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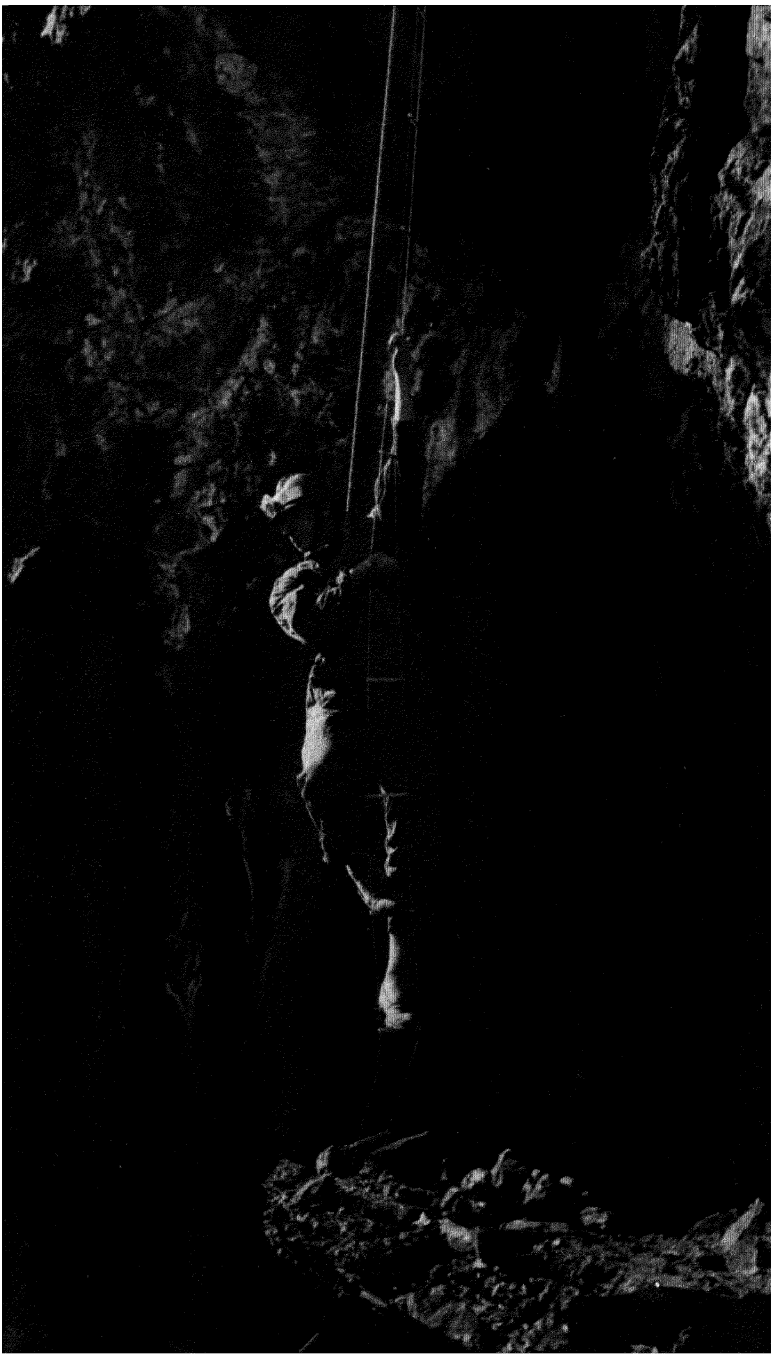
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CAVE MEN
NEW AND OLD

By the same author

TEN YEARS UNDER THE EARTH

MY CAVES



CAVE MEN

NEW AND OLD

by

NORBERT CASTERET

Translated by

R. L. G. IRVING

With 16 pages of photogravure plates

LONDON

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TO THE DEAR MEMORY
OF MY WIFE

who followed and helped me valiantly in more than three hundred caves, pot-holes, and underground rivers

and

TO MY MOTHER

who held my hand in my first cave
when five years old

CONTENTS

PAGE

Introduction xi

PART ONE

IN THE DEPTHS OF THE EARTH

1. The Battle of the Depths in the Pot-hole of La Henne-Morte 3
2. Our Lady of the Chasms 86

PART TWO

THE DEEP PLACES OF THE HUMAN SOUL

1. The Place of Caverns in Mythology . . 117
2. Caves in Sacred Writings 131
3. Thunderstorms and Caves 152
4. A Survival from Prehistoric Times—the Primitive Calls of Mountain Peoples . . . 160

Index 175

ILLUSTRATIONS

Landing 170 Metres below the Surface	*Frontispiece*	
Norbert Casteret and his Wife Elizabeth	*facing page*	16
Abbé Cathala	„	16
Dr. Clamagirand	„	16
Raoul Casteret	„	21
Pierre Castéran	„	21
Ichac and Gaché struggling to keep awake	„	27
The Leader of the Advance Party whistles frantically	„	27
It goes down 325 ft.	„	42
The Spelaeologists' Camp	„	48
Flowers of Gypsum from La Cigalère	„	48
Le Lieutenant du Puy-Montbrun	„	59
Claude Maurel	„	59
Josette Segouffin	„	74
Great Clusters of Crystalline Flowers (Esparros)	„	74
In the Great Shaft of Esparros	„	89
Le Pont du Diable	„	94
Entrance to the Hall of the 25th June	„	94
Mass in the Pot-hole of Esparros	„	103
The Altar and Statue of Our Lady of the Chasms	„	108
Stalactites of Esparros	„	108
In the Pot-hole of Esparros	„	127
Ertaud emerging after Five Days and Six Nights below	„	134

Ertaud and Gaché 130 Metres down . *facing page* 134
Stalactites from Esparros . . . . „ 155
Crosiers and Plumes of Gypsum from La Cigalère . . . . . „ 155
Joseph Delteil . . . . . „ 170
Marcel Loubens . . . . . „ 170

INTRODUCTION

THE main subject of this book is the investigation of deep chasms and caves and an account of my experiences in exploring a gigantic pot-hole called la Henne-Morte in Haute-Garonne, the deepest then known in France. The reader will also find in these pages the description of a ceremony which is exceptional, I might say unique, the celebration of the first mass to be said in the depths of a great chasm, that of Esparros in the Hautes-Pyrénées.

La Henne-Morte and Esparros are successors to previous discoveries and exploration described in earlier works: *Ten Years Under the Earth* and *My Caves*. The present volume is the natural sequel in chronological order to the author's underground campaigns.

But the title *Cave Men New and Old* covers something beyond the actual forcing of a way into the bowels of the earth. The pages which follow will provide matter for thought in the discussion of certain problems of the underground world arising from the practical and scientific knowledge we now possess.

In due course the book will have something to say about the relations existing between caves and mythology, that is to say, with the myths inspired in the men of old by the realms of darkness (and it will be seen how important and varied has been the part played by visits underground).

Many curious problems on the subject of caves and prehistoric man are presented by folklore and philology; a quite surprising thing and still almost unknown is the connection between thunderstorms and caves, the origins of rustic cries, of the language of prehistoric man, of the mysterious soul of man—this last an abyss incompletely explored and probably unfathomable.

These ideas follow naturally on other discoveries, no less surprising in my opinion, which have been set out in earlier

books dedicated to the better knowledge and the greater glory of caves: *La Magic aux temps préhistoriques*, *L'Art préhistorique*, *La Grande Faune du quaternaire*, and *Autre histoire d'une goutte d'eau*. These, together with *Phénomènes souterrains*, *Le Faune cavernicole*, *Trois ans chez les chauves-souris*, *Empreintes préhistoriques*, and *Le Christ et les grottes*, etc., were the subjects of instruction chosen by the author and which he hopes may have led to a better understanding and a greater love of the realms below.

Cave Men New and Old deals, therefore, as much with the static, scientific, and philosophic aspects as with the material, sporting, and dramatic sides of spelaeology.

The carrying out of these investigations was by no means an altogether pleasant, easy task. Many caverns turned out to be difficult to approach and explore; some were extremely dangerous. Moreover I had to embark on the study of kindred subjects and branches of science which involved me in much labour and gave me no assurance of success.

It would certainly be unwise and presumptuous to anticipate numerous or easily won successes or frequent and sensational discoveries in the domain of spelaeology, where only perseverance wins a slow advance. One of the truths we learn from it might well become a motto, which is that patience is not a sign of weakness but of extended strength.

But the true cave-lover never loses heart. In his view 'there is no need of hope to begin the task, no need of success to persevere.' Our spelaeologist, weary and stiff in every limb after an arduous and fruitless visit underground, or after a study of other men's writings that has led to no conclusion, returns below or to his documents indefatigable, without recriminations, more enthusiastic and ardent than ever, consoled and fortified anew, like Antaeus, by the mere contact with his Mother Earth.

Inspired by this passion of his, urged on by the demon of adventure and research, which lets him ignore checks and disappointments, our underground explorer never yields to boredom or discouragement. Moreover the solitude, the

mystery, and the strangely impressive silence create an atmosphere of their own which never fails to act upon him and lends an enhanced spiritual character to the world below.

Down there, where the uninitiated see nothing but darkness and mud, feel nothing but gloom and apprehension, even terror, the real cave-lover, the one who has obtained his *baraka*,[1] pursues his way untiring, his senses and his mind alert. He starts, is turned back, sets off again, pushes further on, deeper and deeper into the darkness, as if into the obscurity of ages long past, quivering with excitement if some fantastic scene or sensational discovery holds him spellbound; not less happy and content if his exploration has proved to be no more than a silent contemplative walk in the bosom of the earth. Has not Pascal written: 'La nature a des perfections pour montrer qu'elle est l'image de Dieu, et des défauts pour montrer qu'elle n'en est que l'image.' (Nature has perfections to show us she is made in the likeness of God, and imperfections to show us she is but a likeness.)

[1] Arabic word. The possessor of the *baraka* is an initiate who has become familiar with some special cult or science.

PART ONE

IN THE DEPTHS OF THE EARTH

Everything comes out of the earth,
Everything returns to the earth.

XENOPHON.

I

THE BATTLE OF THE DEPTHS IN THE POT-HOLE OF LA HENNE-MORTE

Out of the depths have I cried unto Thee,
O Lord.

PSALM CXXX.

When Martel, the apostle and creator of spelaeology, carried out his third underground campaign in the Pyrenees, he devoted a few days to the small limestone massif of Arbas on the borders of Ariège and Haute-Garonne. He explored various interesting openings there, in particular the huge cave of Pêne-Blanque, whose peculiar hydrogeological features fascinated him.

In 1913, attracted by the nearness of this massif to my holiday home and by remembrance of the great geologist's visit, I came to put my youthful vocation to the test by descending, in strict secrecy, alone and with only a poor sort of rope, into the Planque pot-hole previously explored and described by Martel. Filled with the fervour and the terrors of a hierophant, I managed to reach the bottom of the chasm; this was *mon premier gouffre*, my first pot-hole. I even succeeded in emerging without breaking any bones, and, what is more, in discovering an extension of the cave which had escaped the notice of my illustrious predecessor.

This unaccompanied initiation, in the course of which I passed through many exciting moments, ensured for ever my devotion to the hard, uncouth, but incomparable delights of this thrilling spelaeology, and it gave me, as I gladly acknowledge here, a special devotion to this Arbas massif.

And so when in 1930 my colleague and personal friend Robert de Joly, president of the Spéléo-Club de Paris, informed me he was intending to carry out a campaign in my

beloved massif to see once more the pot-holes previously visited by Martel and to investigate others as yet unexplored, I was thrilled. Indeed, for the last seventeen years I had faithfully come back to these mountains, never tired of wandering through their forests of beech and pine, their tumbled wilderness of rock, and their caves; only the vertical chasms had remained forbidden ground for want of the proper apparatus and the rope-ladder that was indispensable. Now, thanks to the expressed desire of my colleague, I should be able to undertake with him vertical descents to explore the depths of these attractive and awe-inspiring pot-holes.

Meantime, in anticipation of the arrival of my friend with his team, I made a reconnaissance with the object of locating the most interesting pot-holes and estimating the difficulties which heavily laden men might find in reaching them. Accompanied by a fellow named Loubet from Arbas, who had already acted as guide to Martel, I took a long ramble over the mountains, and in the course of it I found myself gazing enraptured at the imposing mouth of a chasm I had not known before, the Clot de la Henne-Morte (the pot-hole of the Dead Woman). I had heard its tragic history from Loubet himself. It proved to be the typical story of a poor woman who lost her way in the forest and fell into this pit of Nature's making, on the lip of which was found a wooden shoe and the victim's scarf caught in a branch overhanging the opening, doubly convincing evidence of the tragedy.

When de Joly and his friends reached Arbas, their specially adapted car with its mass of apparatus and personal equipment for the members of the party caused quite a sensation. I mentioned the pot-hole of la Henne-Morte and several interesting-looking pits in the snow and ice; but a disastrously rainy period set in which upset our plans and compelled the team from the Spéléo-Club de Paris to shorten its stay. We had to be content with a descent into only one hole, le Pont-de-Gerbaut, in which Martel had been stopped in 1918 by avalanches of stones; de Joly managed to

check these by fixing strips of wire-netting to the scree which started these dangerous showers of missiles.

It was in this impressive, picturesquely situated chasm, a real terror to the local shepherds and woodmen, that I made my first descent on ladders of rope and steel wire. My intrepid and ingenious colleague showed me the technique for descending these great chasms, and it was thanks to him that I came to know what thrilling sensations these perilous but enthralling performances can give. So enthralling indeed that, five years after this plunge into the depths of le Pont-de-Gerbaut, I had, by means of the wonderful electron ladders invented and manufactured by de Joly, effected innumerable explorations of chasms in the Pyrenees and in the Atlas. With my wife to help me, I had actually discovered and explored the deepest chasm in France and the deepest in Africa. As for the hole of la Henne-Morte, which Martel had left alone and de Joly had failed to attempt, it still figured on my programme and retained a prominent place in my memory. But its distance, the difficulties of access involving a long repellent transport of apparatus to the entrance at over 1,300 metres in the middle of a forest full of hills and hollows, had offered little inducement to undertake its exploration.

FIRST SESSION

Ten years had passed since the day when I had first located this pot-hole of la Henne-Morte when, in October 1940, I had a visit from two disciples of mine who had developed a passion for caves from reading my books; so, at least, they were pleased to assure me. These two young people, neither of them yet twenty, Marcel Loubens and Josette Segouffin, had already been several times underground with me, and I had been struck with their keenness and agility. They had just succeeded in making their first descent together into a pot-hole and were still bubbling over

with excitement as they told me how, with the scantiest of sound equipment, they had gone down the Clot de la Henne-Morte!

With nothing but ordinary ropes and a single rope-ladder they had attacked this great hole. With fine audacity and in considerable danger from methods of which the technicians would not approve, they had reached a depth of eighty metres where they had had to stop for lack of adequate apparatus.

The mystery of the unknown—one of the most powerful attractions in underground exploration—had held them breathless with excitement on the balcony where their first reconnaissance had to end. They were longing to go down further, deeper and deeper, and it was this desire, this overwhelming need to find out, to know intimately, to explore, that showed me my young friends had the true spelaeologist's outlook.

With all the ardour of youth they described their adventure; in particular, how they had to trust to the rope-ladder and the smooth rope itself without being able to secure the companion who came last. No doubt the purely physical aspect of the achievement counted for much, and well it might, in this escapade of theirs, and I am the last person to be inclined to blame them for it.

It was late in the season, the end of October, when this reconnaissance by Loubens and his friend took place, and the arrival of the autumn rains and first winter snowfalls the following week put an end to any possibility of renewing exploration. It was agreed to put it off till the summer of 1941 brought settled weather.

These two pioneers of la Henne-Morte had, it seems, reached a depth of eighty metres and found that the shaft appeared to go down for another fifteen or twenty metres more. They had listened and thought they heard the murmur of a small stream further down; but none of this added any particular new interest to this chasm. My summer campaign of 1941 was spent in what I considered more

urgent researches, and it was only at the very end of the season, 1st October, that I set off with Loubens and, to our regret, without Josette Segouffin, to complete the exploration of the Clot de la Henne-Morte.

SECOND SESSION

Before it was light we left Arbas, the small village nestling at the foot of the imposing cliffs of the Pêne-Blanque (the White Rock). A long, tiresome ascent, heavily laden, up steep wooded slopes, brought us in three hours to the Henne-Morte pot-hole. Up here, at 1,300 metres, the ground is too broken for forestry work, and under the dark pines, concealed by a tangle of tree trunks blown down or dead from age, is an astonishing chaos of boulders. This zone of fallen, shattered rock, where the *dolini* actually touch each other, constitutes a stony waste of vast extent, known to the natives as *carrics*, a term whose etymology is beyond me.

Here, in natural surroundings of the wildest disorder, is the yawning mouth of the sinister chasm. It consists of an oval-shaped funnel about eighty by fifty metres, divided at the bottom into two parts by a rocky partition. On one side, out of sight thirty metres down, is a bed of hard snow which lasts all through the summer, on the other is the opening of the actual shaft of the pot-hole.

Descending to the bottom of the funnel we fastened one of our flexible ladders to a rock, and, repeating the manœuvres employed the year before by my companion and his lady helper, we proceeded to descend the first vertical drop of fifteen metres, where we found footing on a very sloping ledge covered with leaves and bits of branches. A number of stones shifted under our feet, rolled down, and bounded away to another vertical drop, where they leaped into space and fell freely for some seconds before crashing in a chamber which might well be of vast proportions, judging by the long sonorous echoes awakened by the avalanches we sent down.

When we too, following the stones, came to the brink of the vertical drop, where the darkness became total, we effected a descent of thirty metres, swaying about on our ladder, and landed on a solid patch of hard snow, the remains of the falls of winter snow which lined the funnel above and finally slipped down here. This underground snow-bed converted into a refrigerator the imposing chamber whose floor it partly occupied. The temperature here was in fact zero, and the condensations and infiltrations of water which collected on the roof were frozen into stalactites and veneerings of ice.

Crossing the tumbled mass of boulders and tree trunks on the floor of this great natural ice-cavern, whose roof must, in places, have been forty to fifty metres above us, we proceeded by a very narrow passage between the walls of an upward sloping chimney to a small terrace, which, on its far side, overhung a further drop. This was the place where Loubens had been stopped the year before eighty metres below the surface for want of ladders and ropes. On this occasion, while he was fixing a smooth rope to a spike of rock, my attention was caught by two small skeletons lodged in a crack. An examination of the skulls enabled me to identify them as those of martens (*Martes abietum*) which had fallen into the vast trap of the pot-hole and dropped without being killed on to the steep slopes of the subterranean snow-bed. Their fall very likely occurred during the friskings and pursuits of the spring mating time, which wakes these graceful creatures to vigorous life. Imprisoned in the great hole, the slow advance of death had brought them together to this small niche whither instinct had led them to die of cold and starvation, nestling close to one another. This reminder of a humble tragedy, similar to many others I have come across underground, brought my thoughts back to that other tragedy which has given its name to the chasm, that of the dead woman whose skeleton has not yet been found. Doubtless she lies in the snow buried deep under the successive winding sheets

which fresh falls lay every winter on the floor of this chilly tomb.

My short reverie was interrupted by shouts of joy which were in sharp contrast with my line of thought. Loubens, sliding down the rope, had come to a stance ten metres down, and informed me that a new depth of shaft opened below him which would involve the use of our electron ladder. Letting myself down by the arms I rejoined him, and we continued our downward plunge, using the ladder now, into a narrow shaft with occasional skewbacks over which trickled the stream which had betrayed its presence to the sharp ears of the 1940 pioneers. The last rung of the ladder was trailing on the floor of a small oval miniature chamber where we foregathered, soon to be disillusioned, for we had the impression of being now at the bottom of the pot-hole which appeared to end up here without any way out except for a narrow, impenetrable crack.

Into this crack the thin trickle of water found its way, disappearing as stealthily as it had appeared above, between two beds of limestone.

'Never mind, that makes a depth of a hundred metres,' I remarked, after calculating what our total length of ropes and ladders added up to, and taking account of the slopes of various sorts.

Once again we should have known the initiation of a project, the thrill of discovery, and once again soon after the disappointment of being rudely stopped by one of those impenetrable cracks where only water can find its way through to the secret depths of the underworld, towards the bottomless holes and vast chasms which our imagination longs for and builds and which do actually exist, seeing that we have on rare occasions been admitted into these great realms below.

Bending down close to the crack, Loubens persisted in maintaining that the pot-hole did not end here, that it must go down below the closing up of the rocks. Yes, I know, I 'm quite aware of it, but as I tell him, the way of water is not unhappily always a practicable way for spelaeologists,

and most holes present us with fissures and cracks like this which are closed to humans whereas water and air move freely in them.

'There 's air blowing out actually,' observed Loubens.

'Or rather being drawn in, for we can feel it on the backs of our necks'; an icy draught was pouring into the narrow duct (the thermometer here read 2° C.).

'What about trying to clear a way through?' he persisted.

That is the obvious reaction in such cases of every self-respecting cave explorer. The really hard-bitten 'cavernophil' never gives up without having attacked the obstructing rocks and dug into the sticky clay, without exhausting himself in attempting the impossible. So, faithful to tradition, we proceeded to do sad damage to our fingers in loosening a block which had become solidly wedged in the loophole. After getting out this rock, a closely packed conglomerate of smaller rocks compelled us to work on our stomachs with our hands in the icy water at the full stretch of the arms in the duct, which took a slight bend like an old-fashioned bayonet.

Our comments were intentionally pessimistic: 'It 's obvious such a narrow crack is impassable'; a view we endorsed, moreover, every time one of us retreated, exhausted and stiff, to let the other have a go. But the imp of adventure was always there, entreating, tempting, spurring us on. It whispered all sorts of confidential encouragement based on many memories of successes after hope had been abandoned; cat-holes enlarged with the hammer, 'flatteners' squirmed through with many groans, 'siphons' passed by boldly diving. In short, there was no denying that I had managed to insert my shoulders and chest where at the start I had been unable to insert my head.

As my torso acted as a cork the current of air had only a tiny space to enter the passage into which it was being drawn. The recent whispering of the small imp had been succeeded by a whistling sound, then by a roar like that of a forge's bellows, very familiar to those who have crawled and panted

in airholes. By a series of jerks, crawling on my side so as to adjust my shape to the narrow duct, I forced my way through inch by inch. Advance was slow and difficult in the tricky rock which caught my shoulders, my hips, and my knees till it seemed things were getting a little easier and that a few more efforts would see me through. Despite this more favourable outlook, and acting quite against my usual principles in such a case, I did not persist in my crawl for two reasons. Firstly, the rocky walls enclosing me were covered with small but very solid spiky concretions; secondly, thanks to an amazing omission on my part, I had not put on for this occasion my usual overall of stout canvas. The many clawings and tears I could feel on my blouse and my ski-ing trousers cooled my enthusiasm. So I began to crawl backwards, having informed Loubens of my recent assurance of success and at the same time of my reasons for retiring. He appreciated my sartorial fears, and confident in his lithe body and the resisting powers of his sail-cloth overall, he crept in to take my place in trying to force a way through. He found his length of nearly six feet a formidable hindrance in the bending cat-hole, where his long limbs made advance very difficult; nevertheless, by dint of various contortions in violent efforts to imitate a snake, itself swallowed by a boa of stone, he vanished from sight and presently a breathless, triumphant voice announced: 'I 'm through!' But the cat-hole opened over a new vertical drop which I hoped we should be able to descend without a rope.

