does water come from? What creates its taste? Why is every water unique?...
The book *Realms of Water – A journey of discovery to the sources of mineral water* tells the little-known story of springs, alternating inspiring images with narrative. France, Switzerland, Belgium, England, Spain, Italy, Turkey, the Lebanon, Vietnam, Mexico, Argentina, Brazil... Fifteen springs are revealed in images by the photographer Sandrine Alouf, who has crossed continents capturing the atmosphere of these magical places and protected spaces.

**MINERAL WATERS: AN ELEMENT OF MYSTERY...**
Waters are unique, the product of a long process dictated by nature. Rain upon rain and snow after snow, water seeps slowly through the rocks which provide natural protection. Water is enriched with minerals and trace elements specific to the ground through which it is filtered, giving it its own peculiar taste characteristics, thus constituting a true water terroir, like a signature enduring through the ages.
By turns exuberant, delicate, stimulating or flavoursome, mineral waters also display a surprising richness and diversity. Landscapes and ground, vegetation and climate play their part in forging the taste of water. Freshness, effervescence, clarity, fluidity, sweetness or, by contrast astringency, are all characteristics linked to the terroir from which they emerge and from which they draw their distinct features. There are as many different waters as there are terroirs to form them.
Ranging from one terroir to another, from the spring itself to tasting, *Realms of Water* explores the origins of water, allowing expert contributors to reveal and decipher the secrets of taste (a tea master and a sommelier), or to shed light on the water cycle and the science behind it (a hydrogeologist, a climatologist, etc.).

An ode to nature and to the underground and terrestrial forces which produce this precious nectar, *Realms of Water* provides an insight into the simultaneously unique and diverse but always unchanging identities of water. The work invites the reader to discover the terroirs of water, terroirs which man strives to protect with a view to preserving their integrity for future generations.
Sandrine Alouf
A photographer in pursuit of atmospheres...

Whether it be clouds or water, Sandrine Alouf likes to observe nature and to display the atmosphere it conveys. Realms of water - A journey of discovery to the sources of mineral water was one such experience, offering a wealth of landscapes and also encounters with people.

“Restoring the magic to public spaces, to transit zones which are considered unfamiliar, often hostile, or at best indifferent… That is my mission. I call myself an ‘Atmospherist’”. As a photographer of moments from everyday life, she tells stories, romances and tales through her photos. A globetrotting photographer, Sandrine Alouf exhibited her photographs of clouds taken all over the world in the Luxembourg RER station in Paris in 2006.

Her latest projects include the design, interior decor and theming of the Sublim, Apostrophe and Secret de Paris hotels. Her works L’Art du geste (2009) and D’art et de papier (2008) have recently been published by Textuel.

BACK TO THE SOURCE

As a natural extension of her work on clouds and to reveal the origins of water, the photographer Sandrine Alouf set out to discover fifteen springs in France, Switzerland, Belgium, England, Spain, Italy, Turkey, the Lebanon, Vietnam, Mexico, Argentina and Brazil.

It took Sandrine Alouf seven months of travelling to photograph these fifteen springs worldwide.

In an underground spring in the Lebanon, on a mountain above the clouds in Argentina or hidden away in a Belgian forest, Sandrine uncovers the atmosphere of each of these water terroirs through her photographs.

Gripped by the beauty of the landscapes, Sandrine Alouf was particularly struck by her trip to Argentina and the area near the village of Tunuyan, in the Mendoza region. The Andes Cordillera pours its snowmelt onto the land making it prolifically fertile.

Located between Mount Blanco and Punta Negra, the Arroyo Grande basin is one of the natural reservoirs for Eco de los Andes, the water of the Andes.

Sandrine Alouf’s journey also laid great emphasis on meeting people and this left her with unforgettable memories of these enthusiastic men and women whose role it is to preserve these terroirs.

“It is a mystical vision; nature in its primitive state in the form of flowing water, while I am above the clouds, and down below is the splendour of the fruit trees. A wealth of colours and smells… This is one of my fondest memories of my journey”.

SANDRINE ALOUF
Although the virtues and health benefits of natural mineral waters have long been recognised, their taste has often been unfairly overlooked as being of secondary importance. Yet their taste, density and the fizz of the bubbles in the case of a sparkling water, bear the hallmark of the terroir from which they originate. Each mineral water has its own history, geological journey, texture, character and unique, inimitable flavour which has remained unchanged through the ages.