After this I should have to trust to listening to his encounters with the walls of rock, to the rubbing of his overall or scratching of his nailed boots against them. From time to time he sent back a brief message to tell me how he was getting on. Already he had notified me in a voice that became fainter and fainter, of four stages, when a sudden exclamation of some sort made me inquire anxiously:

'What 's happened?'

'My lamp has gone out!'

'Well, light it again.'

'Just so; but I haven't any matches!'

'All right. Wait there, don't move, I 'm coming along.'

So here I was again in this trap with spiky sides, in which, behaving very differently from the solid canvas of the overall which slid over them, my cloth garments caught on everything. There it goes! A rending sound confirms a monster tear in my trousers!

A few minutes of gymnastics of every kind enabled me to rejoin Loubens, who had wisely waited for me on the lowest ledge he had been able to reach. There my acetylene lamp met his in the traditional, formal embrace which transmits its flame.

Instinctively we both leaned over the continuation of the pot-hole, a sort of narrow letter-box, albeit penetrable, beyond which the shaft widened out and dipped vertically. The combined light of our lamps showed up the vanishing perspective of the walls for some thirty feet down where an overhang shut out what was below. We had neither plummet nor burning paper to throw into the hole to give us an idea of its depth, but a few stalactites served as missiles to fling into the black void.

Making allowance for considerable errors in this unreliable method of finding depth by sound, we reckoned it by the time of fall of our stalactites at some forty metres. Now we ourselves had come twenty metres below the cat-hole, which gave to this pot-hole of la Henne-Morte a depth of about 166 metres. On the whole a rather remarkable result, for this latest reconnaissance had enabled us to double the depth gained the year before. Assisted by the poor feckless victim of the place and also by the small hobgoblin mentioned above, we gave ourselves the satisfaction of imagining, of admitting, and before long of determining that the pot-hole did not end where the stalactites had fallen on rock, for that could only be a mere ledge, the starting point of a fresh descent. For the present we could have no confirmation of whether we were right or wrong.

We had not the requisite tackle, so we had to turn back and climb straight up the twenty metres of steep wall between us and the cat-hole. In the latter we had to deal, as in our entrance through it, with its obstructing bed and its maddening projections of rock. When at last we reached the small chamber where I had recently waited when Loubens was continuing his descent, and while he was exulting over the day's achievements, I touched him on the shoulder and pointed with outstretched finger to the wall.

'We are not the first to have entered here,' I said solemnly.

My companion bent down to look and to his amazement and dismay made out an inscription scratched in red pencil on the uneven surface of the rock. But all of a sudden his sensitive face lit up and a hearty burst of laughter relieved his feelings. The *graffiti* dated from a quarter of an hour ago; it was I who had scribbled the date and our initials during my short wait alone in the place.

The rest of our re-ascent was carried out in normal fashion, save that the climb up the thirty-metre ladder was made without any safety-rope (repeating the imprudence, one might say the folly, of a year ago), and no incident marked our return to the surface. There, pretexting a photograph of the site, Loubens succeeded in making me pose with my back to the camera, deep in contemplation of the landscape. As a result his album has been enriched, if one can so describe it, with my silhouette adorned with the enormous tear in my trousers.

This first light tribute to the pot-hole of la Henne-Morte was not to be the last; we had reason subsequently to deplore incidents and accidents of a far graver character than mere damage to our clothes.

THIRD SESSION

Three weeks later we went down once more, despite a snowfall which spread a covering over the forest and the funnel of the hole, making our walk up more tiring and

calling for more care in our measures for the descent. This time we had brought a more elaborate outfit and had two others to help us, Espagne and Pellegrin, who were delighted to be introduced to the pot-hole and reached the point 130 metres down where we had previously stopped. Their job there, and very well they did it, was to help Loubens and me to unroll the extra ladders we had with us and let us down and bring us up at the end of a long rope, the regular procedure in prospecting a vertical descent.

Loubens, the discoverer of this pot-hole, or rather the first to go down it, was likewise the first on this occasion to enter the letter-box and disappear below it on the magnesium rungs of the forty-metre steel wire ladder we had unrolled for his use. It was some time before he whistled to announce his safe arrival at the foot of the ladder. On hearing his signal the safety-rope which he had taken off was drawn up. Tying it round me under the arms I too prepared to take the plunge.

For the first ten or twelve metres down I kept bumping against the walls of the shaft, which was fairly narrow; then came a sudden dramatic change. I had the feeling of having entered, as though through a skylight, the vault of a vast cathedral.

It was a surprising and thrilling effect, after the series of compressions suffered above, to be swaying about in the dark in space. The light in my helmet did not enable me to make out any limits to the vaulting, or the walls or the floor of this gigantic nave. It was a bewildering surprise, and for a moment I paused in my descent, hanging on to the ladder as it oscillated in the void, to enjoy the wonder of this overwhelming, unexpected revelation, the like of which cannot, I think, be experienced except in this underground world, so strangely different from anything existing on this planet of ours.

What had happened here? What colossal power to fracture and erode the rock had been in action to carve out within the mountain cavities of such proportions as these?

Coming on top of our arduous advance in the narrow shaft and in the cat-hole we had enlarged and penetrated with so much labour, this sudden emergence into the colossal cavern was a truly wonderful experience, rewarding us a hundredfold for the persistent efforts we had made.

This time it was not, as above, a narrow uncomfortable ledge that I had reached, but the floor of a spacious gallery. Once more we had been right to lend a willing and obedient ear to the urgings of the imp of adventure that dwells underground. That invisible being, who haunts caves and gets busy with any visitors the moment they enter his domain, enjoys frightening and driving away the uninitiated and timorous, but welcomes with tempting advice the adventurous, the lovers of solitude and of the dark. His names are many, as are his abodes—gnome, kobold, nutton, sotois, djinn. But he is well known to workers underground, who are, all of them, superstitious folk, believing or pretending to believe in haunted mines, haunted quarries, haunted caves.

Such wildly or mildly fanciful thoughts did not, however, render me oblivious to realities, and as I stood at the foot of the ladder to take off the safety-rope, I realized that my feet were resting in the bed of a stream which stole in a few yards away through a kind of natural aqueduct. At the same time a vague sound reached me. Were they shouts, calls for help? I could not say. Walking through the water and entering the rocky defile where the underground stream broke into a succession of small waterfalls, I heard the sounds of shouting more clearly, and I suddenly recognized them as that fine tune from *Mignon*: 'Connais-tu le pays où fleurit l'oranger.' There was certainly something paradoxical in calling up the vision of an Italian sky in the icy darkness of this hole. But I have a most vivid memory of Loubens, whose fine baritone and passion for the music of Ambroise Thomas was new to me, singing at that moment at the top of his voice, a sure proof of great excitement. What was it he had discovered?

I hurried towards him, delayed for a moment by a rather anxious crossing of a cascade several feet high falling into a deep basin which would have been awkward if full. There at last I found Loubens standing on the edge of a drop. Seeing me, he gesticulated excitedly and stopped singing.

'The pot-hole goes on further and further down!' he shouted, wild with joy.

It was quite true; I realized as much when I knelt down and bent over the chasm into which the stream fell in a vertical cascade. I took my torch out of my bag, but, powerful as it was, it failed to light up the bottom of the fall.

This time again I had forgotten the sounding line, but I unfolded and twisted up a couple of newspapers, set a light to them, and let them drop into the hole. These improvised flame-carriers shed a momentary gleam on vertical sides dripping with water, but they were quickly caught and extinguished in the cascade. Numerous rocks which we proceeded to send down into the gap did not crash on the bottom of the shaft till three and a half seconds later, which corresponds roughly to a fall of forty-five metres. The disclosure of this figure made Loubens's eyes dance as he reckoned the immense depth to which the exploration of the pot-hole was enticing us. For the moment we had once more run out of ladder lengths and there was nothing for it but to withdraw, after indulging in raptures over the increasing and truly colossal scale of the chasm the deeper it sank into the ground. Our stay below had lasted ten hours, and to get to the place had meant, in addition, a spell of forty-five miles on bicycles and a walk uphill of several hours with exceptionally heavy loads.

Our one desire, as you can well imagine, was to return to the pot-hole at the earliest possible moment to continue our exploration. Unfortunately we were at the end of November and snow was going to impose a long delay on our getting there. It was advisable too to wait till the snow melted, for it fed by secret channels the underground streams and quickly increased the volume of the cascade in



M. NORBERT CASTERET AND HIS WIFE, ELIZABETH



ABBÉ CATHALA



DOCTOR CLAMAGIRAND

spring and even, as we were to learn by experience, all through the summer.

For which reasons it was not till eight months later, on the 6th July 1942, that the pot-hole received another visit from us.

FOURTH SESSION

The difficulty and strain of carrying heavy loads up the mountain on every visit we had made had been so great that we had arrived at the entrance of the chasm dangerously exhausted, and on this fourth expedition the gear we felt was all we could carry proved insufficient. We had, however, on this occasion a couple more to help us in carrying up extra ladders, Roger Pellegrin, who took sole charge of the operations at the relay post 130 metres, and Marcel Pons, who reached our furthest point of the year before at the top of the cascade with Hubert Pellegrin, Espagne, Loubens, and myself. There Loubens earned high praise for a most gallant vertical descent of forty-five metres under the shower-bath of the cascade and landed on a ledge where he had some room to move but suffered greatly from the mist and spray and a strong draught of cold air. The noise of falling water and his distance from us made conversation difficult, but he managed to convey by shouting that he was held up by a fresh drop, not of very great height, but impossible without some tackle or a simple rope. To my suggestion I should join him he replied that this would only mean an extra operation and loss of time and that he could not wait there shivering. Accordingly he came up at once, and as before under the shower-bath which got right through his overall and clothes.

This time, then, our visit was just a quick reconnaissance carried out by a single individual, but it provided confirmation that the cascade was quite forty-five metres high, that it continued further down, and that this pot-hole of la Henne-Morte could be put straightway into the category of the great French chasms of over 200 metres.

There is no denying it; from that day onwards the idea and the hope of seeing our pot-hole become the deepest of all took root in our minds, inspired us, and attracted a team of friendly collaborators who were fired with enthusiasm at the prospect of beating the depth record, if only as sharers in the task, an ambition which the severest difficulties and trials failed to check.

This ambition, this 'religion,' of the record may be criticized—and it is certainly open to criticism—its motive is anti-scientific, there is something showy about its aim; but its overwhelming attraction is characteristic of our time and culture. 'Recorditis,' the feverish cult of performance, which has crept into and found favour in quarters where one would least expect to find it, could not fail to infect a team of young people getting together to penetrate as far as possible into the bowels of the mountain, while others are attempting either to reach the highest summit of the globe or attain the greatest speed in flying, cycling, running, or swimming.

And so—it is, as I said, useless to deny it—our assaults on la Henne-Morte were henceforward to be delivered in the spirit of a tough, sporting adventure, an attack on the deep cave record. Our motto became: *Quo non descendam!*

Was this ambitious aim justified? Was it not presumption on our part? I do not think so. Since 1935 the deepest known chasm in France had been the Martel hole, named so by me when I and my wife discovered and explored it to a depth of 300 metres. Next to it came the Puits de Heyle or Trou d'Audiette, in the Basque country, where exploration was begun by Martel in 1908 and completed in 1935 by Max Cosyns and Vander Elst, who reached the bottom at 250 metres. Third place was now taken by this new pot-hole of Henne-Morte; its 230 metres, with the continuation observed by Loubens, seemed to justify all our hopes.

We had already begun to organize the next expedition, which was to comprise a team of six and enable three of us

to reach and, if possible, pass this 230 metres. Anticipation of a further gain in depth was already in view, and we were trying to calculate how important such a gain might be when, like a clap of thunder waking the echoes in the hollows of a cave, came a sensational bit of news that left us bewildered and aghast. My good friend and fellow worker Pierre Chevalier and his team, who had been operating for years in the pot-hole of Le Trou du Glaz in Dauphiné, had just realized a long deferred hope and effected a difficult junction between this hole and the underlying cavern of Le Guiers-Mort. It had meant a descent on ladders to 270 metres in a series of shafts and a long advance at a slight angle to the outlet of the subterranean passage. It added up to a total difference of level of 427 metres, which, in the language of the sporting papers, pulverized the record previously held by the Martel hole.

There was nothing to be done but pay our tribute to this great exploit and persevere with our pot-hole in the Haute-Garonne, which provided us with tit-bits of hydrogeological information as well as with activities and excitements of no ordinary kind; in fact with those pleasures of body and mind which give so much attraction to the practice of spelaeology and such satisfaction to those who like to associate their physical with their intellectual culture.

FIFTH SESSION

The first of August 1942 was the date of our next expedition, comprising Loubens, Hubert Pellegrin, and myself with three new recruits: Seurey, who was to remain alone to ensure our safety at the 130-metre relay post, Pierre Castéran, and my son Raoul who had both reached the top of the 45-metre cascade at 180 metres, and would operate there under the orders of Loubens; the latter's activities were restricted on this occasion to furthering the operations of the spearhead of the attack consisting of

Hubert Pellegrin and myself. Pellegrin, a strong athletic fellow of twenty-two, very keen, followed me down to the foot of the horrible cascade, whose waters had provided such a soaking shower-bath at 3° C. These really merciless douches are the *nec plus ultra* in barbarous cruelty which 'living' pot-holes (that is, those where streams of living water flow) inflict on man in the unequal, dangerous battle he wages in darkness and cold against the many snares of the underworld.

Despite our appearance of half-drowned rats, with our icy clothes clinging to us, we got busy with our sixty metres of ladders, our ropes, and our heavy sacks of equipment, now reduced to sponges. Our friends had let down the sacks from above by an ordinary thin rope which now hung in the cascade and was our only link with the upper storey of the cave. Seurey, alone on his balcony, and condemned to shiver for hours in an icy draught, had done his share in lowering the bundle of sixty metres of ladders which had been previously bestowed in the first shaft below the subterranean snow-bed. We were actually doing the transportation business in successive stages, to avoid having to carry hundreds of metres of ropes and ladders, which would have made an impossibly heavy, clumsy load. This method compelled us to allow for several assistants at the various relay posts, where we needed to detach the ladders after use in order to free them for use lower down. In consequence, we had to have up above on the surface at the opening of the hole, a team of amiable young men from the locality to see the ladders were safely drawn up at the end of the thinner rope, when we should come up in full battle kit to the level of the chamber containing the subterranean snow-bed.

Thanks to Hubert Pellegrin's help in sorting out and folding up our gear we were ready to descend further and get below the bulge previously noted by Loubens. We shouted an *au revoir* to our friends who would presently be out of hearing and hurried off down a first drop of five metres, then another of three metres, delighted at being able

RAOUL CASTERET



PIERRE CASTÉRAN



to get along on our feet in a sloping corridor rather like a toboggan slide obstructed by rocks, where we could advance bending under our heavy sacks, but still walking after a fashion, an exceptional mode of progress hardly ever practicable in this more or less vertical chasm. Moreover, the vertical character soon reappeared; we were brought up by a fifteen-metre overhang with an exit into a new part of the pot-hole, on an even greater scale than what we had seen already, judging only by the feeling of space and its acoustics. As for the walls and roof, neither came within the range of such means of lighting as we carried.

To descend over the bulge below us the employment of an electron ladder attached to a rock became essential. I went down alone, all the time under the trying attentions of the cascading stream, leaving Pellegrin to stay where he was till he heard the result of my reconnaissance.

For the last minute or two we had been puzzled by the impressive sound of a waterfall now revealed by the light of my lamp. In a corner of the great chamber I had just entered I made out a sheet of clear water whose surface was broken by a cascade falling into it from a sort of huge skylight twenty metres up on the wall. This underground lake was discharged by an effluent which ran into the middle of the chamber and there joined the stream which had been showering its unwelcome gifts upon us.

So here, happening before our eyes, was an actual case of the confluence of streams in these underground water systems which have in the long course of geological history made use of the fractures and cracking of the limestone. Percolating through the ducts and fissures in the rock, drilling and wearing it away, these active intrusions of water have gone on ceaselessly enlarging and deepening the natural pits and chasms in the subsoil. We know, of course, the destructive effects water can produce from the convincing evidence left on the surface of the ground by the violent action of torrents in the gullies and canyons they have carved out, or by the power of sea waves in sapping and breaking

up granite cliffs. But below ground, in the vast dimensions of certain pot-holes and some truly colossal caves, we realize more easily what can be done by the various processes employed in this relentless action of water. The violence and impetuosity of these swirling, eroding streams, the cataracts and columns that thunder down under the earth, score away the rock and increase tenfold the effects of this hydrodynamic action; while the no less irresistible concealed power of tremendous pressure eventually wears down the stoutest rock. As for the slow but implacable work of ages, the corrosion by chemical action, it can dissolve and break up the hardest kinds of marble. What terrific hydrostatic pressure must have exerted its strength in this huge chamber whose roof rose out of sight above us? What wild torrents have been at work chiselling, sweeping away, and banking up to give it this Dantesque appearance I find to-day? I, the first frail human creature to poke his nose into this titanic pit since the creation of the world. Nothing could be further from my mind at such a moment than the idea of record breaking, or any anxious calculation of our depth below ground, as I cautiously groped my way forward. Combining all my powers of thought with my slender stock of knowledge, I tried to reconstruct the gradual formation of this splendid chasm, to use my geologist's vision to discover what had been in what was no longer there. The appalling complexity of such a problem taught me my limitations; its solution was beyond me.

Meanwhile, with my mind seeking and evoking a sort of antithesis to the *mirabilis in altis* beloved of alpinists, I had crossed Lake Hall and been stopped at a fine new chasm into whose dark depths the cascade disappeared.

A single rock of enormous size rested on the edge of the hole. Putting down my lamp as well as my bag I braced myself against the great boulder and managed to make it move. It heeled slowly over and toppled into the shaft, falling noiselessly. Crouching on all fours, with head and shoulders over the void, trembling and with bated breath I

listened and waited. Somewhere between the fifth and sixth second a violent explosion followed by sounds of shattering and ricochetting came up from the bottom of the chasm, where the rock had been dashed to bits. I was petrified, as I had been before when the Martel hole revealed to me its immense depth; I could think of nothing but this new, grand, geological epic, and of the dangerously rude and intoxicating task that lay ahead in reading the riddle of its last canto in the abysmal darkness below.

But as an echo to this sinister protest of the shattered rock, almost before it died away, I heard noises and exclamations typical of the Comminges district coming from my companion, who from his perch on the balcony above was giving free vent to his astonishment and admiration at the result of my depth-finding by sound, which I hesitated to translate into figures.

SIXTH SESSION

The following month, on the 11th September 1942, we tried a new plan and made our descent into the pot-hole at eight in the evening. There was nothing fanciful or paradoxical in this; it was an attempt at perfection in adapting our methods logically to the circumstances. Hitherto our séances underground had in fact lasted from ten to thirteen hours. Consequently we had been obliged to walk at night in order to arrive at the opening of the pot-hole by daybreak; and further, when we emerged, darkness overtook us right in the middle of the forest where we proceeded to lose our way, carrying our horrible individual loads. On the other hand, by arriving at the pot-hole at the end of the day we would be certain of coming up again next morning in broad daylight, at a favourable time for our final stage back to Arbas. Moreover, thanks to much preliminary work in cutting branches and removing undergrowth in the forest, we had succeeded in clearing a track for a transport mule which would relieve us in future of part of the heavy stuff. This

time our reconstituted caravan had two additional members, bringing our number to eight. Two new members, Pierre Compans and Claude Maurel, had taken on the long, monotonous sentry duty at the uncomfortable relay post at 130 metres below ground. Two men new to the business, Jean Castéran and Henri Perrin, with my son Raoul, would see to the safe working of the rather complicated operations at the top of the cascade at the 180-metre level. Finally, Hubert Pellegrin and Pierre Castéran would have the honour, well earned in previous séances, of descending to my latest furthest point of Lake Hall, where the rock I had thrown down revealed an impressive drop. As for Loubens, who had gone off meanwhile to the Chantiers de Jeunesse et Montagne, he regretted his absence as much as we did, but he had begged us not to wait for him and to pursue our advance in depth without him.

There were also, this time, some innovations in our descent of the forty-five-metre cascade. Pierre Castéran, an eighteen-year-old, the Benjamin of our party, and I had put on our light balloon-cloth diving suits, which, old and porous as they were, gave us some protection at least from the icy douche. Pellegrin, who was unfortunately not provided with a waterproof overall, inaugurated a very bold and original way of dealing with the difficulty. He simply wrapped up his clothes in a waterproof covering and went down stark naked under the icy cascade, which the recent rains had swollen considerably; a performance more heroic than practical, demanding from its originator a quite exceptional endurance of cold and a succession of halts in acute discomfort for taking off and putting on his clothes.

The result of all this organization and hard work was nothing but a defeat so regrettable and discouraging that for a time we considered the complete exploration of the pot-hole of la Henne-Morte to be ended, with no possibility of carrying it further.

Indeed, the cascade in the last great shaft came down in

such volume and with such violence that when thirty metres down I was so buffeted and smothered, with lamps all extinguished by the column of water, that I lost no time in whistling to my active friends above to pull me up. They were as distressed as I was at the defeat, but conscious of having gone to the limit of what was possible. This séance had lasted sixteen hours, every one had done his job keenly and conscientiously, and the point reached where I had had to give in was 290 metres down. Another ten metres more and the Martel pot-hole, my French record up to date, would have been equalled. But there 's many a slip . . . and when you are dealing with vertical shafts freely watered, every metre counts.

Spelaeology, like other things, is a matter of long, patient effort and demands obstinate persistence. The equinoctial rains discouraged us from organizing fresh attempts which must inevitably have led to similar defeats with the waterfalls in flood. Further exploration was therefore put off till the following summer, and in the long months of waiting I made up my mind to adopt the forceful plan of descending at all costs, feeling my way down, if necessary, to the full extent of my ladders, when our next expedition took place, whatever the condition of the cascades.

SEVENTH SESSION

On 14th July 1943 Lake Hall was reached by five men, who proceeded to unroll a hundred metres of electron ladders into the great shaft not yet explored. Assembled there were Loubens, who had just been liberated, Pierre Castéran and Claude Maurel, and also Joseph Delteil, my former companion in the underground river of la Bouiche, whom I had specially invited to share the present expedition, as it promised to be unusually trying. On the other hand, Hubert Pellegrin was no longer with us, having been deported to Germany. My son Raoul and Julien Labedan,

that good Pyrenean enthusiast, who had for the occasion forsaken its summits, were to assure our safety at the important relay post at 180 metres. Two willing, handy fellows, Louis Delvigne and Rieusset, were to stay meanwhile with their feet in the water and exposed to the horrible draught that blew at the 130-metre balcony.

Our morale, always good, was even further raised by the fact that the cascades were much less full than the year before. Consequently the fixing of the long ladder to a big rock went with a will, amid lively talk and general excitement, while I prepared to take a sounding of the hole below. The lead, which stopped persistently at a depth of seventy metres, indicated that only ten metres separated me the previous year from the projecting shelf I might have reached but for the exceptional volume of the waterfall.

Duly tied on to the rope, wearing my diver's dress, my head covered by a hood which protected the lamp in my helmet, I entrusted my person to the ladder and to the arms of the friends who rapidly let out the safety line. There was a definite advantage in going down as fast as possible; not only were the arm and leg muscles less liable to cramp but the time spent under the douche was diminished. Rapidity of descent depends, of course, on the skill of the individual in finding the rungs of the ladder as it sways and twists about in space, when it is not inconveniently close up against a sloping wall, which provides the maximum annoyance and difficulty. In the present case, this last trouble was non-existent, for the ladder, well stretched by the weight of its hundred metres of length, hung free of the walls of the shaft, which is twenty to twenty-five metres in diameter. But the accursed cascade very soon began to cause serious trouble. The deluge of icy water pattering down on my hood and shoulders covered my face with spray, dimmed my glasses, found its way in at my neck and into my sleeves, though these were tightly closed at the wrists, and down my back where the waterproof cloth of my overall was worn. I do not suggest that all this was worse than the discomforts



ICHAC AND GACHÉ STRUGGLING TO KEEP AWAKE
AFTER A LONG VIGIL AT THE RELAY



THE LEADER OF THE ADVANCE PARTY
WHISTLES FRANTICALLY

of many other shower-baths I have endured in similar circumstances; what worried me here was the power, increasing as I got lower, of the column of water weighing on my body and chilling my fingers. However, I kept on down in a rhythmic movement perfectly synchronized with the letting out of safety line, till, on reaching the second connecting ring of the ladders which told me I was thirty metres down, my helmet lamp went out at exactly the same point as the year before. My first reaction in the sudden darkness and under the pitiless douche was to go up again at once. Nevertheless I resisted this instinctive reaction and with my whistle I simply gave the signal to stop lowering.

Such halts are always impressive and demoralizing on long vertical descents. You hang there passively, more open to the suggestions of the drop below, the always present possibility of the ladder breaking; you become more conscious of the tension and extension in it. The gyratory movement and the swinging increase and make you fear the rope will get entangled round the ladder. Holding on to the ladder with one hand, while searching in my sopping bag with the other, I began to analyse the above disagreeable sensations as I looked for a pocket torch. At last I found it and lit it and held it in my teeth in order to free both hands, after whistling to those above to go on lowering.

During this short, unpleasant halt I had remembered and convinced myself that forty metres lower I should find a shelf, and that after last year's retreat I had resolved to reach that ledge at all costs. Almost suffocated by the volume of falling water and breathless from holding the torch in my teeth, I went on down, still moving as quickly as I could; but presently the second torch went out and I continued enveloped in darkness and in water. The sense of touch alone would be my only source of information and my hands felt the thin steel sides of the ladder in order to recognize, as I passed them every fifteen metres, the broken rings of the connections. In this way I passed to the additions to the

ladders at forty-five then at sixty metres. Another ten metres and I should find myself at last on firm rock, on a shelf where I should no doubt be able to move out of the axis of the cascade and shelter while I got my lamps going again and had a look round. I quickened the pace; I counted the rungs and suddenly I felt my fingers were on a fresh connecting ring, that at seventy-five metres! I must, therefore, have passed the point so persistently indicated by the plumb-line. The ladder was still hanging in space!

It would be difficult to put into words one's feelings at such a moment; no description can convey them, just as it is impossible to restore the true setting of my actual situation as I swayed there in the dark, drenched by a cascade falling down a shaft whose depth I had failed to plumb and which I might suddenly find to be bottomless, suspended only by a ladder of steel wire three millimetres thick. . . . Only one thing was certain where all else was impenetrably dark and unknown . . . that the shelf vouched for by the plumb-line was nothing but a mere insignificant projection on which no landing was possible and which, in any case, I had already passed. 'Up again! Up again, quick! Get out of this nightmare and never go down another pot-hole!' That was panic and instinct making their voices heard. Another voice within me, a more honourable and in the end more convincing voice, countered with my firm unshakable decision to descend to the very bottom, not to jeopardize in one moment the result of several years of effort shared with others, not to attempt a re-ascent that would be premature, barren of results, humiliating, and which was, in addition, practically impossible without a long, preliminary rest; for climbing on a free-hanging ladder, even going down, is an exhausting physical strain.

You can imagine then my state of mind as I went on down, a shrinking, shivering figure; rung after rung, in anticipation of the awful moment when I should come to the last bar and my foot would grope vainly in the empty depths.

This last dreadful ordeal, thank goodness, I was spared,

for all of a sudden I made contact with a rocky floor where I could let go the ladder and work the catch of my electric torch; after several failures it lit up. By its feeble light I at once realized two things: that I was standing in a lake with water half-way up the leg and that only the last few rungs of the ladder were trailing at my feet. I tried to move a few yards away from the cascade which still beat upon me, to shake myself and try to clean my glasses before looking round. I found that the rope under my arms stopped me and made further movement impossible beyond a step or two. I whistled loudly as arranged and yelled out for more rope; voices far off and indistinct made some answer, but not an inch more rope was allowed me; so, willy nilly, I had to stay under the insufferable shower. I put all my weight on the rope in order to bend down and draw out another yard and get relief; it was no good, it was held in hands of iron. They were probably right to act as they did, and I realized it the moment I looked again at the few rungs of the ladder remaining on the ground and which showed me the facts. I had just effected a vertical descent of a hundred metres, which with the loop of rope round my chest, the knot and the end held by my friends above made it impossible to let me have an inch more. Let me add, for the benefit of those who do not realize off-hand what such a descent means, that it corresponds to the height of the spire of Notre Dame de Paris from top to bottom.

No doubt greater vertical drops exist in French pot-holes, the giant of the species being in the aven de Jean-Nouveau (Vaucluse), where Martel in 1892 made a descent in a single drop of 163 metres. I myself, in the Atlas, have had to drop 103 metres vertically in the Oulad-Ayach pot-hole and 145 metres in the Basque pot-hole of Heyle; but in both these cases I had to deal with dry chasms where there was no douche or failure of the lamp; I had never known anything like what I went through in this awful water-swept shaft of la Henne-Morte. To come back to the present story, the hundred-metre rope unrolled to its full length in this last

drop informed me that I was exactly 355 metres below ground, and despite the odd and trying way in which I was held a prisoner I made a rapid survey of the place.

I was standing at the centre of a circular chamber fifteen to eighteen metres in diameter, occupied by a small lake fed by the cascade, and it appeared that the basin emptied itself through a crevasse in the rock at the foot of the great shaft; but what specially caught my eye was a terrace dominating yet another drop!

I made desperate efforts to get nearer to it, but without success. I then tried to free myself from the safety-rope tied under my arms, but the effect of my weight and the icy water had tightened the knot and my numbed fingers could do nothing with it. As a last resort, I managed to bend down as I got back to the foot of the ladder and pick up several pebbles and throw them into the further drop in the pot-hole. This sounding, calculated on the duration of the fall before I heard the stones hit the bottom, revealed the existence of a further vertical shaft of considerable depth.

An extra fifty-metre ladder and one or two helpers beside would have been sufficient to reach the exceptional depth of 400 metres and see what might be below. But, like a modern Tantalus in chains, I could not even get near the edge of this new shaft. You can guess what I felt about it! Having taken in all I could of what no human being before me had ever seen, I had to accept the inevitable and signal I was coming up again. It had to be done in total darkness as the deluge of water was too much for my torches, and I emerged to be clasped in the stout arms of my anxious friends, who were burning to know the results and the various incidents of my amphibious reconnaissance. We were full of enthusiasm and much impressed by the increasing depth of our chasm, and decided there and then to return to the attack with a more numerous team and longer ladders.

We had entered the pot-hole at 6 p.m. on 14th July, and we came out next day at 3 p.m. after shivering in it for

twenty-one hours, but still, in accordance with the formula now accepted as a cheerful slogan for our team, 'ready to begin again.'

EIGHTH SESSION

A month later, 16th August 1943, we were off again with extra gear and a team of eleven, the largest party ever assembled at la Henne-Morte. Our morale was excellent as ever and every one was exceptionally keen over the coming séance which promised to be full of excitement and to be longer than any. So much so that we began our descent this time at 8 a.m., never doubting that we should emerge again about the same time next morning.

At the 130-metre level Louis Delvigne, who on the previous expedition had mounted guard there for fifteen hours without moving from his narrow balcony, stoically took up his post there with a new recruit Paul Depuy, who had equally made up his mind to shiver and freeze for twenty-four hours if the success of the expedition depended on it.

For the second relay post at 180 metres we had brought a couple of new contrivances. By means of pitons fixed in the rock an iron bar was placed across the chasm to keep the ladders away from the worst of the cascade and allow the descent to be made with the minimum of sousing. In addition, by the use of stones and sacking, Roger Pellegrin and a friend of his, Jean Carenini, succeeded in putting up a small barrage across the stream and so keeping back the water for a time and diminishing the volume of the cascade. These two improvements were appreciated the more because this time seven men went down this cascade shaft of forty-five metres in equipments that were pleasingly different in style but in most cases hardly ideal for the purpose. Our metal helmets were the only thing that lent a martial note of uniformity to the party, and even here our headpieces presented a fine collector's assortment: infantry helmets, tank helmets, motor-bike helmets belonging to the new army

found themselves next to my old blue trench helmet, a Zouave's khaki 'Adrian' helmet, a Belgian army helmet, and even a miner's steel visorless headpiece.

For my own part, using the only privilege I could not forego and refuse in this group of young men, my age, I had put on one of two balloon-cloth overalls we had with us; the other was reserved for Loubens who, with me, formed the spearhead which was to reach and even pass the depth of 400 metres revealed by the last expedition. The others, Delteil, Rieusset, Castéran, Maurel, had got cast-off waterproofs that had all suffered more or less from wear and tear. My own son's outfit stood out from the rest by its originality: a Breton fisherman's sou'wester, a close-fitting yellow jacket of what had once been oiled cloth and had now become so sticky we all avoided going near him; even his haversack became so closely attached to it that he could have dispensed with any strap. A short skirt like a Scotch kilt cut out of an old piece of oilcloth and leggings that reminded one of the inner tubes of a car tyre with patches to cover tears and punctures all over them, added picturesqueness to his appearance.

Our outfits showed the obvious effects of the severe clothing restrictions, and I need hardly add that the snacks of food carried in our haversacks were equally ill adapted for supplying physical energy or the grievous need for calories in this windy, watery pot-hole, where temperature varies between 0° C. and 4° C. at the different levels.

A definite increase in the volume of the stream compared with what it had been at the last séance gave me cause for anxiety about the descent of the lower 100-metre cascade, now likely to prove a more powerful, troublesome, and dangerous adversary than ever. But the small temporary barrage and the improvement due to the bar fixed to keep us away from the main stream of water disguised this aggravation of our difficulties and we all made the descent in good heart.

Going ahead with Loubens and Delteil we had transported

part of our gear as far as the upper edge of a twelve-metre cascade above Lake Hall. On reaching this level I was alarmed by the thunder of the cascade as it fell into the lake; it was far louder than ever before.

We were in mid August and it was clear that the melting of the subterranean snow-bed near by was quickened by the great summer heat. How should we be able to face the icy douche with our equipment in its present state? How would my companions be able to stand it? But, after all, why worry before we need, seeing that the course of events was very soon to settle the question or rather evade it!

While Delteil, armed with the hammer that never left him, was delivering lusty blows on a piton to which to fasten the ladder Loubens and I were unrolling, a vague hubbub ending with the muffled sound of a heavy fall and shouts of 'Help! Help!' reached our ears.

We hurried back at once, all three of us, into the steep corridor we had just descended, clambering over the bulges and jumping from one boulder to another to the foot of a five-metre cascade, where Pierre Castéran was doing what he could for Claude Maurel, who was bent double, his face drawn with pain and groaning; he was dripping too from head to foot, and the crest of his helmet was torn off and hung by a single rivet. Castéran, who was soon joined by Rieusset and my son, who had hurried down the ladder at the short drop, explained how the accident had happened or rather described its last phase.

For some cause or other, which will always remain a mystery, Maurel, one of the best movers in our team, had slipped at the top of the steep bank; he had fallen head first and might well have been killed if he had not providentially landed in a great pool of water and had not been wearing a helmet. The wounded man managed to stand up, supporting with his right hand his left arm which was broken at the elbow and was causing him terrible pain. As I tried to soothe him while we relieved him of a sixty-metre rope he had slung over his shoulder, he was loud in his lamentations,

but there was not a word of pity for himself. The good fellow was thinking only of how he had compromised the success of the expedition. 'Stupid! Stupid!' he kept repeating. 'All my own fault; I 've spoiled it all for you!' Then he began to think of the re-ascent, which was certainly going to be an arduous, painful, and complicated business, for we stood at a point 230 metres below the surface. 'I 'm good for nothing,' he groaned. 'I shall give you an awful time getting me out of this; I can't help at all on the ladders.' To tell the truth, I shuddered at the thought of the incredible manœuvres and the trials in front of him. Particularly disturbing was the thought of getting him through the cat-hole at the 100-metre level. But I thanked my stars *in petto* that we had to deal with a vigorous lad who blamed no one but himself and, despite his horrible situation, could bemoan nothing but the failure of the expedition.

We bound the fractured arm across his chest in the position that seemed least painful to the patient, and with the help of the rope we quickly got him up to the relay post a few metres above. But here the real arduous work was to begin and the long ordeal for the wounded man.

Rieusset, Castéran, my son, and I followed each other up the forty-five-metre cascade to lend a hand to Pellegrin and Carenini; for the work of hoisting the sacks of gear and, still more, the patient was going to be severe. Delteil and Loubens stayed with him, bound him up superbly, and brought him to the foot of the ladder, then helped him to get a footing on it, placing his feet on the rungs and pushing him up as high as possible. We began to haul him up as steadily and gently as we could as soon as the signal to do so was given us.

The very first pulls we gave astonished us at the weight we had to lift and we only raised it an inch or two at each effort. Certainly the iron bar recently placed across the chasm and over which the rope made almost a right angle, offered a strong frictional resistance to the rope. No matter, we began to pull harder than ever and then, after a few more

hauls, collapsed on to one another, while a shout came echoing up the shaft: 'The rope has snapped!' Maurel, who was just beginning to raise himself, doing all he could with one hand on the ladder, had fallen, happily not from any great height, and also into the arms of Delteil and Loubens who were closely watching his ascent. But it must have been a fearful shock for the patient, as it was for us above, who tended to think he had come up much further than he actually had. Never in all my previous campaigns had I had a case of a rope breaking, and now it had occurred at the very moment when a friend who was maimed and helpless was on it.

Maurel's confidence was definitely shaken and he shrank with some justification, powerless to help himself as he was, from making a fresh start on the long giddy ascent. We too were badly upset by this distressing sequel to the accident.

However, we undid a fresh rope, using it double this time; the patient was tied on and hauling began again. To diminish the serious friction on the bar, I moved forward, bestriding the rim of the shaft with legs wide apart, and seizing the rope with both hands I pulled it from underneath with accompanying loud shouts of 'Heave ho!' to which my team made a vigorous response in unison.

This time our patient was raised without a check. Our methods were sound, success certain. His lamp, however, had been extinguished by the cascade and I could not see him; on the other hand, I could see the lamps on Delteil and Loubens shining at the bottom of the ladder as they held them up to facilitate Maurel's ascent. It is extremely dangerous to stay like this right below a ladder while a companion or a sack is going up; for bits of rock, stones, and other things may come off and falling from a great height become formidable missiles. I shouted down to them to remind them of the danger and not remain under the ladder. No sooner had I uttered the warning than a great projecting bit of rock on which my foot was resting firmly

broke off and fell down the shaft while I gave a warning shout and, as I swung forward caught hold of the bar, the only thing that prevented my following the rock down the drop. There was a short silence; the boulder, which must have weighed forty pounds or more, ricochetted two or three times from wall to wall; then suddenly came a heart-rending cry and shriek of pain which died away almost immediately, and then a great silence. . . . We were aghast and, in a flash, all manner of possibilities closed in on our minds; life seemed suspended. Then, without consulting the others, without a word of explanation—quite useless anyhow—after a pause which can hardly have lasted more than a few seconds, I recovered myself and in a broken voice went on again with the 'Heave hos' to the haulers. These, with the panting of the haulers, were the only sounds that broke the silence which had followed the last cry we had heard. Maurel must surely have lost consciousness; possibly even . . . No! No! Put away the thought; pull away, pull away, and let us get him up quickly out of this pit! At last I see his helmet emerge from the darkness, his shoulders get nearer; one more pull hoists him level with the bar, and I eagerly scan the pale, dripping face, the sweat beading on it from pain and fear, my own being doubtless in a similar state. He fixed his staring eyes on me, and as we helped him over the edge of the shaft he managed to get out just two words which revealed the truth. 'Poor Loubens!' he sobbed.

So Maurel had only been grazed by the missile which had crashed from forty-five metres above on Loubens. Immediately I bent down to hail Delteil, whose silence I could not understand; but at that moment the latter, who had waited with amazing self-control till Maurel was in safety, broke the silence and hailed me.

'Casteret!'

'Yes, I 'm listening,' I said with a shudder.

'Come down!'

'Right away, right away, but . . . how is he?'

'Come down!' was the answer.

A chorus of questions came at me from them all, asking for news, for something definite; with no result. Delteil was keeping anything further to himself; adding nothing to his previous injunction he went on repeating 'Come down!' And his voice was grave and urgent.

No longer in any doubt as to the extreme seriousness of the situation I hustled into my harness and scuttled down the ladders quicker than I had ever done before.

I would have liked to hear some sort of conversation, lamentations, even a groan, but there was nothing at all. Since that cry of a stricken creature, no sound had come from Loubens, and his companion, who had no doubt something else to do than to talk to us, had been equally silent. As I climbed down in the falling water, a prey to all manner of thoughts in which I could alas! discern the worst, I could not prevent my mind, split as it were in two, from tracing a parallel between our present anguish and sudden distress that had fallen on us, and the unchanging immutable surroundings in which we poor wretches were entrapped and struggling at this moment. What was Loubens's poor feeble cry, stifled as soon as uttered, beside the age-long eternal lament of this cascade? How could our humble distress disturb the bosom of a Nature indifferent, if not hostile to our weakness, which had opposed our intrusion or rather had presided over this human tragedy just as she presides over a tidal wave, an avalanche, or the fall of a dead leaf?

I landed amid dripping, slippery boulders at the foot of the shaft and at last I saw Delteil kneeling over the body of Loubens lying huddled up on a flat rock. To my mute interrogation Delteil answered by a look which evaded the question and a rather hopeless gesture inviting me to look for myself. After that he told me briefly how the bit of rock had first struck the back of Loubens's helmet where the part that covered the neck was bashed in, then the man's back at the height of the shoulder-blades. Loubens had cried out, had had the strength to stagger a few steps, and

collapsed on the ground. Since then he had rattled in his throat and spoken in a wandering way. The rattling went on; my urgent inquiries were answered by groans. It was his lung above all that hurt him, I gathered, and he was actually breathing painfully and with obvious difficulty. Fractures or internal damage? Almost certainly both, but there was no possibility of knowing; he could not be undressed here, it was far too cold; his wet clothes would never slip off, it would only risk adding further to his sufferings.

Anyhow, he was alive, actually able to speak, and we did all we could to hearten him, assuring him that we would, of course, get him out all right; and we proceeded to put our words into practice, disentangling a fearful muddle of ropes, out of which Delteil, who was an expert at the job, was prepared to knot together a sort of folding chair suited to the wounded man's condition. While we were dealing with the ropes and knotting them up—after the two accidents at this level the gear was in an unbelievable tangle—we were startled by the sound of a scout song, sung in a broken, trembling voice; it was our poor Loubens in his delirium.

That was his last sign of weakening, for, after swallowing a couple of aspirins and a few lumps of sugar soaked in brandy (all we had in the way of medicines), he behaved with admirable courage and did what little he could to help us. So presently, duly roped and tied up in the crouching pose of a Peruvian mummy, he was hoisted up through the cascade in which he swayed about, suffering cruelly during the long, seemingly endless ascent, and enduring without a word, though not without some low groans, the painful shocks and jolts, the halts and sudden stoppages, under the relentless downpour from above.

I will not dwell further on the details of what followed; words are quite powerless to restore the setting or describe the ordeal for the two sufferers of this nightmare re-ascent from the depths of the chasm. The shafts that followed one another, the slopes where we had to climb, the passage of the cat-hole where we all but failed to get through—such things

cannot be told; they must be lived to get any idea of what we suffered and endured, in constant distress at seeing our patients overcome by cold and exhaustion, at seeing our hands, paralysed by the cold and cut into by the thin ropes, gradually lose their ability to haul up helpless bodies of more than twelve stone as well as great sacks of heavy, wet ropes. Our lamps too gradually failed owing to the unusual length of the séance, and they had either gone out or were on the point of doing so as we came to the end of our adventure.

We had gone under ground at 8 a.m. on 16th August; the first accident had occurred at 6 p.m., and it was not till 7 p.m. next day after thirty-five mortal hours that we emerged into the light of day.

Our wounded had been rescued from the chasm, the whole of our gear had been retrieved, the whole team without exception had stuck it out splendidly to the end, from Delteil, who had kept so admirably calm and worked like a hero, to our two volunteers at the 130-metre relay who had been on guard on their narrow, comfortless rocky shelf in lonely isolation from every one and everything for twenty-five hours.

The rescue in the strict sense had been accomplished, but our task was not yet ended. We improvised a rough, heavy stretcher and Loubens was carried on it through the forest; there darkness overtook us and we lost our way, while Maurel gallantly came along on foot.

It was 2 a.m. when we staggered into the hamlet of Labaderque, and from there Roger Pellegrin, tottering from weariness like the others, summoned enough energy to take us back that night in his lorry to Saint-Gaudens. At last, at 5 a.m. on the third day, we were able to lay our poor wounded friends in beds in a hospital, where the X-ray photographs showed that Loubens had a fractured shoulder-blade and four ribs broken.

So our 1943 campaign at the pot-hole of la Henne-Morte ended in a disastrous séance which might easily have been

even worse, for it was a miracle that Maurel falling on his head had not been killed, and another miracle that the rock falling from such a great height had not smashed Loubens's skull. It is true that these two accidents should not have happened in normal circumstances. It is impossible to explain how such an expert, agile fellow as Maurel should have fallen as he did; and it was sheer bad luck that the portion of the rocky edge I stood on should have given way, seeing that every one on the previous descent had used this convenient footboard. Eighteen of us had stood on it and put their whole weight on it. The very day of the accident, my son, as an extra precaution, had tested its firmness with a hammer.

That edge of the pot-hole had stood every test; it was ordained that it should break off and fall in the brief moment of time when three men were in its line of fire. Imponderable forces had, in fact, come into action that day, the evil genius of la Henne-Morte had been roused to anger and had severely chastened us.

All the same we did not accept defeat, there was to be no capitulation. On the beds of suffering in which Maurel and Loubens were awaiting restoration to health, the plan of the pot-hole was many times unrolled and studied, and our next expedition was planned for the summer of 1944.