A JOURNEY OF THE SENSES

Water does not yield all of its richness and subtlety straightaway! Water tasting requires all the senses to be fully alert: sight to assess limpidity; touch to express the texture; smell to capture aromas; hearing to be aware of the popping of the bubbles, and taste to appreciate its subtlety. Water also arouses tactile sensations: variations in texture test the mucous membranes, inviting the definitions “biting”, “light” or “fizzy” for each water.

The minerals which give waters their different tastes challenge the taste buds. The proportion of different minerals contained in a water give it its specific identity when it is tasted. Hence, a composition which is rich in calcium and magnesium will give a velvety and sometimes slightly salty taste to certain waters.

Water gives rise to many sensations, fuelling the imagination inspired by the environment which formed it; to taste it is to absorb its terroir.

AN INCOMPARABLE VARIETY

Tasting a water which is dense, creamy in the mouth, with a cotton-wool flavour and a nose reminiscent of sulphur conjures up molten magma which has fertilised land and encouraged lush vegetation. This could indicate a water moving slowly through porous limestone volcanic rocks, taking its leisurely fill of minerals and absorbing the essence of the earth.

However a very pure, light water with a discreet plant nose arouses different emotions. It conjures up a clear stream rushing over white pebbles in the heart of a forest of cypresses. Lively and light with a low mineral content, it flows quickly through rocks such as sandstone which act as a natural filter.

In order to reveal and decipher the many secrets of water flavours, taste experts – sommeliers and a tea master - have also taken part in the project Realms of Water – A journey of discovery to the sources of mineral water.

“In 2009, I was invited to a major blind tasting of nearly 150 waters. Although I was enthusiastic at the prospect of learning and sharing knowledge, I was pretty anxious. Influenced by a very prevalent prejudice, it seemed to me that I might dry up by the fourth or fifth water I tasted and have nothing relevant to say about the drinks on offer. How wrong could I be! I was very talkative, inspired by the multitude of differences between the waters lined up. This has been one of the greatest discoveries in recent years for me. Water, that pure gift of nature, which in return single-handedly makes nature itself possible, is both one and many, bearing the profound imprint of the terroir in which it burnished its arms of taste and chemistry. Although a water being served can have many properties, I think that the general balance which it displays and its purity to the eye and to the palate are the decisive assessment criteria. These are what provide the pleasure.”

ANDREAS LARSSON, WORLD’S BEST SOMMELIER 2007
How does water acquire its taste?

The deciphering process

Drop by drop precipitation in the form of rain and meltwater from snow or glaciers penetrates the ground via permeable geological layers. It absorbs minerals and trace elements as it passes through these rocks. The water then rises to the surface through fissures or on encountering impermeable rocks and emerges from a spring or is collected underground. Each water owes its individuality to its geography and the hydrogeological journey which it has undertaken. Water from a spring is the culmination of a natural process which is continuously renewed, born of telluric forces sometimes going back to the dawn of time.

**THE JOURNEY OF WATER**

Everything begins with rainwater. This water changes from one terroir to another and salinity in particular varies according to distance from the sea. The surface area in which rainwater or snowmelt seeps into the ground is known as the catchment or impluvium. The catchment can be huge, up to several hundred thousand hectares, or much smaller. As the water passes through organic matter in the ground, it acquires gas which provides it with additional acidity to dissolve rocks. On its way through the ground, rainwater picks up humic acids, molecules which undoubtedly contribute to the flavour of the water.

After having begun its journey on the surface in the catchment area, water continues on its way, feeding the groundwater, where mineral water will be collected. This is the aquifer, where underground water is stored, either flowing freely or confined. Therefore, the hydrogeological profile of water also depends on the duration of its transit underground and the circumstances of this journey. Water which has taken some fifteen years to pass through rock such as sandstone will differ in texture and taste from a water which has travelled through limestone for a century.

Water absorbs minerals and trace elements in specific quantities depending on the subsoil and rocks it encounters. It can therefore have a low, medium or high mineral content.

Lastly, water also owes its taste to the depths of the earth, specifically to the mantle which lies under the earth’s crust and exhales noble gases and juvenile water – water which does not come from the water cycle. In volcanic areas the impact of this deep water can certainly be discerned more clearly.
A terroir to be preserved

Water, which is powerfully influenced by the terroir in which it has forged its taste, is like a wine which does not undergo vinification, leaving the job of blending, balancing and perfecting to schist, limestone, grasses and lichen. The unchanging nature of the terroir allows a mineral water to retain its identity and stability. Although man does not intervene in the process by which mineral water develops underground, he is responsible, by contrast, for guaranteeing the quality of the environment, and primarily for protecting the spring from which pure water untouched by pollution emerges.