Circumstances alas! were to decide otherwise. In 1944 our keen young Henne-Morte team was split up and dispersed. Some had been deported or sent off to S.T.O. of tragic memory, whilst others had succeeded in getting away to North Africa or England, or were operating with the regional maquis, led by Loubens.

The serious events of this troublous time seemed to have put off to some far distant date, if not for good, any following up of our exploration of the great Pyrenean pot-hole.

At the close of a lecture I gave in Paris at the Salle Pleyel on 17th April 1944, I expressed myself as follows, and venture to reproduce word for word what I then said in answer to the question: Shall we go back to la Henne-Morte?

'Many of us have asked ourselves the question or others have put it to us, prepared to approve, to criticize, or condemn according to the answer given and according to the point of view and temperament of the questioner.

'For us the answer has never been in doubt, or rather Maurel and Loubens had dictated the answer within an hour of their accidents by affirming in spite of their sufferings and faced with the appalling difficulties of rescue, that they would come back to fight again. They announced it spontaneously in no spirit of boastfulness or swank, but from the feeling that they had been unjustly frustrated and stopped in a great undertaking.

'They will return to it,' I went on, 'because man is an adventurous being and not a square inch of our planet must remain unknown; whether it be the summits of the highest mountains where he can hardly breathe but which he has reached; or the Polar ice-fields or burning deserts where life is barely possible but where he has forced his way; or in the depths of the ocean or of great chasms in the earth which have never been explored and from which he has no certainty of returning alive.

'This exploration,' I added, 'will therefore be resumed. But this great pot-hole will not reveal the secret of its vast depth to any but a team of experienced, expert spelaeologists, better equipped and with better tools than we could be in the difficult times when it was no longer possible to get anything; not a yard of rope, not a scrap of waterproof cloth, no batteries for the torches. We shall need a great deal of rope, several electron ladders, waterproof equipment for each member of the team, waterproof electric torches, a field telephone.

'With all these safety appliances, with the right gear and thanks to the actual exploration we have pursued down to nearly four hundred metres, the pot-hole of la Henne-Morte will have to disclose its secret and be conquered.

'On this point we have no doubt, but seeing what the circumstances are, the question remains as to when the realization of this adventure will come and who will live to see it. If we have to wait for long, the changes and chances of life are only too likely to separate and scatter the partners in the early expeditions. Shall I, the veteran of the party, be in at the last battle? If the day is long delayed, shall I still have the supple limbs, the bodily vigour needed for the task?

'After all,' I said in conclusion, 'what matter if I am not the one to direct the final exploration? I know the work will not remain

unfinished, the torch will pass into younger, more vigorous hands, for the line of explorers is not extinct. The young men of France, so discredited, so calumniated at this present time, in whom some affect to have lost all confidence after leading them up a cul-de-sac, these young men are full of ideals and enthusiasm, now alas! inhibited. They will live again to do battle for the pure, exalting triumphs of knowledge and adventure; they will be healed of their wounds as Maurel and Loubens have been healed at this moment and, like them, they will set to work again. . . .'

To-day I may be allowed to say, referring to the time this lecture was given in Paris—it was 17th April 1944, the day before the violent bombardment of the la Chapelle quarter, when the repressions and arrests of the Gestapo had been fully resumed—these remarks and their allusion to the servitude in which the French people were then held caused considerable sensation.

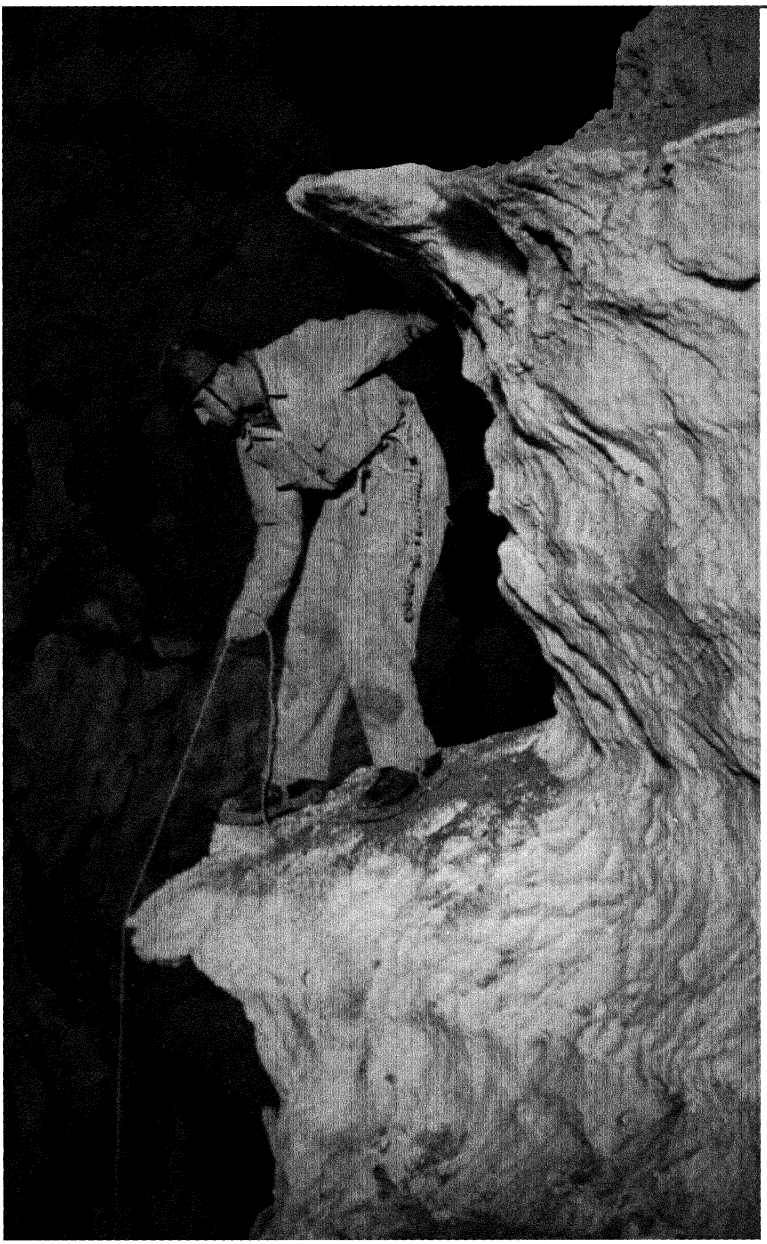
I ended with these words:

'*Pour la Patrie par la Montagne*—that is the splendid motto of the French Alpine Club, and no one can ever say how fine and well justified it is. How many of our young people have indeed learned from the mountains and made their own by the practice of mountaineering, the qualities of courage and endurance, of determined pursuit of an ideal, which have made men of them, valiant soldiers, and leaders.

'*Pour la Patrie par les Cavernes*—so might we parody and claim it for the spelaeologists, that lower brotherhood of mountaineers, but lower only in altitude, for they too have their heart firmly in the right place and have become a force which counts and is going to count in future in our country.'

Into this peroration I had put all I had, and with all the stronger feeling because the strength of the French Resistance had just revived and was about to make use of fifteen tons of arms concealed by myself in caves of the Pyrenees in 1941.

I cannot describe the thrilling ovation with which the 2,000 listeners in the Salle Pleyel received this peroration, which for them had a double meaning.



IT GOES DOWN 325 FT.

As a result of this lecture, at a friendly reception that followed, the members of the Spéléo-Club de Paris, rightly judging that neither our numbers nor our equipment and gear was adequate to tackle a chasm like la Henne-Morte, offered me their most effective help and collaboration in bringing the exploration to a successful conclusion and I accepted there and then.

France, however, was not yet at the end of her trials. Neither the summer of 1944 nor that of 1945 saw, and with good reason, any spelaeologists wending their way to the Pyrenean chasm. There were other matters to attend to in our country.

NINTH SESSION

At last, after waiting three years, on 12th August 1946, some ten members of the Spéléo-Club de Paris and three survivors of the Pyrenean team (Delteil, Loubens, and I) were able to pitch their tents once more in the vicinity of the pot-hole and prepare to descend it.

The chasm which had defended itself in 1943 with murderous discharges of stones brought its flooded waters against us in 1946. Copious showers came most unfortunately to swell the cascades inside it, compelling the president of the Spéléo-Club, Raymond Gaché, the leader of the expedition, to halt the descent 250 metres down, at the top of the great 100-metre cascade.

'It is no longer the waterfall vanquished by Casteret alone three years ago,' was how Gaetan Fouquet was to describe it in his record of the expedition. 'It is an incredible torrent, a cataract, an underground Niagara that thunders down into the chasm. A whole collection of torches directed down the shaft threw light on nothing but a cloud of foam. Are we to go a bit further? Sheer folly. . . . Go down in that raging flood? Absolute madness. We must go up again without a hope of pushing exploration an inch further. No doubt about it, la Henne-Morte is putting up a stout defence!'

Before turning back, however, Gaché with Loubens's help threw into the cataract eight or nine pounds of fluorescine in the hope of discovering the place where the waters of the chasm reappeared. Then, defeated by the elements, the party climbed up and returned somewhat downcast to the camp where persistent bad weather gave the signal for dispersion.

Holidays were ended for us all. The pot-hole remained unconquered and withheld its secret, the colour test giving no result.

Only one tangible result was achieved in the course of this 1946 campaign. A young polytechnic student, Halbronn, specializing in the use of explosives, had undertaken to enlarge the inconveniently narrow cat-hole at the 100-metre point. Using some new contrivances known as *charges creuses*—their first use in spelaeology—Halbronn succeeded in making a fine roomy passage of the said cat-hole. Four explosions effected such a clearance that in future two men could work their way forward on all fours at a place where up till then we had had to squeeze through this bottleneck panting and struggling in a serpent-like crawl.

Be it noted also in passing that Loubens, this same Loubens, met with yet another adventure at the very spot where he had been so badly hurt in 1943.

Just as he was descending the forty-five-metre vertical shaft, a mistake by his friends who were working his safety-rope caused him to swing over and find himself hanging head downwards on the ladder. The acetylene lamp carried at his waist turned round and burned his cloth overall, setting fire to the light, very inflammable diver's suit he was wearing underneath.

Luckily his immediate reaction was to effect a pull-up on the arms and so start a pendulum-like swing under the cascade, which put out the fire. It was certainly the only case in which these accursed underground cascades played a useful part!

TENTH SESSION

In December 1946, taking advantage of the Christmas holidays, six Parisians (Deudon, Susse, Dresco, Mondin, and François and Jean-Paul Maille) and two from Toulouse (Baylac and Doumercq), led by the new president of the Spéléo-Club de Paris, Trombe, made a descent of the pot-hole as far as the great chamber at 250 metres. Félix Trombe, a spelaeologist who had won many honours, a well-known chemist, director of the Centre National de la Recherche Scientifique, and the key man of the scientific side of the expedition, is, in addition, a native of the district of la Henne-Morte and has a thorough knowledge of the Arbas massif, based on a number of spelaeological campaigns.

As in his judgment the depth of snow and severe cold at such an altitude would have greatly diminished the amount of water in the streams above and below ground, Trombe decided to pay this winter visit to la Henne-Morte. The approach up the mountain, as had been anticipated, proved very trying, owing to the gear having to be carried on the back over deep snow and the bivouac somewhat arctic. But his deductions about the condition of the chasm itself were confirmed by the great diminution in the cascades compared with their volume in summer. It was a most important point and we could now hope that, should the summer campaign of 1947 fail, exploration could be attempted in the depths of winter, despite the difficulties of approach and camping out.

In addition to settling this matter of the diminution of water in the underground streams, this reconnaissance at Christmas 1946 was also meant to examine the best way of attacking and providing with aids various tricky passages in the pot-hole and, in particular, the formidable 100-metre cascade.

Photographs and measurements were taken and sketches made on the spot. Then, having gone on to make a new

colour test with nearly half a hundredweight of fluorescine, this valiant team went back to Paris, promising that the summer of 1947 would see exploration brought to a successful end, and impatiently though confidently awaiting the result of the test.

'Half a hundredweight thrown into la Henne-Morte cascade means the possible colouring of several million cubic metres,' asserted Trombe, and he went on: 'I was so confident in the success of such a test that I gave warning of it to the Water and Forestry Departments as well as to the many local authorities of Ariège and Haute-Garonne, who were in a position to keep a good look out all round the Arbas and Paloumère massifs. A month, two months, three months, passed, till in the end we lost all hope of any positive result.'

In fact, to every one's amazement 'the vast digestive tube of la Henne-Morte has absorbed the huge injection of colouring matter without leaving a trace.' So the mystery of the pot-hole remained complete, and spelaeologists were keener than ever to solve the enigma, more determined to go deeper into the bowels of the mountain to drag its secret from it.

This is not the place to record the many serious meetings that were held at the headquarters of the Spéléo-Club de Paris, or to describe in detail the preparations and the manufacture of special gear to which the technicians and executants of the scheme gave time and thought, conspicuous among them for their zeal being Trombe, Dresco, Gaché, Deudon, and Susse.

Neither is it possible to record the innumerable and troublesome proceedings these same spelaeologists had to carry through to obtain the grants indispensable for the purchase of equipment, accessories, and gear of all sorts; the appeals and reports designed to interest public authorities and influential organizations in a position to help the undertaking, to finance the expedition; notices and reports of meetings and bills carried to the Pyrenean enthusiasts far

from the scene of action, echoes of these activities, and an assurance that the coming 1947 offensive would be on the grand scale.

Nevertheless, being outside the Parisian sphere of action and at a great distance, we could have no idea of the size and importance of the expedition that met my eyes as I reached the village of Arbas on 24th August 1947, one of the last to arrive. I had been excused in the nicest possible way; I had been told: 'You have done enough in previous years; this time you are to come when all is ready, so you will be able to reserve yourself for the actual task of exploration.'

When, in fact, the Spéléo-Club had offered its collaboration I had not only sent a full acceptation of the offer, but had asked the Parisians to undertake the future organization and supervision of any operations, merely reserving a place in the first-line party for myself and my two devoted followers, Loubens and Delteil; all of which had been accepted and furthermore confirmed in the most friendly manner by making me an honorary member of the Spéléo-Club.

And so when I arrived at Arbas, a village tucked away at the end of the valley, nestling at the foot of steep, wooded slopes which conceal any number of pot-holes and caves, I had ample confirmation of the rumours I had heard in the last few days and which had kept the locals in a great state of excitement. A strong detachment of soldiers was in the neighbourhood and was using a scheme for training in mountain warfare to assist the operations of the spelaeologists.

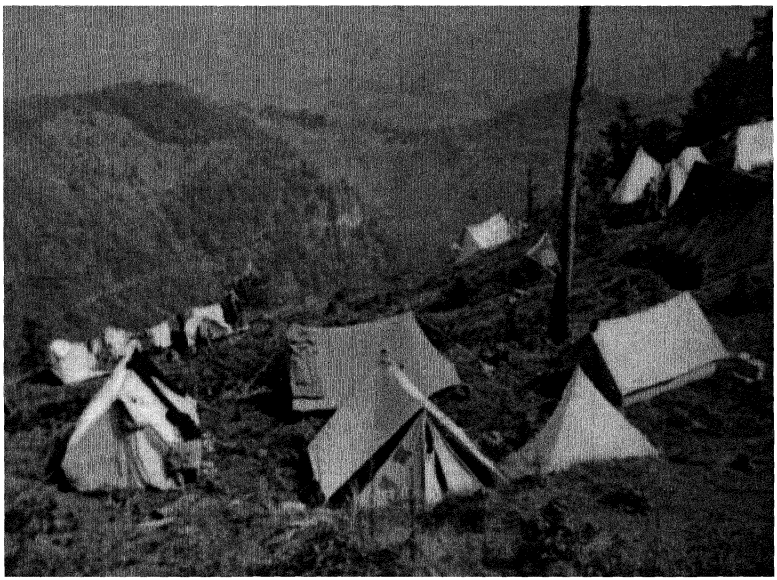
A telephone line several miles in length, the laying of which had met with many difficulties owing to the extremely rough nature of the country, was already functioning between the valley and the mouth of the pot-hole. Beside the house used by the telephonist in the Service des Transmissions a car park comprising two lorries and two jeeps with trailers had been established, these cars performing a shuttle service between Arbas and the hamlet of Labaderque up at the furthest point reachable by car, 800 metres above the sea

There the loads (gear, provisions, etc.) were turned over to the mule drivers of a colonial regiment, whose fifteen mules, taking difficult paths where three of them were badly hurt by nasty falls, managed to reach the opening of the pot-hole in the depths of the forest in an unbelievably rough bit of country, a chaos of great fissures and pits and vast tumbled heaps of rocks.

Freed for once from an organizer's worries and my shoulders eased of the usual crushing load under which I had so often staggered up to this point in a trying climb of three to four hours, I arrived as fresh as paint at the camp which had been pitched beside a pasture at a height of 1,400 metres, a quarter of an hour's walk from the chasm. In growing amazement I counted up to twenty-eight tents clinging to the slope, admittedly rather too steep a slope, but what else could any one expect who knows the surroundings of la Henne-Morte.

The army tents, easily recognizable by their great size and dark colour, were seen grouped round a spring, and over them floated the tricolour flapping at the top of a mast. The civilian tents of various sizes, shapes, and colours were scattered over the ground at no great distance in a less orderly, slightly fanciful plan. Among them I picked out Loubens's German tent and the *bonnet de police* of François and Jean-Paul Maille next to president Trombe's tent, the conical *Itisa* type of the two entomologists, Dresco and Nègre, and the tent shared by the Abbé Cathala and Baylac, the two members of the party from Toulouse. Further away, the isothermic tents, Himalaya type, afforded shelter to the spelaeological-Himalaya-Caucasian group, Gaché, Ichac, Ertaud, Jonquière, Clément, and Susse.

Finally, the huge tent (canteen, provision, and equipment store) of our kindly manager and commissariat officer, M. Fossorier, rose proudly in the ladies' quarter, the quarter, that is to say, of Mmes Trombe, Deudon, Valluey, Guérin, and Jonquière. These ladies, with Mlles Annie Maillard and La Blanchetais, vied with one another in their zealous



THE SPELAEOLOGIST'S CAMP



FLOWERS OF GYPSUM FROM LA CIGALÈRE

care in restoring with ample meals and hot drinks the members of the teams which emerged from the pot-hole at any hour of the day or night, all of them chilled to the bone and famished.

In reply to the military flag, the tricolour pennon of the Spéléo-Club fluttered from the branch of a slender beech, emphasizing the national character of an expedition which counted among its patrons and supporters the army, the French Alpine Club, the Recherche Scientifique, and the Direction des Sports; in short, a scientific and sporting enterprise undertaken exclusively by Frenchmen.

This was the picture presented by the camp of la Henne-Morte on the mountain side, perched on a balcony more than a thousand metres above the plain of Haute-Garonne, and from which the vast panorama spread out below was studded when night came with myriads of points of light, enabling us to pick out the small towns of Lannemezan, Montréjeau, Saint-Gaudens, Saint-Martory, and, nearly seventy miles away as the crow flies, on the horizon, the revolving light of the Toulouse aerodrome.

But I was in a hurry to reach the pot-hole itself to see the new improved apparatus set up there, which had been described to me, and also to have news of the others who, as I knew, were hard at work underground at that moment, establishing the various relay stations and transporting some of the gear to lower levels.

This time it had been wisely agreed that the chasm should be prepared for descents down to 250 metres by a succession of working parties. The team for the final assault, which I had claimed the honour and responsibility of leading down, was, at any rate in theory, only to go into action after the preparatory work had been done. The men of this assault party were, in this way, to be as far as possible spared other work and kept in reserve for the final advance, and so be in first-rate condition to go to the front at the desired moment.

Such a plan demanded a discipline in all of us which was freely accepted. If some of us were to be called upon to

show our mettle and our stamina in pushing the attack to the limit, others would have to do jobs that were both dull and exhausting, whilst others again, sacrificing their individual inclinations to the ultimate purpose of the expedition, were showing real self-denial in agreeing to be stationed at posts that were thankless and not free from danger.

Without anticipating the incidents of our descent and the results achieved, let me say at the start, to the credit of all, that the demands for all this effort and self-sacrifice found a team spirit and a unanimity of purpose so admirable that success was assured; all was done under the competent, large-minded direction and authority of Trombe, who took over with general assent the supervision and very heavy responsibility of one of the most ticklish and daring enterprises which have ever been attempted with success under ground.

Accompanied by Delteil, who never failed to turn up when there was a battle to be fought in any pot-hole, least of all when that pot-hole was la Henne-Morte, I crossed the bit of forest between the camp and the mouth of the hole. It was raining hard as we approached the tumbled rocks round the entrance. In its vast, deep, wooded funnel, even under a blazing sun, the light that filters through is never more than a sort of twilight, giving, we all felt, a rather sinister look to this antechamber of the chasm.

Now the impression was strengthened by the downpour descending from a low, leaden sky; the place had a sadly discouraging message for us, for this heavy, continuous rain meant swollen cascades and threatened to hold us up as it had the year before. 'Proper Henne-Morte weather,' remarked Delteil, who so often himself suffered from these deluges characteristic of the Arbas massif.

But what was that? Not the sort of noise one expects to hear in a place like this! Could it be the engine of a jeep that had forced its way up here? No, that was obviously impossible. In any case, we should have the explanation

at the edge of the funnel where, well protected by beeches and pines, we found three large military tents. The ground here was particularly muddy and trampled, strewn with packing débris, for it was here that the transport mules coming up from Labaderque by difficult, slippery paths had unloaded their burdens, the contents being immediately distributed in two of the tents before being lowered into the pot-hole. The third tent was the one that specially drew our attention, for it was from it that the noise of the engine came.

'Quite incredible!' murmured Delteil, as we stopped in front of a lot of electric generators which had been brought up, goodness knows how! They were running before our eyes and we followed the wires from them over the top of the pot-hole where, through the leaves, a powerful electric lamp was shining and swaying about.

Further down we could make out shadowy forms moving about apparently under orders given by shouts or whistles. 'The factory is working,' said Delteil, as we clambered together down through the rank growth and boulders that covered the sides of the crater. And now we came to the pot-hole itself, round which was working a team of men in cloaks or helmets. Muddy and dripping, these soldiers were pulling in time on a rope which came up black and sticky from the depths below. A fine electron ladder, stretched taut as a fiddle string, plunged down into the dark shaft, with an electric wire and a telephone wire. On the very edge of the drop, tied at the waist to a tree trunk and gesticulating like a great menacing monkey, a man was directing operations with voice and whistle. Clad in a canary-yellow waterproof, with an imposing military helmet on his head, it was easy to recognize in him the leader of the team. This man, who last year and this year must have spent in all a formidable total of hours chained to the rock like Prometheus, was our good friend Chavigner.

In Paris Chavigner is an engineer in the post and telegraph service; here at la Henne-Morte he is in command

of the surface party. At this important and thankless task, which he took on at his own request, he had spent several days and nights on guard or hauling, a most arduous business. No one of our helpers can have suffered more from the weather with its continuous rain, perched on his tiny, comfortless stance of rock. It was thanks to him we had enjoyed since 1946 an electrical connection running through woods and gullies from Arbas to the mouth of the pot-hole and a field telephone down it to the 130-metre level.

Everything that has gone down or come up from the chasm in the last two years, whether men or material, has passed through his hands. He knows the fancies and special characteristics, as well as the character of each one of us. He has had every opportunity of considering and drawing conclusions upon the reactions fatigue produces in the man clutching his ladder and making a final effort to struggle up the last rungs as he comes up after a prolonged stay underground. He will, I am sure, not contradict me when I say, further, that in most cases their reaction took the form of violent outbursts of the most lurid language directed at him and his team of haulers, despite the utmost efforts they were making to draw us up to the surface.

Luckily for us, however, Chavigner did not answer us in kind; he knew we were about at the end of our tether, poor creatures physically and mentally, and he always had a smile of welcome for us, some pleasant, soothing words of greeting, as with his own hands he would undo the sodden knot in our safety-rope which our own numbed fingers had not strength to loosen, and would send us off to the tent near by, where Mlles La Blanchetais and Maillard would make and bring us strong hot tea and coffee.

As I was going up to Chavigner to shake his hand, the telephone rang in the tent where it stands beside Mlle La Blanchetais's spirit stove and I took it up.

'Hallo, this is ground level,' I said, as I put it to my ear.

'Hallo, this is one hundred and eighty metres,' came a well-known voice.

'What, is that you, Loubens? What are you doing down there? When did you get to la Henne-Morte?'

'I came several days ago; the day before yesterday, with Dr. Clamagirand, I blew up with three of the new "hollow charges" the bottleneck at one hundred and thirty metres, which was too small for the windlass to be used at the two hundred and fifty-five metre relay to get through.'

'The factory is working,' as Delteil said just now. It is indeed far from idle and la Henne-Morte is at the moment a veritable subterranean workshop.

'Good! Splendid! Congratulations!' I called down to Loubens. 'But one word more: what conditions are the cascades in after all these recent beastly storms? Aren't they running a bit too strongly?'

'Yes, I 'm afraid that is so; there 's plenty coming from the roofs and the forty-five-metre cascade just below me is in flood; we shall have some fun!'

I hung up again, by no means pleased at this latest news. It was 3 p.m. and still raining and it was to go on raining without stopping till nightfall, then all through the night with lightning flashing quite near us, for we were right in the centre of the storm, and the thunder crashed and rolled and echoed from the summits round us.

The slow hauling up of the six who had transported gear down to the 180-metre level seemed to go on for ever, with the usual halts and incidents: telephone communication cut, ropes entangled or caught in rocky protuberances that were out of reach, mishandling of the smaller ropes causing them to break or slip out of the hands, shouted or whistled signals misinterpreted, and various other sources of delay and physical strain.

Chavigner is always there on his pedestal leaning over the chasm, hustling, ordering, whistling unceasingly, and little by little the members of the team come up, breathless, covered with black mud, unrecognizable.

Trombe, Dresco, and Loubens had returned to the light of day or as it would be more correct to say to the outer world,

for it is pitch dark. It was Susse's turn to come up. We heard blasts on the whistle, then vague exclamations, hard to understand. Somewhere about eighty metres down he appears to have been the victim of some accident or incident; it was hard to tell, for the thunder kept on growling incessantly. We all longed to see him appear and know for certain what had happened. He came up at last, stepped out, and described his adventure; it is worth telling, as it may be unique in the annals of spelaeology.

As he was climbing the metallic rungs of the steel wire ladder he felt a violent shock, an electric discharge which above ground coincided with a flash and a sharp clap of thunder. The electric fluid must have touched the great beech-tree to whose trunk the long ladder was fixed, for Susse was torn off the ladder by the discharge. Fortunately it was not a real thunderbolt, for, wet as he was on a ladder dripping with water, he could hardly have failed to be struck dead. It was fortunate too that he was on a safety-rope and was held up by it.

By midnight the last two, the brothers Maille, had been brought up. Bending under the weight of our rucksacks and torch in hand we made our way in single file towards the camp, where some of us had an unpleasant surprise in finding our tents invaded by streams which, if not subterranean, were no less disastrous in their effects.

The next few days were occupied in more descents of the chasm. We did our best to use fresh teams, but our numbers were not inexhaustible, and some individuals were called upon to do more than could fairly be expected of them.

The army took a large share in the labour of preparing the various relays and storing the gear there. Captain Ducos de la Hitte, Lieutenant Laguille, Adjutant-chef Vigroux, Sergeant Caille de Salies, all volunteered for these preparatory descents and gave efficient help to the spelaeologists in the course of séances underground, which provided plenty of excitements in the shape of frequent showers of stones, ladders broken, a fall of rocks, one such rock of enormous

size falling from a height of eighty metres coming to rest right at Trombe's feet, while a sack filled with metal sundries actually grazed Jacky Ertaud as it fell. The usual tribute to pay, the 'ration' of la Henne-Morte, as Loubens was to describe it on hearing that Delteil had had a bad fall approaching the foot of the notorious shaft of fifty metres, a veritable death-trap. Delteil who comes from Ariège ('Thereby unbreakable,' commented Loubens) was not seriously hurt, but he was badly bruised and had to resign his place in the assault team.

Instead, he chose to endure and overcome any physical handicap and devote himself to performing a shuttle service between the surface and the 180-metre level, taking supplies to the troglodytes who, for their part, were to go down and live for several days 250 metres below ground.

ELEVENTH AND LAST SESSION

The decisive descent, in which actual exploration was to be resumed, took place on 28th August 1947. Between noon and midnight that day twenty-two men in parties of two to four, were to go down into the chasm; six to occupy the relays at various heights, the other sixteen to go as far as the great chamber 250 metres down.

I cannot possibly describe even in abridged form what amounted to a mobilization, a great exodus into the depths. Everything had been arranged down to the smallest detail, each of us knew exactly when and with whom he was to go down.

At midday, as I was idly lying on the grass in front of my tent, I saw Delteil, Nègre, the entomologist of the Spéléo-Club de Paris, the Abbé Cathala of the Spéléo-Club de Toulouse, and the Adjutant-chef Vigroux shoulder their packs, and with helmets already on leave the camp and set off marching like heavily laden men towards the pot-hole, the first party to go down.

The day passed slowly, and it was not till late in the

evening at ten o'clock that Loubens and I, after giving a send-off to the others, ourselves set off for la Henne-Morte.

Owing to the crushing weight of our packs and the rough nature of the ground beneath the dark undergrowth we did not exchange a single word, but our minds were active enough. I am sure our thoughts were never far from our objective and the seriousness of the occasion. The success of the expedition was bound up with ours, seeing that we were the principal actors. After seven years of working and waiting for this opportunity we were about to go all out to win.

In the operations at the mouth of the pot-hole there had been delays; the various parties and the material they had with them had not been able to go down as quickly as expected and we had a long wait before the ladders in the first eighty-metre shaft were freed for use.

At midnight we caught up and passed the brothers Maille of the Spéléo-Club de Paris engaged in transporting, unrolling, and patiently getting clear a telephone line down through a succession of shafts, a job made more difficult by their being narrow and twisting. Lower down, at the 130-metre level, we came to the first relay shelf, where Delteil, Nègre, and adjutant Vigroux were busy letting down bags of gear to a point forty metres below. They stood back against the wall to let us pass and drop down to the 170-metre level, where we entered the watery part of the chasm. It is, in fact, the point where the first subterranean stream appears, and we paddled along its bed to the second relay shelf, where Captain de la Hitte, Lieutenant Laguille, and the Abbé Cathala were looking after the hauling and lowering at a descent needing particular care and agility, the difficult drop of fifty metres, called the Death Pit after the two accidents in 1943.

For the safety of the man descending and to keep him away from the line taken by the cascade and stones, two parallel ladders had been fixed in this shaft, one of them further than the other from the said cascade, so that at a

certain depth, while hanging in space, a transfer from one to the other could be effected by a swing across; we called it the 'squirrel's leap,' and no member of the party is likely to forget it. After this bit of rope-dancing, not unworthy of trapeze experts—save that we did it without a net below—I went down the ladder that twisted and gave to my weight and landed at 230 metres on the floor of the basin strewn with the rocks large and small in which this shaft abounds. Knowing by experience that it is unwise to stay long at this point I moved out of the line of possible missiles, and discovered, close against the wall, the dripping form of an unfamiliar member of the party, who proceeded to introduce himself as if we were meeting in a drawing-room: 'Lieutenant-parachutist du Puy-Montbrun.' I was unaware the expedition had been joined by this finely built officer. Even down here in the depths of the earth, muddy and wet through, Lieutenant du Puy-Montbrun retained his natural distinction. I was tempted to ask if he had landed down there in his parachute! But the arrival of Loubens who came up beside him interrupted our talk. The Abbé Cathala, directing the tricky business of lowering in the shaft we now occupied, was preparing to send our sacks down on a long rope. Raising our heads, we watched, trying in the darkness to get a sight of our baggage, at that moment swaying freely and occasionally bumping against the sides. One of these bumps broke off some stones which came clattering down and made for us. Quick as thought we lowered our heads, crouching as low as possible under our helmets and offered our backs to the shower. The stones came whistling down and crashed to the ground, one of them giving Loubens a nasty blow on the shoulder that made him wince. He is not superstitious, otherwise he might well believe that the spectre of la Henne-Morte has a special down on him, and that out of the twenty-two at this moment in the chasm it had picked out and struck the one who first came to disturb the solitude of its deep abode.

While Loubens was rubbing his shoulder, the same shoulder that was smashed in this shaft four years ago, I reminded him that only last year in this same spot he had nearly been burned when his waterproof caught fire, and I begged him not to dally any longer in the place.

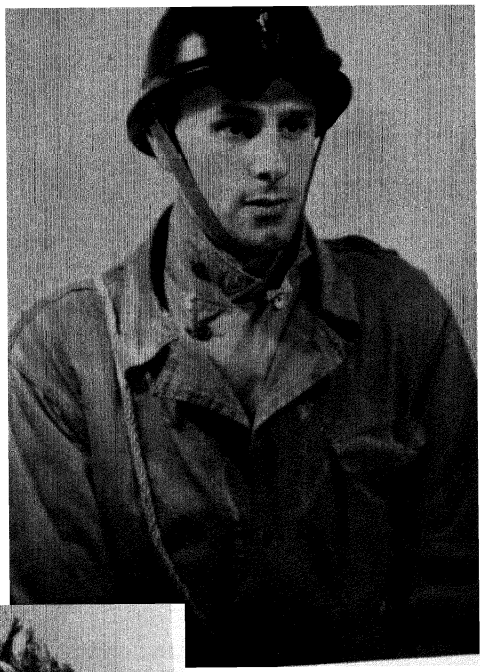
Accordingly we hurried away down a succession of steep slopes to a point where we came upon the main party trying to cope with the mass of material piled at the brink of the last drop above the huge chamber called Lake Hall, our goal for the day. Perhaps I am wrong in saying 'for the day.' I did not really know at what hour of the day or night I landed in Lake Hall, which hitherto I had crossed stealthily and fearfully with only such glimpses of it as were permitted by the feeble light of my inadequate lamps. This time, when sixteen men were to move about in it for several days, the combined light of all our lamps and the magnesium flares of our cinema operator Marcel Ichac enabled us to see what it was really like and the details of its architecture, except for the mysteries of the lofty roof, where objects became indistinguishable at a height of 200 feet.

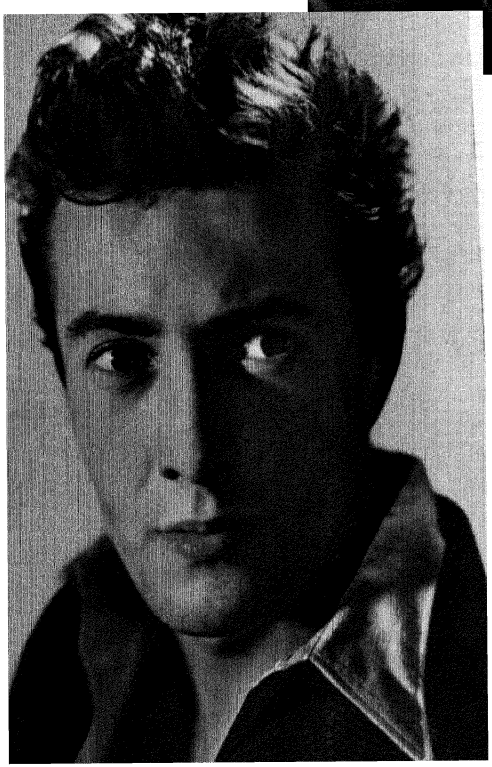
At one end of the immense nave a waterfall seventy to eighty feet high tumbled noisily into a clear lake whose water at 4° C. and the spray that rose about it offered no inducement to go near it. This sheet of water gives rise to a strong quick-flowing stream which has hollowed out a miniature canyon in the rock floor of the hall and crosses it from end to end before pouring over into a great vertical chasm.

On the sloping chaos of rocks and water which formed the floor of the hall, after the heavy and seemingly endless task of transporting the material, we turned to another task which appeared to be quite devoid of sense. We proceeded to unfold and set up three tents; we were to camp underground, such was the decision of our leader Trombe, who had selected this unusual and singularly unhealthy spot as our base camp.

The decision had not found favour with all of us, far from

LE LIEUTENANT DU
PUY-MONTBRUN





CLAUDE MAUREL

it, and most of us were sceptical about the possibility of a prolonged stay 250 metres below the surface amid the thunder of cascades, the enveloping mist and the drippings from the roof, exposed to an icy draught.

Nevertheless, the tents went up, the guy-ropes tied to boulders as the ground was too rocky to drive in pegs, and soon the sixteen of us, exhausted by our long spell of hard work, endeavoured to creep into them. The bestowal of our persons inside raised a bit of a problem, for the tents, normally intended to house three people were now to hold five or six. It was touch and go, for what was to go in seemed to be greater than what was to contain it. But spelaeologists are by profession accustomed to insinuate their bodies into tiny receptacles, and we gradually succeeded in distributing and packing ourselves like sardines in a barrel.

Lying on their sides, Loubens, Ichac, and the Siamese twins François and Jean-Paul Maille contrived to make themselves into a lower layer on which I could lie alongside Dr. Clamagirand.

A combination of the laws of gravity and compressibility and of good humour would do the rest, and so, tightly packed, fitted in and stratified in our tent and the others, cohabitation began.

Comments and comparisons suggested by our situation were not lacking; the sardines already called upon and herrings in a cask provided most of them. There were some, however, that showed more originality and realism, and the palm was awarded with much laughter and grunts of approval to the author of the remark that we were just like 'a litter of small pigs a quarter of an hour before birth!'

Such horribly close packing prevented any sleep for some of us and meant only broken sleep for the rest, but it did have at least one advantage, it kept us warm.

Almost all of us had down sleeping-bags; the most fastidious had brought their air mattresses. What a pity we had not one more tent, now that living in the pot-hole was seen to be possible!

The hours went by slowly and painfully, with occasional groans from sleepers racked with cramped or stiffened limbs. One of the sufferers gave a growl, wriggled, and woke up and extracted from under his 'couch' a hammer which was pressing into his back! For my part, I spent the time trying to soothe a damaged hand that had given me a lot of trouble in the descent and was hurting me. How damaged you may ask? Well, not in the pot-hole this time; the 'Dead Lady' had had no hand in it. I stupidly burned myself with boiling oil cooking at the surface camp where the doctor dressed it for me.

'Lucky it 's your left hand,' he said by way of consolation.

'All very well, but I happen to be left-handed!'

Let me add, with apologies for giving you this tale of my woes, that one of my teeth was aching and I had come down with a scarf wrapped round my face under the chin-strap of my helmet.

The result of my smarting hand, the twinges in my back tooth, and the discomfort of my position was that I could not sleep. Tired of lying awake, I put on my torch and consulted Loubens's wrist-watch, whose ticking was audible as his wrist was pressing on my face!

The complete collectivism we put in practice here offers, as you see, inconveniences, but some advantages too!

I looked at the time and suddenly realized that what it told me was no help at all. I had completely lost all notion of how time had gone. Day and night obviously differ in no ways underground, so there is nothing to go by. Moreover we had been working indiscriminately night and day, going to bed only because the job was finished and because fatigue, cold, and damp made it necessary. As for mealtimes, the only things that might have helped us to measure the passage of time, this aid was lacking, for we had no meals. This last peculiarity, combined with all the rest, creates a special other-world atmosphere and a particular *modus vivendi* to which we got accustomed despite all its unpleasantness, since we were actually living in darkness,

cold, and fog, with the deafening, maddening noise of the cascades in our ears, without knowing whether it was 7 a.m. or 7 p.m.

But I mentioned just above that we had no meals; that requires a word of explanation. In addition to some spare clothes and spelaeological gadgets, our rucksacks, full to bursting, contained provisions for several days in the form of American army rations: the famous K rations well known to ex-combatants. At any time of the day or night, it made no difference, we opened these felt boxes to find there various packets of 'dolls' food,' containing cheese and ham, eggs and ham, a bar of compressed fruit or nougat, a small portion of soup or coffee in powder, a tablet of chewing-gum, a few high-quality cigarettes, and some loathsome little biscuits tasting of chemicals. These foods, condensed to the smallest volume, too well packed, satisfied neither appetite nor palate. These 'un-French materials for mastication' as I promptly dubbed them the first time I sampled them, give neither the feeling nor the satisfaction of having made a meal, not even an ordinary snack, and many of us were to regret not having a plain bit of bread and sausage, instead of these delicacies.

But let me stop criticizing and slandering the K rations and give them their due by admitting that though they are not much to look at and have an American taste, they are, from a scientific point of view, remarkably well thought out and apportioned. For our immediate purposes they contributed the ideal type of food; they enabled us to maintain at their posts the most exacting and least trustful of their merits, those who claimed that they never felt they had had a meal and who suffered most from being completely deprived of bread; even these had to admit that their stomachs at least had not protested, and that their physical machine had had its ration and more than its ration of calories and vitamins.

How did the time pass down there in the chasm? That has always been a puzzle to me. I have a recollection

of going in and out of the tents, of working together at various jobs after the fashion of termites. At times the great hall was filled with shouts and orders, the rattling of metal, and the blows of hammers.

The source of these signs of activity was the extraction of metallic objects from the numerous bags let down to us and the assembling of bars and sheets of metal which, at the end of the second day, had taken the form of a windlass firmly fixed to a rock, a metal crane set on the lip of the great shaft, and, hanging from the crane, swaying freely, an odd-looking contraption to which we gave the name of hopper, nacelle, cage, or 'Chinese hat.' It was in this sort of binnacle consisting of four bits of tubing connecting a tiny metal platform for the feet to a shield of sheet iron to give protection from the cascade and stone-falls, that the president of the Spéléo-Club de Paris took his place.

As the inventor and creator of the contrivance with his friend Dresco, he was bent on trying it out as a preliminary to the descent of the assault party.

Actually he gave it more than one trial, for in his desire to bear the maximum of responsibility he had himself let down to the bottom of the great shaft, the complete descent of which I had made on a former occasion when I had cast an envious eye into the drop below. For lack of proper gear I had been unable to let anything but stones make the descent in 1943.

The metal cage with its passenger took about a quarter of an hour to go down, but drawing it up was a much longer, more arduous affair. The strongest of our team only succeeded after most exhausting efforts in making the handles of the windlass turn, and Trombe, who throughout the whole of this anxious re-ascent kept perfectly calm, was only brought to our level after an hour and ten minutes of strenuous hauling interrupted by many stoppages.

Every one was worn out and upset, especially the members of the assault party, who saw that they could never be let down and got up again in such conditions, too arduous for

the haulers and too dangerous for the occupants of the cage. The windlass worked very badly and the crane, as well as the fine steel cable, had to undergo an excessive strain.

An endless discussion ensued round the wretched windlass, whose failure promised to be disastrous. Finally, when someone announced it was half-past one in the morning, we all went off to bed in a very bad temper in the aforesaid conditions of discomfort, which were not exactly suited to calm us down.

Lack of sleep, cramp, snatches of sleep accompanied by nightmares in which breaking ladders and falls in space succeeded each other, summed up a second particularly horrible night.

My patience exhausted, I put on my torch to consult Loubens's wrist-watch, which I knew I could pick out from the general entanglement. I was petrified by the unexpected sight revealed by the cone of light from it. It was snowing! Flakes were floating about under the roof of the tent and settling on the huddled sleepers. This pot-hole of la Henne-Morte had accustomed us to many surprises, but this last one surely bordered on the miraculous, or was it an hallucination? It was neither, for I soon saw that the snow, or an excellent imitation of it, was coming from Ichac's sleeping-bag. A large tear in it was letting out the down, and the movements of the restless sleepers were raising the feathery flakes which floated all over the inside of the tent.

Six o'clock by Loubens's watch; 6 a.m. this time without any possible doubt. . . . I crawl over the others, emerge from the tent, and standing in the great dark hall where the roar of the cascades never ceases, I wake them all up with the Basque cry, a resounding 'irritzina.' This is the day, 'J day,' long awaited, when 'la Henne-Morte shall be vanquished' in the words of our favourite slogan. The tents empty, the hall fills with queer-looking forms and small twinkling lights, and presently the day's first hammer blows ring out. Trombe, Dresco, and a team of men turned mechanics for the occasion take the whole windlass to

pieces preparatory to repairing it and setting it up again, for it is found to have gone wrong owing to a particularly hard knock during its passage of the various shafts.

While some of the party were busily engaged in putting the windlass right, the remainder of the available spelaeologists were standing round in a semicircle in a corner of the hall where their silent, motionless figures offered a strange contrast to the bustle of the team on duty.

What can they be doing? I venture to put the question, for I am pretty sure no one could give the answer.

With cascades thundering down beside them, in one of the wildest, most forbidding places I have ever come across underground, 250 metres below the surface, on this Sunday morning of 31st August, they were attending mass.

My friend the Abbé Cathala had brought down here his military chaplain's small case, he had found a ledge on the rock to serve as altar, and robed in a white chasuble with blue trimmings he was officiating, with the men grouped round him dressed in *anoraks* and muddy, torn sou'westers, their hair unkempt, their faces unshaven and drawn with fatigue; a strange, picturesque congregation.

The ceremony over, the priest turned to address us.

In a few simple, but in such a setting and in such circumstances, very moving words, he told us he had said this mass for all past spelaeologists, especially, he added, for Mme Norbert Casteret and the exploration which was to be undertaken that very day.

Shortly after the conclusion of his mass, a *low* mass as Marcel Ichac happily pointed out, the windlass crew signalled to us; they had put things right, all was ready, the assault party could now set off to attack the depths, and possibly also the depth record.

As agreed, I was the first to take my place in the nacelle; that is to say, I took hold of the tubular stanchions of the crane which overhung the hole, and took a long stride into the cage as it swung above the 100-metre drop (102 metres to be exact).

I was wearing a waterproof *anorak* with a hood and waterproof trousers. Underneath I had put on a light diver's combination suit. Dressed thus it seemed to me I was proof against the worst form of shower-bath and even complete immersion.

On this account, therefore, I had no anxieties; what I did not like and what, I must admit, made me really anxious, was the unpleasant way the cage swung about, the way the crane bent and the pulley squeaked; as for the four-millimetre steel wire which held the thing up, it seemed deplorably thin and fragile.