PROTECTING THE PROCESS OF NATURAL RENEWAL

Pure, stable and healthy, natural mineral water always originates underground, where it is produced in a pollution-free environment. Its mineral and trace element content must be consistent. In order to preserve this unique quality and taste, expert intervention is required to monitor the springs and scrutinize water resources.

At each stage of the process, water guardians are careful to protect its integrity. The entire catchment facility is cocooned, protected by secure well-houses. Catchment is carried out in such a way as to prevent any surface contamination. The health of each spring is monitored continuously to ensure unimpaired quality.

This vigilance also extends to the catchment area which must be protected from all harmful influences. Within this perimeter, all activity is regulated or even prohibited, according to the legislation in force. At each spring, professionals work to raise awareness among local stakeholders about the exceptional nature of the water and the need to protect the resource in the long term. Environmental contracts are signed with farmers and all local communities to encourage them to grow crops which do not pose a pollution risk to the soil, thus protecting biodiversity.

“One Foot on the Ground and the Other in the Water”

Everything connected to the study of underground water falls with the realm of hydrogeology. A hydrogeologist explores the circulation of underground water. He is a water prospector when looking for underground water, a geologist when analysing the rocks through which the water passes, an environmental engineer when examining the repercussions of human activities on the aquifer and a chemist when monitoring water quality.

“A hydrogeologist is as much a historian as a water diviner, researcher or chemist. This profession has a very practical aspect – finding underground water, setting up catchment mechanisms and mastering the operational techniques – but it is also very closely connected to protecting the environment. It is our responsibility to detect how vulnerable an aquifer is to any given human activity, i.e. the underground repercussions of surface activity.

Protecting groundwater is a clear priority if we want to preserve the quality of the catchment. The signature of a water is the result of a fragile process and there is still an element of mystery involved.”

GHISSLAIN DE MARSILY, HYDROGEOLOGIST

Man, guarantor of water’s integrity
A glossary of water...

Renewal

Every drop counts. Although nature is generous, saving resources is the order of the day if we are to safeguard water in the long term and to hand on this legacy in due form to future generations. Therefore the amount of water abstracted is calculated for each mineral water spring in order to avoid depleting the resources of the hydromineral system. The health of the springs is continuously monitored. Measuring devices positioned at catchment points provide continuous information on flow, water levels and groundwater pressure. Specialist engineers double-check this information by visiting the spring to observe its condition. All this data is analysed at regular intervals by staff responsible for water resources in conjunction with the physico-chemical and microbiological elements of the waters. There is little point in saving mineral water if we then waste fresh water. As such, industrial production systems have, in turn, reduced their water intake and recycle waste water.

Discharge zone

This is the place where the mineral water appears on the surface either by natural means from the hydrogeological system or by borehole. In the first instance, the water emerges under its own momentum without any human intervention at all and presents itself for collection. The Henniez region in Switzerland is a wonderful natural discharge zone. The water is extracted without the need for pumps simply by skimming off nature’s surplus. In the second case, the water is collected underground. The groundwater discharge zone of a mineral water is protected under most forms of legislation. In France the protective zone around springs has been strictly regulated since 1937.

Impluvium

In every self-respecting Roman house, the atrium or reception room, housed a huge sunken pool known as the impluvium, which was used to collect rainwater. This word is used in French to describe the catchment area where rainwater or snowmelt seeps down to feed the groundwater from which different mineral waters are collected. It is also known to specialists by the less poetic term, recharge zone. The water catchment area can be vast, covering as much as several hundred thousand hectares in the case of the La Vie spring in Vietnam, or much smaller. The Vittel catchment area is 10,000 hectares, for example.

Alfalfa

I am a fodder crop which can be grown easily without the need for pesticides or additional nitrogen. My roots capture and trap nitrates. I am a leguminous plant, rich in nitrogen which is essential for animal nutrition and I also provide protein, vitamin A and calcium. What am I? Alfalfa! Previously cultivated in the Lorraine region, this plant had disappeared, superseded by corn. It is now making a comeback on account of its impeccable green pedigree. Its cultivation is encouraged among farmers in the area around Vittel by the Agrivair programme.

Ladybirds

The ladybird, known in French as ‘god’s creature’, is the sworn enemy of aphids. Larvae from these charming red insects with their black spots ward off predators. They replace pesticides and are much more attractive to look at. The Vittel rose gardens are therefore protected by an army of ladybirds who lay their precious larvae in a specially created laying area.