One is definitely for or against mechanical contrivances underground. A technician, a scientist, or any jack-of-all-trades generally favours a gadget he has thought of, thought out and manufactured, and in which he has confidence. That is not so with me; I am neither inventive nor diligent, and I know nothing about the resistances of different substances and other formulae which entirely reassure those initiated into such mysteries. In short, I dislike being suspended as I was and let down, passively inert and at the mercy of a machine, not knowing whether the brake will work, suspecting some of the cogs may miss, aware the pawl is little better than a joke. I am all for the ladders one can grasp in both hands, on which one can fight it out, and on which the mere physical effort of frantic exertions leaves no time to meditate on the law of falling bodies!

Let me frankly admit, however, that if I was able in 1943 to reach the bottom of this great shaft and climb up again with nothing but a simple electron ladder under the terrible cascade, such a performance was only an individual exploit, an almost desperate venture, a hasty and precarious reconnaissance made to ascertain whether the pot-hole had any continuation in depth below 355 metres. To suggest such a descent for half a dozen men intending to penetrate still further down was neither reasonable nor practicable. Trombe had written: 'With the attack on the great cascade we should be getting within sight of a catastrophe,' and he

rightly concluded: 'I cannot accept such a contingency.' Hence arose the idea and the realization of the descent by windlass in a protected binnacle.

At the last moment I was handed an iron bar over six feet long which I had asked for, hoping it would be useful in keeping me away from the broken walls of the shaft whenever my nacelle banged up against them, and also in checking the gyratory movement accentuated by my freely hanging body.

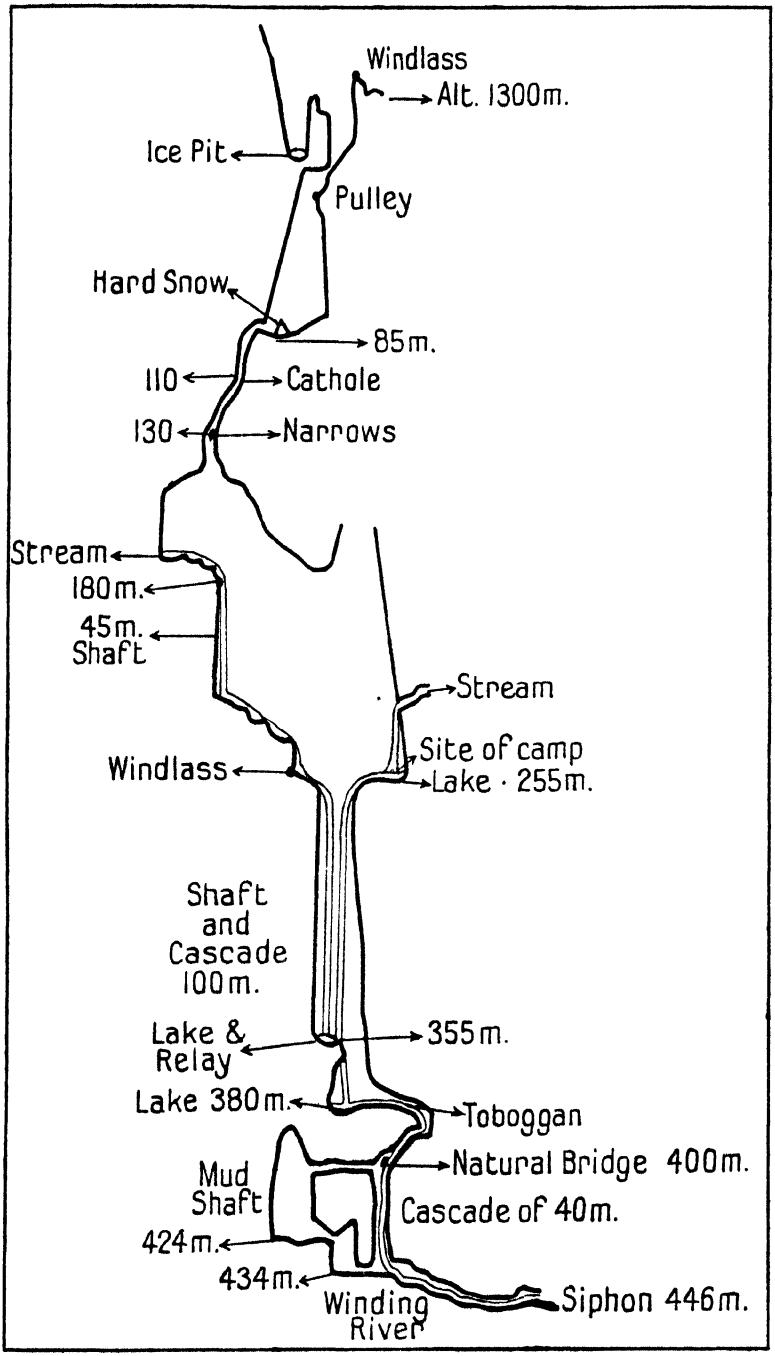
Armed thus, like Don Quixote with his lance, I would have a fencing match all the way down the shaft, and this exercise broke the monotony of my slow descent and offered a useful distraction from my obsession and suspicion about the thinness and fragility of the steel wire as it unrolled above me. The cascade, which very soon began to envelop the line of descent of the nacelle, also contributed something to occupy and even preoccupy my thoughts, for it came crashing down on the sheet metal of the 'Chinese hat,' which broke its violence, but, as you can well believe, did not entirely protect me from the icy rain which spattered out in all directions.

In a quarter of an hour I arrived at the bottom of this vast, dripping shaft, and after signalling by a whistle to draw up the empty cage, I paddled across the small lake in which I had landed on the occasion of my memorable solitary descent in 1943.

I could see better than before, when I had come down with my torch out, soaked and half frozen by the cascade, and I was easier in mind, for my situation was decidedly less precarious. I examined the new shaft which dropped vertically at my feet and threw some stones which landed in a lake.

Choosing a suitable bollard, I fixed my ladder and unrolled it down the shaft.

Loubens had followed me down in the nacelle and came to join me and secure my descent for another twenty-five metres, when I reached the surface of a large, deep pool.


Windlass
Alt. 1300m.
Ice Pit
Pulley
Hard Snow
85m.
110
Cathole
130
Narrows
Stream
180m.
45m.
Shaft
Stream
Site of camp
Windlass
Lake · 255m.
Shaft
and
Cascade
100m.
Lake &
Relay
355m.
Lake 380m.
Toboggan
Natural Bridge 400m.
Mud
Shaft
Cascade of 40m.
424m.
434m.
Winding
River
Siphon 446m.

I had to swing across to reach the wall that overhung and cling to it. From there, gripping the projections on the rock wall, I circled round the lake to its outlet where there was a beach of black, shiny pebbles. Here I found the opening of a kind of low tunnel which I entered with some trepidation rather expecting I was about to come up against a final cul-de-sac.

Could it be that the pot-hole of la Henne-Morte, after holding us in check for seven years, was going to surprise and disappoint us by ending only twenty-five metres lower than my final point of 1943?

I pushed forward over the beach, almost running on all fours, and it was with indescribable joy with a touch of terror in it that I saw the roof lifting and the gallery taking a fresh turn steeply down in a sort of twisting, rocky toboggan run with water cascading noisily along it.

I went on, coming on new descents vanishing below at every step and turn, till I had to stop at the top of an escarpment too steep to descend without a rope. A few minutes later I was back on the pebble beach by the dark lake; I could just see Loubens on his watery balcony twenty-five metres above me, so I gave him the news and invited him to join me.

The water was making such a din that conversation was difficult, though we shouted as loud as we could. By his gestures more than by his words I guessed his excitement, which was fully shared by Deudon of the Spéléo-Club de Paris who had followed us down the 102-metre shaft.

Before he started to join me below, Loubens beckoned to me to wait, and drawing out the telescopic aerial of a portable wireless he began a conversation with the underground camp where the rest of the advance party were awaiting instructions from us.

It was the first conversation by wireless telephony to be carried on at such a depth in any chasm. It should be noted here that Lieutenant Auriol of the Services des Transmissions, who had provided these wonderful sets, was able to

converse from ground level with the underground camp through 250 metres of rock, despite the twistings of the pot-hole and its various bottlenecks.

A quarter of an hour later Loubens descended by means of a smooth rope the pitch where I had had to stop before. We threaded our way, walking in water through a narrow passage till we were brought up suddenly by a deep, gaping pit into which the river disappeared.

The same disturbing thought occurred to us both as we looked at each other in consternation. The shaft was so narrow that the cascade falling into it filled it entirely; a descent into it would be suicidal—we should certainly be drowned. . . .

We were hypnotized by this sinister hole, which swallowed up the cascade and seemed destined to swallow up all our hopes. But, as I raised my eyes from it, I gradually made out a tunnel which went into the wall opposite and disappeared in the dark.

An extremely tricky bit of climbing enabled me, while poised above the shaft, to get a footing in the porch of the tunnel, and I advanced quickly into it till I came to a new vertical drop. Here the noise of the cascade did not reach me and I bent over a great chasm in which all was silent and mysterious. My torch failed to light the wall opposite; what had this new shaft in store for us?

Returning to the tunnel entrance, I let Loubens know what I had found and told him to get into communication with the others and be sure to come back with two or three of them bringing ladders to pursue our exploration further. Accordingly he went off and disappeared.

I had nearly two hours to wait in solitude—all this hauling up and letting down is a slow business in pot-holes—so I sat down to rest and had a look at my note-book, in which since we started in the morning I had kept a careful record of the section of the pot-hole and noted the depths of the various drops.

On this occasion, despite the cold, the discomfort, and the

isolation, the wait did not seem long. In fact, I enjoyed finding myself once more alone, and I tried to solve the question of how far this adventure of ours might take us. On consulting my sketch and adding up the figures of the depths, scribbling them down on my knee shivering all the time, I had a shock; a great thrill went through me as I realized that I was just 400 metres below the surface.

My thoughts turned back to 1912 when, at the age of fifteen, I made a solitary descent of my first pot-hole on a smooth rope. That was thirty-five years ago. . . .

In 1935 when my wife was with me, I reached the bottom of the Martel hole in Ariège; that was the first time a depth of 300 metres was reached in France. It also constituted and actually still constitutes the world's record of descent for a woman, and I reflected, not without a pang, that Elizabeth Castaret, who made light of icy water and did not know what giddiness was, would have come joyfully down here, where I can feel her presence though I cannot see her, for her gentle spirit follows me wherever I go and especially underground, where we worked so long together, side by side, in fifteen years of wonderful collaboration.

This time it was the impressive depth of 400 metres that I had just reached and which we were about to pass, seeing that the pot-hole went still further down.

How can I convey my excitement and give reality to the impression made by the strange nature of my surroundings in a plain tale which has already told at length the story of what must, after all, read like a succession of more or less violent gymnastic efforts to go deeper and deeper; and all with the rather vain ambition of being able to make a lot of the feat and translate it into figures?

Nevertheless, there is something more than that in a pot-hole and the mere fact of descending it, but anything I might add would take us too far, possibly too deep!

To return to facts and cut the story short, I may say that Loubens reappeared at last with Ertaud, Deudon, and Clamagirand. The last two waited for us at this point,

which we named the 400-metre passage. Ertaud came as far as the opening of yet another drop at the 424-metre level. As for Baylac, the sixth member of our spearhead party, his job was to stay on duty at the 355-metre level at the foot of the great 102-metre cascade.

Still followed by my *alter ego* Loubens, I traversed a chamber with a sloping sandy floor, longing to know what we should find further and lower down.

The first discovery we made was to find once more, in the form of an unpleasant shower issuing from a hole in the roof, the cascade which had vanished down the black shaft that so disconcerted us forty metres higher. This by-pass through the passage at 400 metres and two muddy shafts had therefore brought us back into the part of the pot-hole still in active use by water. Once more we were in the main waterway and we were going to get more and more involved in it, for the series of vertical shafts one above the other, which are characteristic of la Henne-Morte, ceased beyond this point. A change in the appearance of the rock (dolomite replacing Aptian limestone) coincided with a complete change in the character of the chasm; no more cascades, but an almost horizontal river along which we paddled in running water. Presently the lowering of the roof compelled us to bend down, and accumulations of pebbles kept forming barrages which produced reaches of calm deep water.

Coming on one of these pools I plunged in up to my chest, trusting to my waterproof clothes to keep out the water. Loubens, following me like a shadow, did likewise, so that our exclamations of surprise and our gestures of disgust were made in unison. We had not realized that our light diving dresses had suffered severely as a result of our efforts on the ladders and rope and that we had taken on board a gallon or more of water, enough to soak us to the skin and half freeze us for the remainder of the expedition.

Another pool appeared beyond and I hurried towards it, for from now on we had to move quickly and not dally in one

place because of the intolerable cold. Loubens, however, caught me by the arm to stop me and confide to me what he had had the pluck to keep to himself till this moment, but thought he ought not to withhold from me any longer in view of the changed aspect of the pot-hole.

When he had had his last conversation by radio at the 355-metre level a very disquieting message sent off from the surface post and relayed by the camp at 250 metres had been transmitted to him: 'Warn the assault party that a violent storm is raging at this moment.' Such was the purport of the warning and it left me aghast, wondering what to do.

The warning was not one to be neglected at the depth we were, and our situation, crouching under the low roof of the underground watercourse which might rise suddenly, was bound to make us very anxious. We called to mind the catastrophe in the Bertarelli chasm, where, in exactly similar circumstances, Italian spelaeologists were surprised and drowned by a sudden abnormal rising of the water. Was the resistance of la Henne-Morte never to end and would its sorceries and powers for evil never be exhausted?

I read the question in Loubens's eyes as he looked at me, and I thought hard, knowing I had to make a quick decision.

Instinctively I looked down at the water flowing rapidly round our legs under the low ceiling. I considered how disastrous would be the consequences of a retreat from the point we had reached. It would jeopardize the result of many years of preparatory work and of the present expedition and I decided we ought to persevere and trust our lucky star.

I uttered no phrase worthy of record to convey to Loubens my decision to carry on. By some curious working of the mind which I leave to the psychologists to explain, I made a remark which had no connection with what was worrying us, but its very unexpectedness drew our thoughts away from the fears that obsessed us both. 'It 's odd,' I said, 'in this expedition in which we form the advance party, we are sent on ahead as scouts, yet both of us are wearing spectacles!'

It was with these words we chanced the fate of the expedition and continued to go forward, now walking, now crawling with increasing difficulty in the ice-cold water, which found its way freely into our diving suits, thanks to the unfortunate tears already mentioned, and we turned round frequently to watch the level of the water. We were indeed haunted by this fear of a sudden rising, for we had noted further back on the walls marks which proved that at times the water piles up, flows back, and rises more than fifty metres in the pot-hole.

With teeth chattering we kept on, advancing with more and more difficulty, and reached a final bend where the river was drawn into a drawer-like fissure in the rock and disappeared from sight.

Up to our waists in water, our heads bowed under the low roof, we just gazed stupidly at the impenetrable closing up of the walls which marked the end of the pot-hole.

'It 's eleven at night,' remarked Loubens.

'We are here four hundred and forty-six metres down,' came my answer; 'la Henne Morte is the deepest vertical pot-hole in France.'

Then I took him by the shoulders and embraced him, adding with some emotion: 'It 's a wonderful birthday for me; I couldn't have wished for a better, la Henne-Morte setting a crown on my career just when I have reached fifty; it 's almost too good to be true. . . .'

And so victory finally came to reward our persistence in this formidable Pyrenean chasm which refused to give in and confronted us up to the last yard with every variety of snare and challenge to our spirit.

Then back we went in the winding river, so as to get out of it as soon as possible, for we were extremely cold, and the threat of a sudden flooding hung over us all the time. Nevertheless, I stopped long enough to make a rough plan of the watercourse, by means of compass bearings, taking the sights by Loubens's lamp as he preceded me on our way back, stopping at my request every time it was about to

disappear behind a screening corner of rock. After leaving our fourth halting place my sighter disappeared and only a smothered far-off voice replied to my calls. I found he had been attracted by a passage near by, which we had ignored on the way down, and had begun to crawl along it. He was quite right, for it was our job to examine everything we could, but, as I waited for him, I felt the water getting icier and icier, and as I carefully watched the amount of water in the river its volume seemed to me to be increasing as well as the noise it made.

Loubens called out, but the sound of the rushing water almost drowned his voice and I had to crawl after him into the narrow tunnel full of sticky mud; he had reached the end of it after a crawl of about thirty yards. It was another cul-de-sac—the pot-hole had no continuation.

We returned to the river converted into two great lumps of clay, there to take up again and complete our plan of the hole as far as the waterfall chamber, where we had the satisfaction of picking up again the end of our electron ladder. Loubens climbed up the rungs to the balcony where friend Ertaud had been waiting for us, while I dallied a few minutes longer in the watercourse.

I picked up some worn pebbles, broke off a few specimens of rock, observing, inspecting, and dreaming.

It is an unusual experience to find oneself at such a great depth, and I knew I should never pay another visit to the place. The minutes passed in it were of special interest; and all too short the time I had to spend there alone at the bottom of the deepest pot-hole I had been privileged to explore. I could not tear myself away. . . .

It ended by my taking an indelible red pencil from my bag and tracing on the wall the same initials as in 1941 when Loubens and I reached the cat-hole we had then judged impracticable at the 100-metre level, and I added the date 1947.

Up above Loubens and Ertaud, much puzzled by the delay caused by these doings, had already hailed me several



JOSETTE SEGOUFFIN



GREAT CLUSTERS OF CRYSTALLINE FLOWERS (ESPARROS)

times. I seized the ladder with both hands to climb up to them, and then, just as I left the ground, I bent over and, may I be forgiven, I put my lips to the cold rock. It is the only time in my life I have kissed a pot-hole. . . .

Weighed down by our sodden clothes and stiff all over from the cold, we climbed laboriously up by the thin ladders. One after another we picked up Ertaud at 424 metres, Deudon and Clamagirand at 400 metres, and finally Baylac at 355 metres.

At the sight of this last fellow worker, who had been waiting for us at the foot of the huge cascade under the spray and in an icy draught, I felt a pang of remorse at having left him so long alone in such a spot. But he, phlegmatic as ever, had waited at this post, just as he would have gone down to 446 metres or to 700 metres if circumstances had allowed it or had so ordained. Now at last his cruelly long spell of sentry-go was ended, and I took up the telephone which had come down to this level and called up to let the men above know we were ready to be taken up.

Though night and day do not differ perceptibly underground and one usually loses all count of time, it did so happen that the men at the base camp were at that moment asleep in the tents, the hour being 1 a.m. of 1st September.

Marcel Ichac, disturbed by the ringing of the telephone, but still half asleep, seized the instrument and had quite a shock as he recognized my voice and heard that exploration had been completed. He woke Trombe to give him the news and tell him I wanted to be drawn up in the iron cage as soon as possible. It was then Trombe's turn to speak, and I could hardly believe my ears. He pointed out that the working of the windlass had been most exhausting and his team, their arms and bodies aching, were done up and could not work the handles. They simply had to recover their strength and he had granted them a couple of hours' sleep.

I replied that we too had had as much as we could stand, and that we just could not wait two hours in sopping clothes in the blast of fog-laden wind in which we were shivering.

Up above, however, the verdict was pitilessly confirmed; the hauling team simply must have some rest and in addition we were allowed to learn, as some check to our protests, that the crane of steel tubing had been showing signs of weakness and that the necessary measures for strengthening it would take some time.

I shall certainly not attempt to reproduce the chorus of oaths and maledictions that rose from the pot-hole when the programme was announced. The *parias* of the assault party, beside themselves with indignation, hurled a stream of anathemas against the bourgeois of the base camp lolling in their tents and their down sleeping-bags! But these echoing shouts did not reach half-way up the shaft and our invectives fell back in icy rain on our bowed shoulders.

This was where the toughest ordeal of the whole expedition began for the six of us down below. Strength and morale had endured about as much as we could stand, some of us not having slept for days, as well as being soaked to the skin.

Packed close together like a lot of helpless grubs we did our best to restore our spirits and warm ourselves by singing and slapping each other on the back. Then, putting the remainder of our provisions together, we finished our K rations.

With our powdered coffee and thanks to a few tablets of *Méta* we set about preparing a hot drink. Of water there was no lack at all; we had merely to draw it from the lake in which we were taking our prolonged bath.

While the bluish flame of the solidified spirit round which we sat was slowly heating our aluminium cups I had a talk with my next-door neighbour, Dr. Clamagirand.

'What about it, doctor?' I said. 'We have faced all the dangers that threatened us in the pot-hole: stone-falls, breaking of tackle, drowning, pneumonia; that is all behind us now. But at this very moment we are about to take a risk.' And I pointed out what we were collecting and drinking underground, without first boiling it, water that

must be terribly polluted at every stage of the chasm, by the fact that the cold and damp had made every one ill and that the cascades were the only drain. . . .

Whereupon the doctor made a reply that was superbly frivolous. He looked up for a moment at the great cascade as if in doubt.

'Nothing to be afraid of,' he said. 'The cascade is so high that all the microbes lose their form in falling.'

Good for the doctor! Was it 'the intoxication of the depths' which called forth such light-hearted talk? Who can say? But a moment or two later he was to let us see another specimen of his sudden and, let me hasten to say, purely temporary lack of respect for the principles of hygiene and medicine.

Ertaud had cut his finger badly opening our last tin of jam and held out a bloody hand to the doctor. The latter once again took out of his case a roll of plaster, by now an extremely thin roll from having been used to dress the many wounds and abrasions with which we were all more or less scarred, and solemnly, dazed with fatigue, our dear Clamagirand swathed the finger next to the one that was damaged!

Let me say, to clear his character and cause no misgiving to his patients, that we had all reached the limits of human endurance, that the lighting was not what it should have been, and that Ertaud's forepaws were not exactly white and pink!

Talk and incidents of this sort and other tales of *haulte graysse* supplied the necessary fillip to stick it out, not for the two hours asked for, but for seven hours, seven cruelly long, exasperating hours during which the telephone refused to utter a sound.

What on earth could have happened up above? We never actually discovered; but what is quite certain is that the ten men at the relay camp had done more than mortal men could be expected to do, and it was not their fault we were left so long under the waterfall.

Whatever the reason, it was not till close on 8 a.m. that sounds of a hammer on the metal of the crane brought the

welcome announcement that we had not been entirely forgotten and that they were beginning to get busy about us.

Then the telephone, miraculously restored, woke up, and down came the order to me to take my place in the cage and be brought up first. I was all against it, faithful to my principles of being the first down and last up, as it should be when one has the honour of commanding an assault party. I tried to insist on giving first place to the Benjamin of our six, Baylac, who was only nineteen, but he would not hear of it, nor would our other Benjamin, Ertaud. They were quite definite that I, being the oldest and also the wettest, must go up at once.

A new peremptory order from Trombe himself came down the telephone and I gave in. I will not dwell on that re-ascent in the cage; it was an endless, horrible, watery business; I could never have believed a windlass could be so slow and irregular; it was in fact out of order, often slipping and very hard to work. Three teams of two in relays were needed to bring up each spelaeologist a hundred metres in fifty minutes. And here two athletic fellows, the most modest in a modest company, stood out in the strenuous efforts made, Jonquière and Clément, whose acquaintance with the pot-hole was restricted to its most thankless and arduous labours.

I was up at last and the cage was still swinging near the top of the crane as I got eagerly out of it. In front of the ten men, wondering what my reaction was going to be, I rushed up to Trombe.

'La Henne-Morte is vanquished; thanks to you I have had one of the greatest joys in my life,' I said as I wrung his hands.

Clearly I was not alluding to the hours spent in purgatory beneath the cascade; that was all forgotten already, swept out of existence by what remained, by the fact that the organization of the Spéléo-Club de Paris, despite its inevitable imperfections, had made possible the conquest of la Henne-Morte, the beating of the French depth record.

When the last member of the team, the valiant and enthusiastic Ertaud, had been drawn up out of the cascade, but not till nearly 3 p.m., the sixteen of us, once more reunited, had but one idea, one urgent aim: to get away into the tents, fling ourselves down, and sleep; sleep just as we were, in wet clothes, but at any rate sleep. The telephone to the surface had been in action, the news of our success had gone forth, the journalists had at last something to write about, and they certainly made good use of it!

The mixed team of civilians and soldiers which had already been down twice to the 180-metre level to bring equipment and food was invited to make a third descent to this level to help us in the last re-ascent. We fixed up that they should be there at eight next morning.

Everything having been thought out, arranged, and ordered, our underground camp was at last able to let itself sink into a sleep that would restore exhausted energies. It was a sleep that might be accurately described in Raymond Gaché's phrase: 'Rest taken like animals in a crowded vapour bath.' But what luxury after our spell of purgatory below the great cascade!

Just as my mind was hovering in the misty borderland between wakefulness and sleep, the telephone rang almost in my ear.

'Hallo, two hundred and fifty metres speaking,' I said with a yawn.

The reply made me sit up; it was literally a case of not being able to believe my ears.

Like the thin sharp ping of a mosquito, a barely perceptible woman's voice was whispering into the instrument, and at last I managed to make something out.

'Hallo, Maud Guérin speaking. I want to speak to Norbert Casteret.'

Maud Guérin? Madame Guérin, secretary of the Spéléo-Club de Paris? She had been at the outdoor camp near la Henne-Morte a few days before but she and her husband had had to leave us. I had seen them go off

before my own descent of the pot-hole. Where could our female colleague be, and from where was she telephoning? I asked her this and also what she wanted, but her voice was so faint and thin we could not understand each other.

And then some unknown and obliging operator, probably at Saint-Gaudens or Toulouse, judging by the accent, came to our assistance, and enabled us to communicate through him.

This lady is asking if the exploration has ended, what depth you have reached, and if her brother and every one is all right.

I replied that the exploration was completed and gave the figures; I added that Jacky Ertaud (Mme Guérin's brother) was at the moment asleep, that every one was asleep, worn out.

And this time I heard faintly, without the help of our kind go-between, Mme Guérin's own voice.

'Splendid! *Au revoir*, Monsieur Casteret, and congratulations.'

So from the depths of this pot-hole in the Pyrenees, where I lay huddled in the tent, still dressed for the fray and wet through, I had actually carried on a conversation at night with a Parisian lady sitting in her drawing-room in the boulevard du Montparnasse. Certainly the soldiers of the Services des Transmissions and the P.T.T. had done things well; we owe them our congratulations and thanks.

On Tuesday, 2nd September 1947, with reveille at 5 a.m., began a general bustle, a taking down of gear and tents; the great removal had come. Camp was struck, the first camp underground ever to be pitched in a pot-hole. The sight was certainly unique. 'The factory is at work,' Delteil would have kept on repeating if he had been there, but he was not. All the same, he was at that very moment in the pot-hole coming down to meet us with the liaison teams.

The tents subsided, were rolled up and packed; the crane and the cage with its 'Chinese hat' were taken to pieces; other things were picked up and retrieved. 'The circus is moving

off,' whispered Jean-Paul Maille, as he rolled up endless telephone wires. Some sixteen hundredweight of equipment would soon be piled up, arranged in order, put in sacks, and be on the way to the surface.

I cannot remember which of us was the last to leave the camp; but this chamber, when it had returned to its primitive, stern solitude after all the vitality and hustle we had brought into it, must have offered a particularly striking picture.

For my part, drawn into the crowd going up, I had reached the 230-metre post; in other words the foot of the Shaft of Death at the top of which the shining lamps of the liaison team showed that they were punctually on the spot.

'Come up first,' said a voice, betraying much solicitude; 'you have earned it, and there is a surprise waiting for you up above.'

Much puzzled, I began the ascent of the fifty-metre ladder which always swayed and twisted abominably in this difficult shaft.

Half-way up I stopped to admire the fairy-like effect of a red Bengal light which gave the pot-hole a truly infernal appearance. That dilettante Ichac was burning his last lights for the benefit of all; thanks to him we have been able to take away with us these visions of marvellously sculptured roofs at giddy heights above us.

Higher up I was surprised to see the end of a ladder swaying a few feet above my head and some distance to one side. I had in fact forgotten this was the 'squirrel's leap.' It was here, wearing all my heavy equipment, weary and stiff from many hours of arduous work and cold, that I was called on to recover the agility of a monkey skipping from branch to branch.

'Mind the change of ladders; up you come! Jump!' came the warning, uttered in a youthful melodious voice from a form bending over the drop as it watched my ascent.

I jumped to order and the change of ladders was effected while the youthful voice was still sounding in my ears.

Yes, it actually was my son Raoul; this was the surprise awaiting me; he was there, hauling in time on my safety-rope with Captain de la Hitte and Lieutenant Laguille!

He hauled me up, helped me over the last overhang, and welcomed me effusively on the edge of the shaft.

'You 've just arrived?' I said, still breathless.

'I 've come from Moisson.'

'Ah! You 've come from Moisson; well, our jamboree here is over!'

My son is a Rover and he was just back from the peace jamboree at Moisson, too late to share in the Henne-Morte expedition—not, I should say, in the present one, for he took part in the descents of 1942 and 1943. This time he joined up with the team which had to reprovision the underground camp.

At 130 metres I met another friend, the good Delteil, whose recent wounds had prevented him from completing the descent of the pot-hole with us, but who had, after all, done his utmost in the thankless and no less tiring jobs of liaison and reprovisioning. At the moment he was working with Nègre the entomologist, to whom I had regretfully to return quite empty the insect tubes he had entrusted to me. Indeed, I had not seen a single animalcule in the deeper parts of this chasm, which appeared to be particularly azoic; it is much too cold for them.

When we finally reached the surface, our nyctalopic eyes were not hurt by the daylight, for it was dull, rainy weather. A few persistent journalists and reporters who had been waiting several days for our reappearance fired off their questions in our faces. Our sopping, ragged clothes, our faces smeared with mud, our well-grown beards and drawn features, must have provided them with rather striking documentation.

We had gone underground on 28th August and reappeared at the surface on 2nd September (the last of us in the night of 2nd–3rd), after five days and six nights in the black depths below; which, for those who delight in statistics,

constitutes another record for the longest stay down a pot-hole.

This is not the place to deal with the scientific results, the harvest of observations of all kinds which each member of the party in his own special line brought back from this deep penetration of the earth's crust.

I will, however, mention that a colour test of the waters of the pot-hole (the fourth since 1943) was carried out at the conclusion of our exploration to see if we could not finally discover the course of the subterranean stream beyond the terminus we reached. Two hundredweights of fluorescine thrown into the cascades produced a coloration twenty-eight hours later in a spring situated at the foot of the massif.

The 1947 expedition to la Henne-Morte has been rewarded by a double success, won by the zeal, the persistence in face of difficulties, and the team spirit shown by all. (And let us not forget the financial help mentioned above, as well as the efficient help of the army, both in equipment and personnel.)

We now know where the outlet of the underground water system is and the bottom of the pot-hole has been reached at last. With its 446 metres, la Henne-Morte is one of the deepest pot-holes known, and is undoubtedly the most fearsome and dangerous because of its formidable cascades.

Is it the deepest in France? It was up to 31st March 1948, at which date it had to yield the first place to the pot-hole of le Caladaire in Basses-Alpes, the exploration of which is not yet complete and promises great things.

To what tremendous depths will further descents be made into these natural chasms of the earth?

This tournament of sport, characterized by disinterested love of adventure—enhanced by the scientific interest attaching to such expeditions—has begun and is being fought out with ardour.

Many keen spelaeologists are longing to go deeper and deeper than ever before. Luck combined with persistent research will put them on the track of one of those gigantic

pot-holes which certainly exist somewhere in les Causses, in the Alps, and in the Pyrenees.

Thirty-six years have passed since 1912 when, a schoolboy of fifteen breathless with excitement, I leaned over the edge of the Planque pot-hole close to that of la Henne-Morte, and went down into it alone on a smooth rope after stuffing paper into my school cap. . . .

Thirty-six years, in the course of which I have been able to discover, explore, and find my way through more than a thousand caves, pot-holes, and underground rivers. After a whole life devoted to the exploration of the underground recesses of the Pyrenees, chance or Providence has brought me back to this district in the centre of the range, this massif of Arbas where I made my start as a cave explorer, to which I have continually returned and which is still the magnetic pole, a sort of synthesis of the realms below. I seem to have taken all that time to cover the few miles that separate the Planque chasm, my first pot-hole, from the chasm of la Henne-Morte which may possibly be my last great pot-hole. . . .

Spelaeology started in France in 1888 with Martel and a dozen of his disciples whom hardly any one took seriously at the time; it has become a fashionable sport to-day and is developing in an astonishing way.

Now there is not a province, not a department or town, which has not got its section of the French Spelaeological Society, its group of cave-lovers, or scouts' team of spelaeologists.

A young generation, thirsting for new and violent sensations, attracted by the desire for risk and adventure, by the mystery of caves, by the varied and enthralling objects of study they afford, has given itself up to research underground, and is exploring this new realm rich in its promises of sensational discoveries from which science is not excluded; for spelaeology is a sport which can serve science and many branches of science.

For all these young people, for my friends, imitators, disciples, and colleagues, who, like me, have a love for the abodes of darkness (and many of whom, I like to think, have found their vocation through me, since they are kind enough to tell me so or write to that effect), for all of these, I say, my wish is that they may know the same adventures, the same emotions, the same joys of scientists or sportsmen, the exquisite pleasures I have known underground, and that they may be able to appreciate them as long. That is the fervent wish of a veteran who expects everything from youth.

II

OUR LADY OF THE CHASMS

Praise the Lord upon Earth: ye dragons and all deeps.

PSALM CXLVIII.

A Pyrenean chasm was the scene in 1945 of a ceremony, which, to say the least, was novel, surprising, and which had a doubly religious significance. Some may consider it too original or out of place, but its participants meant it to be simply edifying, an act intended to express in a service of thanksgiving, a sort of *Te Deum* underground, their gratitude for the ending of five years of the greatest and cruellest of wars.

But let me not anticipate; I will set out the facts as they occurred, so that the reader can settle for himself whether 15th April 1945 will mark a date, a modest but definite date, in the records of Christian worship.

On that day a powerful, heavily laden car left Saint-Gaudens, the picturesque sub-prefecture of Haute-Garonne, crossed the plain of Rivière, drove through Montréjeau, climbed the slopes up to the plateau of Lannemezan, where it entered the department of Hautes-Pyrénées, dipped into the valley of the Nesle, climbed up again to the Col de la Coupe, taking the winding country road to Bagnères-de-Bigorre, and stopped on the long steep descent which drops to the village of Esparros, whose Lilliputian houses can be seen far below in the valley of the Arros.

It was eight o'clock. In less than an hour we had been carried from the banks of the Garonne into the Comminges country, into the secluded district of les Baronnies in the very heart of la Bigorre, a typical Pyrenean spot, with a sea of foot-hills billowing round it, all green and blue under their growth of beech and pine, while in the background rose the continuous snowy wall of the main chain, culminating in the

imposing dome of the Pic du Midi which rounded his back at us and lighted up in the setting sun.

Out of the car stepped seven men, glad to shake off the effects of the close packing on the journey, but promptly rendered motionless by rapt contemplation of the vastness and splendour of the panorama the eye takes in from this lofty balcony of Nature. Brief rapture it had to be, for the evening's programme was a heavy one, and never before can the chasm of Esparros, whose gaping mouth is at no great distance, have seen such an influx of visitors and such a display of equipment as that contained in the great sacks we took out of the boot and sides of the car. We should have to work hard if night was not to catch us at the edge of the shaft and increase the difficulties of the anxious operation of descending.

As we hurried into our equipment, wearing our usual linen overalls, putting on our rucksacks and haversacks, and adjusting the chin-straps of our helmets, a small solitary shepherd, wondering at our late arrival and our accoutrements, appeared on the scene and shyly approached us, half hidden behind a bush. The cow-bells and sheep-bells of his flock made pleasant bucolic music in this hushed hour of twilight.

We were soon ready. Leaving the car to spend the night in the open, and shouldering our burdens, one a bulky sack of pliable ladders, another a great coil of rope, another an old-fashioned suitcase of problematical content, we all seven hurried down through the brushwood that covered the steep mountain side to the opening of the chasm where our numbers had grown to ten. The small shepherd had, in fact, preceded us there and two shepherdesses with him: a woman and a small girl, whom we had never expected to find in such a place and who expressed delight and surprise at being able to witness our descent of the pot-hole.

Meanwhile, with his usual speed, my colleague Gattet had unrolled down the vertical shaft a sixty-foot ladder of thin steel, after fastening it firmly to a tree, and was already busy with the arrangements for letting down the other members

of the party and the various things we had brought with us. As he received them on a rocky ledge on to which I let them down from the surface and sent them on below, the ground round the shaft was cleared of the accumulations caused by the assemblage of ten people and a great deal of heavy baggage. The moment came when I found myself the only member of the party left above ground, where the voices of the others, growing fainter and fainter, testified to their continuing advance into the depths of the shaft. Orders, signals, various exclamations, still reached me, but faint and muffled.

The three spectators, hitherto speechless from rapt attention to a spectacle so novel and thrilling, found their voices again, and feeling they would no longer be interfering with operations or signals, engaged me in conversation.

'It 's M. Casteret, isn't it, who goes down last to-day?' asked the woman, looking hard at me.

'What, you know me, then?'

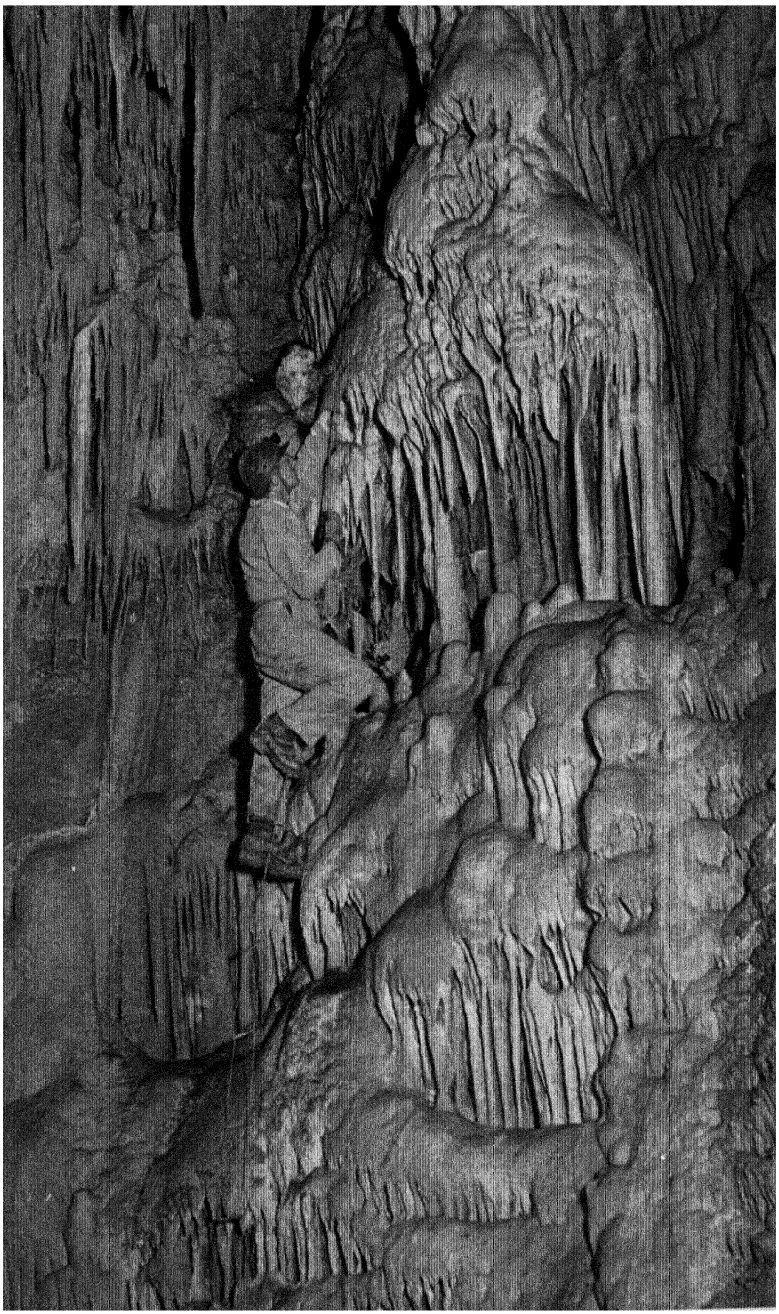
'Oh, yes! I 've known you for long and easily recognize you. In a book we have at home there is a picture of you wearing a helmet, just as you are now. We have also a copy of *L'Illustration*, with photographs of your discoveries in the grotto of Labastide.'

As the village of Labastide, as well as the cave of that name where I discovered prehistoric engravings on the rocks, is little more than a mile away, there was nothing surprising in this shepherdess having recognized me from seeing me go through her village.

Meanwhile she went on talking and inquired in a friendly way: 'Are all your children well? And your small boy who also had his photograph in *L'Illustration*, he must have grown a bit?'

'Yes, my "small boy,"' I said, amused at the description, 'has certainly grown. He has just been down the shaft before your eyes, but you failed to recognize him.'

'Your small son there!' she exclaimed. 'It can't be. Which was he?'



IN THE GREAT SHAFT OF ESPARROS

'Well! Well! Time flies; my discovery at Labastide goes back to 1930; my son is twenty this year. It was he who went down first, just before M. Gattet and the padre.'

'The padre? Have you a priest with you?'

'Yes, one of us is a priest. Does that surprise you? It is true that in his overall and helmet you would hardly suspect it. Nevertheless, he intends to say mass at the bottom of the pot-hole.'

'At the bottom of the pot-hole! A mass! It can't be true what you are telling me!'

'Yes! Yes!' broke in the small girl. 'Now I understand. That suitcase they let down so carefully; they called it the chapel!'

It was, actually, the suitcase which contained the portable altar and priestly vestments, I explained, a disclosure which elicited various expressions of astonishment, interspersed with numerous questions, for I had aroused a most lively and understandable curiosity.

'That 's a jolly big sack you 've got there,' remarked my questioner as I put my arms through the straps of my rucksack, which was indeed a pretty bulky one.

'It is full, but its contents are fragile rather than heavy. Have you no idea what is in it?'

——?

I had already revealed the object of our nocturnal expedition and did not want to go underground without disclosing the whole of our programme to these approving witnesses of our preparations.

'It is a porcelain statue I have in the sack; a statue of the Virgin we are going to set up at the bottom of the pot-hole, in the finest part of the cave.'

A whole string of 'Ohs!' and 'Ahs!' from the astonished girl greeted this announcement; up till then she had been restrained by shyness, but now she burst out: 'Well! I was saying just now I wouldn't go down there for a million; now I should be only too happy to follow you to attend the mass and see the statue of the Virgin!'

The declaration came out with a spontaneity, a force, and a sincerity that astonished me, and looking at the young shepherdess I was strikingly reminded of another small Pyrenean shepherdess who lived not many miles away at Lourdes nearly a hundred years ago.

Meanwhile I had sent down the last package at the end of a long hauling line and heard a distant voice hailing me; it was time to rejoin the others who were dealing with the big sacks of material which had to be lowered further down past various obstructions.

I was in the act of descending the first rungs of the thin steel ladder when the ringing of the angelus reached me from the church tower of Esparros. It was half-past eight and night was about to surprise the trio above, who continued to rain down on me injunctions to be careful and their good wishes for our expedition. I meanwhile proceeded to plunge deeper into the twofold darkness of the night above and the interior of the mountain, where I picked up the rest of the party eighty feet underground in a circular hall containing the openings of five shafts, one of which has a depth of over 400 feet. This hall also, as a rule, offers housing accommodation to a colony of some 200 rhinoloph bats, a certain number of which carry on the wing an aluminium ring put on by myself seven years before. But on this particular evening we should have no time for observing these cheiroptera, which abandon the cavern in the spring to live in the woods; at the time of our visit the contingent hanging from the roof did not amount to more than a score.

Crossing the hall we entered a horizontal passage with a ceiling which gradually became lower and lower till we were forced to go on hands and knees; an uncomfortable mode of progress when heavy bulky baggage has to be dragged along at the same time.

A second hall opened out as we emerged from the passage, a somewhat dangerous opening, with a gaping chasm 200 feet deep at our feet; but we were fully aware of its existence and also of the way to circumvent it by a succession of earthy

ledges demanding all our attention if we were to avoid falling off into space. Two such falls actually occurred during the first journey across, falls, I hasten to add, of sacks of material of which we lost our hold and which made a sensational dive below and had to be fished up again from the bottom with many additional ladders.

This yawning abyss was passed, the second hall crossed, and we disappeared down a sort of bumpy toboggan run with spiky walls on which our sacks and clothing caught, and from which we emerged blown and sweating into a third hall called the theatre, for, from our places below where the orchestra could be, we had above us a genuine stage with limestone sculpture all round it, the upper part lost in the darkness of the vaulted roof. There was but one exit from this theatre, a sort of sloping, rocky fissure into which we could only creep by pushing and compressing our sacks. As we came together for a short halt on emerging from this narrow passage, I breathed in steadily and detected a very faint smell, a subtle fragrance of indiarubber which hung about the place. Gattet and I exchanged a meaning glance and raised our eyes to the lofty roof. Up there, more than sixty feet above us, in a rocky niche, whose existence would never be suspected and only to be reached by an exceedingly tricky bit of climbing, reposed a treasure of a rather special nature. On the night of 24–25th June 1940, during a storm of wind and rain which seemed to emphasize the tragedy of the military disaster to our arms and the imminence of the armistice, I had, with this faithful friend of mine, motored along the roads blocked by refugees with a special official order and two vast waterproof bags. By night we had descended the pot-hole of Esparros, dragging and hauling up to the hiding-place high up in the rock documents entrusted to us by the Services des Poudres; precious secret documents which must not on any account fall into the enemy's hands.[1]

[1] The hiding-place proved a good one; the secret was well kept and the contents of the bags lay there undisturbed for five years. It was not till 25th May 1945, in the presence of Colonel Carton of the Service des Poudres

After a few minutes' rest the caravan, bending under heavy loads, resumed its advance through a chaos of rocks and before long reached a fourth hall on the walls of which could be seen several names written in charcoal and the date 1913.

On the eve of the Great War of 1914–18 the earliest explorers of Esparros stopped here under the impression they had arrived at the bottom of the pot-hole.

It was not till twenty-five years later in 1938 that Gattet and I in our turn, having penetrated as far as this hall ending in a lake of mud, found a narrow, precipitous passage giving access to immense extensions.

On the present occasion we crawled one by one through this 'Discovery Passage,' then picked our way over the uneven floor of a long antechamber where we noticed the first signs of fine stalactites and a few crystals.

Making our way forward, sometimes by pulls up on the arms, sometimes by leaping down, prone on our tummies or twisting our bodies according to the nature of the obstructions on the ground, in the roof or on the broken surface of the walls, we came to a place where the rocks closed up in a way that aroused a lively curiosity in the newcomers to the place.

'So here we are at the famous cat-hole?' asked one of them.

'The famous cat-holes, to be precise,' answered Gattet and I.

This is, in fact, the place where the cave continues in a narrow, winding tunnel, a real rocky intestine in which it behoves the visitor to enter lying flat and to crawl along so as to get himself assimilated by the bowels of the mountain. All right as regards the actual eminently sporting exercise of worming one's way forward, which demands a certain amount of previous experience and a great pliability of body; but the material we had with us, piled up at the entrance to this bottleneck, by its volume and inertia offered a serious

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in Paris that the bags were brought down from their niche and restored to those who had entrusted them to us. During the five years they had lain there we had several times renewed the waterproof coverings so that when they came to be unpacked the documents were seen to be in wonderful condition and as dry as if they had come out of a cupboard.

obstacle to further progress; three great bulging canvas sacks, the chapel suitcase, a small wooden table with its portable stand, four sections of a metal pole tied together with iron wire, half a dozen bags and haversacks. This great clumsy pile of different things seemed to defy our efforts, but spelaeologists are proverbially obstinate and we would find a way, by our ant-like persistency, of getting the whole lot through these cat-holes.

Going to the head of the troop I lay full length and crept into the passage, pushing along in front of me the sack containing the china statuette, while Gattet attached me with a slip knot round my ankle to a stout cord I was to drag through behind me. So harnessed I proceeded with my stretching, pushing, and back and knee work and soon reached a point where the rocky tube opened out into a stomach-shaped chamber in which I could stand up again, lay down my fragile package, and undo the cord on my ankle. I turned round, stuck my nose into the sort of skylight which had just ejected me, and let the others know I was safely through.

'Pull hard, it 's a big sack coming!' answered a hoarse voice.

As I pulled vigorously with both hands on the cord, it stretched with the weight of the sack, which rubbed against the rocks, refused to come, and got wedged in a bend of the cat-hole. One of the party volunteered to follow the sack into the narrows, and pushed it with his fist and head till the great bale of stuff reached its destination with the man following close behind, breathless, red in the face, but chuckling. Thanks to the device of the cord pulled in either direction every package was eventually got through the cat-hole by itself or pushed by an escort of one of the party. But the small chamber could not accommodate us all, and the first arrivals had to make room for the rest and vanished feet foremost down a sort of blowhole, which constitutes the second cat-hole and the continuation of the chasm. Caught in the grip of this steeply dropping tube, even narrower than

the first, the whole party contorted and stretched themselves in the effort to get through, and by squeezing and pulling the sacks finally emerged in triumph. Once past the cat-holes the baggage was carried in the normal way through a passage that was far from straight, but enabled us to walk upright, and presently we were able to turn aside into the Hall of 25th June, so called from my discovery of it on that date in 1938.

On our second exploration on 30th June 1938, when Gattet and I devoted a whole long séance to enlarging with hammer and chisel the cat-holes we had found impossibly narrow, my wife forced her way alone as far as the Hall of 25th June, found a passage through a maze of galleries near it, and came back enraptured by her discovery of splendid clusters of ex-centric stalactites, the strangest and most transparent I have ever seen.

On our present visit we all gathered in front of an inscription scratched on the wall:

JUNE 23 1942

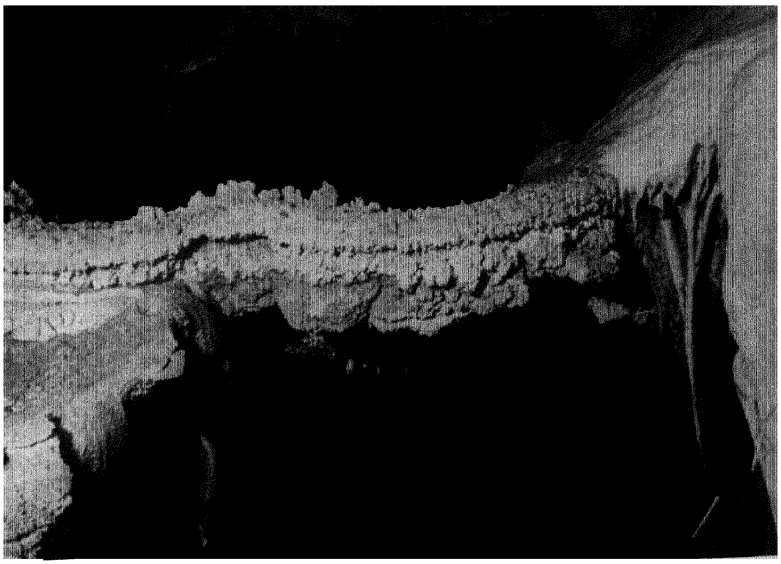
NATIONAL BROADCASTING SERVICE

FIRST BROADCASTING REPORT FROM UNDERGROUND

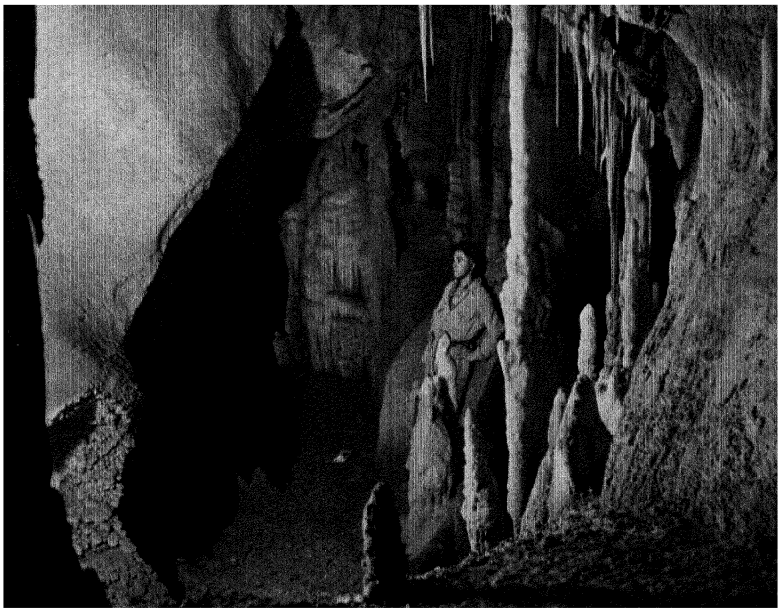
N. Casteret	P. Beauvois
G. Gattet	Clottes
M. Loubens	Peteuil

The inscription reminded us that it was, in fact, here that the first report was broadcast from a pot-hole not accessible to visitors.

After unrolling some hundreds of yards of telephone wire to connect us with the broadcasting car parked on the Bagnères-de-Bigorre road, seven records were made in the course of our journey underground by means of the microphone carried on his chest by the reporter Beauvois and with the help of the technicians Clottes and Peteuil. As for the spelaeological trio, Casteret, Gattet, and Loubens, their job varied; at one time they behaved exactly as they would on



LE PONT DU DIABLE



ENTRANCE TO THE HALL OF THE 25TH JUNE

a normal expedition underground, at another time they answered questions and gave explanations for the benefit of listeners. These records gave a remarkably clear rendering of the different stages in our descent of the ladders, the incidents during the passage of the cat-holes, where the breathlessness and panting of the speaker needed no acting at all!

Possibly in some future century this inscription in indelible red pencil will delight an archaeologist who finds it.

Although I am avowedly entirely opposed in principle to all the inscriptions which vulgarize in such distressing numbers the walls of caves, I consider that in certain special cases and in certain places a name and date or a record modestly inscribed may have their use and interest.

While Gattet was opening a sack and extracting the rope required for our descent to the storey below, I took the padre aside into the maze of passages near by, to let him admire the ex-centric stalactites which loaded with ornament a whole succession of small fairy-like chambers. I used the occasion while my companion was gazing at these gardens of crystal flowers which Nature has ironically grown in the darkest depths to penetrate as far as the last small cell. This tiny retreat was quite plain and unadorned; bare rock all round. But for me it contains a very moving memorial. A modest inscription had been engraved there by my wife the day she made her first exploration of this part of the cave alone.

In obedience to what impulse did that beloved hand engrave upon the rock the small initials E. C., a thing I had never seen her do in the course of our explorations underground? A quite unexpected gesture like this, a unique and ultimate sign left by one who had always disliked leaving the smallest pencil mark, even in the shape of a directional arrow on the wall, might well make one believe it was a sort of premonition, a presentiment, warning her that this chasm of Esparros was to be the last she would explore. . . . Whether there be truth in that or not, I never enter unmoved or without a pang this *erimi* hidden away in the depths of the

earth. It calls up memories of her who gave such happiness to life in the sunshine above and who followed me so bravely, helping me, and keeping at my side in the abodes of darkness.

As I came back I picked up the padre who had never seen a cavern worthy of the name and who had been in a perpetual state of growing wonderment ever since leaving the surface.

When we returned to the Hall of 25th June we found our friends had gone down a further stage and disappeared, though we could still hear them. While the padre slid down the smooth rope to join them I approached the wall at a place where the floor is composed of a thick layer of fine sand. I scratched away the sand for a minute or two with my foot, then pushed my hand down into the chalky dust and came almost at once upon a hard, cold substance. My memory had not deceived me, my probing had proved exact, and on my knees, digging with both hands, I uncovered and laid completely bare a heavy metal cylinder which I set on the ground.

It sounds as if I were turning the pot-hole of Esparros into a receptacle for mysteries and surprises, so I must explain at this point that at the actual time we had hidden the secret documents referred to above I had buried in the Hall of 25th June a stout bit of zinc piping, soldered up at both ends, containing a couple of German rifles and their bayonets and various trophies brought back from the war of 1914–18, the whole representing a collection of arms in the outer hall of my house, which would have been dangerously compromising during the years of enemy occupation. I had now a favourable opportunity for taking these weapons home again; properly greased in their watertight case, they were still in wonderful condition.

We started off to join the rest of the party and caught them up, after wriggling ourselves through a forest of limestone pillars, at the opening of a big vertical drop, where Gattet and the others were already unrolling fifty yards of electron ladders, a chink of metal that is always music in my ears.

Should Esparros be called a pot-hole or a cave? It is a

question that is always recurring on every excursion or rather incursion into this cavity in the earth. 'I am a pot-hole, look at my succession of shafts adding up to nearly 1200 feet; I am a grotto, look at my interminable subterranean galleries and avenues,' and so, like the bat in the fable, Esparros can claim to be called both a pot-hole and a cave and does indeed deserve the title of pot-hole-grotto.

At the point where we had rejoined the others it was certainly a vertical pot-hole we had to deal with, and one after another we descended the light steel wire ladders, the only sort sufficiently small in bulk to be dragged through the cat-holes.

The descent of an important shaft by seven men and material is an operation that calls for endurance and patience; it involves a whole series of manœuvres that are tricky and frequently brightened and interrupted with incidents of various sorts. Ropes get entangled, signals are misunderstood or wrongly carried out, lamps attached to the waist occasionally go out and leave in utter darkness the man hanging on the ladder in a position that is far from comfortable. At other times, it may be the flame from the acetylene jet that suddenly gives a spurt and burns the linen overall, which is soon betrayed by the smell of burning or is discovered even sooner when the flame 'gives a sudden caress to a backside new to it,' as one of the party put it on experiencing it on this occasion.

As at the first shaft, Gattet took charge of operations and acted at the bottom as receiver of the men and sacks I duly roped and sent down to him from above, thus 'insuring' their descent. Then came the moment when I was left alone on the brink of the shaft; I had no desire to dally and went down after the others unattached, a law unto myself, every one else having arrived below.

What my friends had so far seen of this pot-hole of Esparros had amazed them by the variety of its passages, in one part horizontal, in another sloping, in another vertical. From now on two characteristics prevailed and never ceased to arouse their astonishment and admiration: the colossal

proportions of the subterranean avenue which unfolded its majestic way at the bottom of the pot-hole and the extraordinary splendour, the unrivalled richness and purity of the stalactites and crystals which covered the walls, the roof, and even the floor of this part of the cave. As it was, our friends could not see everything on this visit, for we had to pass by one of the principal branches from the avenue, the one which runs through the Hall of the White Lilacs, the Crystal Antechamber, the Hall of the Needles, Chaos, Hades, the Lake, and the amazing Hall at the End in which is hidden away, 340 feet down, an incredible accumulation of translucent pieces of sculpture and banners worked upon the walls. It is impossible to see it all on a single visit. Having to limit ourselves, we chose the eastern branch, which begins with the traverse of a ledge on the brink of an oubliette in the shape of an eighty-foot drop, bridged by a natural structure as daring as it is frightening to look at: the Devil's Bridge. Beyond this ledge a comfortable stretch of walking in a great antechamber on the level leaves one free to gaze in ecstasy at the walls sparkling with flowers of gypsum of the greatest delicacy and spotlessly white. The progress of the party was slowed down and often we had to stop altogether to admire, but this time Gattet and I had no desire whatever to go quicker.

We ambled along slowly in this fashion, with many halts and outbursts of admiration before these dream-like beauties. The clusters of elegant crystals, the profusion of columns and coral-like reefs, were on such a scale that one of the party kept repeating over and over again, what had already been said in this place and well reflects the main impression it made upon us: 'Incredible, quite incredible!'

But here is something that must bring relief from this surfeit of uninterrupted splendour; twenty feet up, in the roof, which was, for a wonder, bare of ornament just here, appeared an inaccessible opening, a sort of dark skylight from which hung an outpouring of stalagmite in the shape of a deep fringe, showing that formerly a cascade fell from the

roof into the gallery where it had hollowed out a well-marked basin in the clay-covered floor.

It was to reach this still unexplored skylight that we had this time brought with us the heavy clumsy bundle of sections of the metal pole; these we proceeded to spread out on the floor before screwing them into each other. By this means we obtained a pole sufficiently rigid to support a man's weight and enable him to climb up it. By dealing with it suitably we got the pole set up on end and placed under the skylight with its upper end just inside against the side of the chimney-like opening whose existence could be dimly made out from below. While the sections of the pole were being fitted together, Gattet had got his camera all ready to record the scene of the climb which was perhaps destined to mark a date, a new stage, in the investigations we had devoted to this pot-hole of Esparros. Relieving myself of sack and bag, I climbed the pole under the eye of the camera and in the glare of the magnesium flash and reached the vertical chimney, and began to heave myself up it by back and knee work against the walls of smooth, shiny stalagmite which testified to the long continued flow of water over them; so long, I am sorry to say, that the deposits of lime accumulated in the tunnel had entirely blocked it, sealed it beyond hope of passing. Our reconnaissance was ended, the hatefully laborious task of conveying the heavy tubes had led to no result, save to tell us for certain that the chimney was but an insignificant cul-de-sac. We accepted our disappointment with the philosophic calm of which every cave-explorer should carry a good supply in his wallet; moreover, the ascent of the chimney was not meant to be more than a curtain-raiser in the programme which had brought us together that night at the bottom of the pot-hole. Accordingly we abandoned our pole and went on, through a forest of elegant small columns with corbels, under a ceiling on which our lamps lit up countless facets of calcite, and we came out at the place previously fixed for the ceremony of the first mass to be celebrated at

the bottom of one of these great cavities below the ground. It was a magnificent hall with a floor of smooth stalagmite that shone like ice and walls loaded with marble draperies, stalactites, and marvellous concretions of crystals that made this a jewel among caverns, the very apotheosis of caverns.

When friend Gattet, who had been the instigator and active supporter of this mass underground, had first suggested the project to me, we had had no difficulty in agreeing that this fairy-like hall must be the scene of the ceremony. When the idea then occurred to me of putting up a statue of the Virgin under the new title of Our Lady of the Chasms, we were entirely at one in choosing this same hall as the fitting setting for it; hence the double ceremony which brought us together that evening in the lowest depths of the chasm.

But where we did not find ourselves at all in agreement was in deciding at what point of the said hall the statue should be placed! Every one had his own idea and preference and passionately defended his point of view. One had chosen a niche that seemed to him just the place for it, another maintained that a certain cornice was simply made to show off the statue to the best advantage; a third could not imagine its being placed anywhere but in a particular bit of wall embellished with crystals; a fourth was quite hurt that any one could prefer any site other than the one he fancied. Without proceeding to the extreme measures in the famous quarrel of the lectern, to which it bore a considerable resemblance, the discussion was lively, even passionate.

The padre alone maintained a wise reserve up to the moment when we reached agreement on a site no one had thought of at first and which finally captured all the votes.

Having extracted the small statue from its sack and removed the shavings and cotton used in packing it, we tried placing it on the top of an onyx pillar about six feet high, a small column of fine material rising up like a church spire, a pedestal that showed up the figure to the very best advantage.

Placed on this base, the Virgin stood out in the centre of a sort of small apse, under a natural canopy from whose edge fell a rich curtain of sword-shaped stalactites, the whole structure being supported and framed by fluted pillars. The setting so happily suggested the ciborium of the early basilicas which formed a covering above the altar that we suddenly realized it was here we ought to set up the altar; for here it would be dominated by the Madonna and enthroned in the shrine of rock and calcite which Nature seemed to have erected in this spot expressly for that purpose.

The padre having approved our choice, we undid the fastenings of the folding-table, whose bulk had been a constant worry as we came through the cat-holes. Having screwed it to the X-legged stand, we carefully propped the whole thing up and set it against the onyx pillar.

The padre opened his little case, took out the vestments and other necessaries, and laid them on the altar, which soon after we saw covered with a white cloth with a crucifix upon it, and in their proper place the veiled chalice, the missal on its stand, the two candlesticks and their candles, the mass charts. The celebrant withdrew a few steps into the shadow to the suitcase placed there on the floor, and put on his vestments, while we arranged our lamps so as to direct their light on the altar, and my son, who was to act as server at the mass with Hubert Pellegrin, set out the burettes and the bell on a small rocky ledge which provided a credence table on the right of the altar. All was in readiness and the mass was about to begin.

But, you may say, what is the idea behind this celebration of a mass in such a place? Is there not too strong a suggestion of the fantastic, and for that reason of what is irreverent or at least unsuitable, in celebrating the eucharist at the bottom of a pot-hole? Is not this type of originality to be condemned as quite out of place?

It is to answer such objections and criticisms that I venture to introduce here a digression. But first of all let me not fail to point out that a mass cannot be celebrated outside

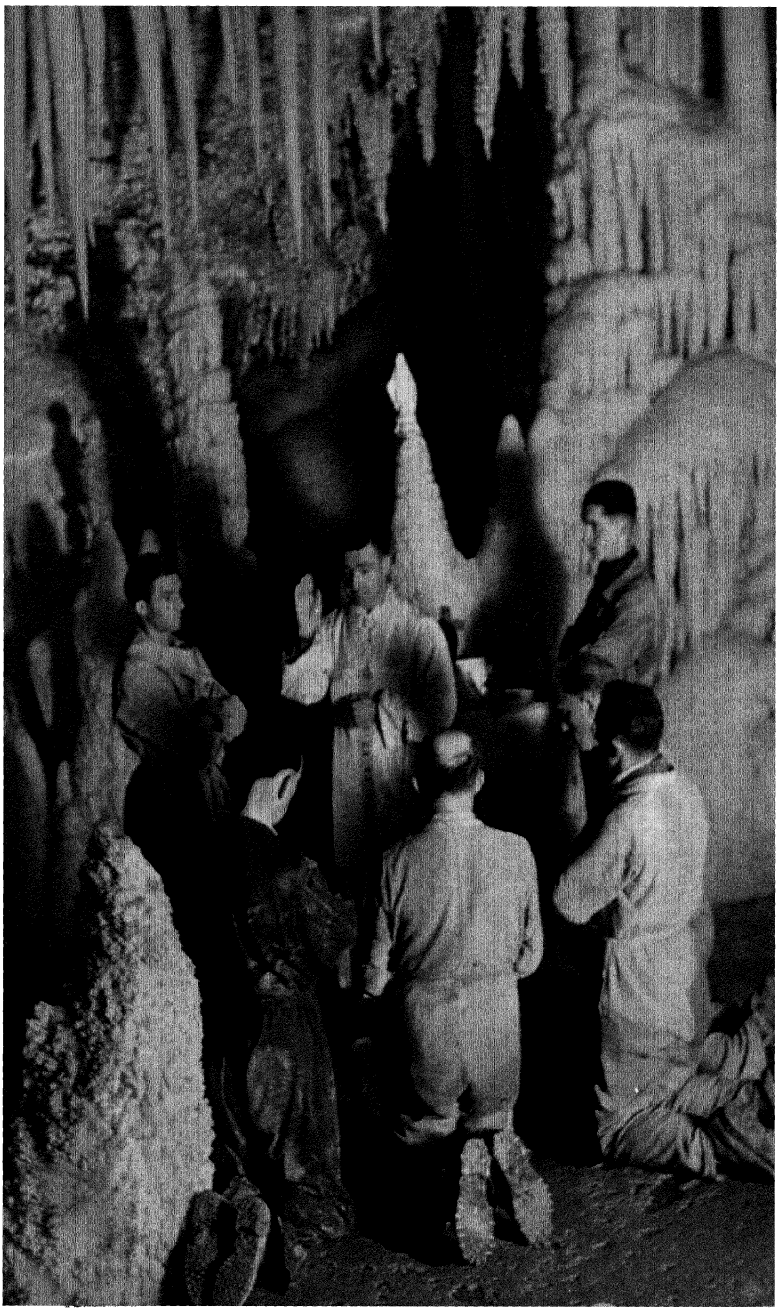
a church without having been specially authorized by a bishop, and that this mass of Esparros had had the assent of Mgr Choquet, Bishop of Tarbes and Lourdes, in whose diocese the pot-hole of Esparros is situated.

The subterranean regions have the reputation of being haunted by the Powers of Evil only in mythologies, in primitive religions, and among pagan peoples. The ancients made them the abode of Shades and saw in them the mouths of hell. In the Christian religion, on the contrary, caverns have been sanctified; in the first place by Jesus Christ, who consented to be born in the grotto of Bethlehem, taught the apostles in the grotto of Eleona, fasted in the grotto of En-Gedi, suffered in the grotto of Gethsemane and was buried in an underground sepulchre hollowed out of the rock, the classical type and reminder of the grotto as sepulchre.

It is well known that in all ages and in every latitude countless caves have been inhabited by legions of pious hermits and saints, who lived in them in awful self-inflicted sufferings; we know too the important part the catacombs and other places underground have played in the history of Christendom.

Because of this very great part played by caves in the Catholic religion, subterranean sancturaries abound all over the world. Nevertheless, these hypogea are not usually at all deep, and it seemed to me that the great depths had so far failed to have received sanctification.

Millions of masses have been said in all parts of the globe for nearly 2,000 years. Masses in the catacombs or elsewhere underground, secret masses in hiding-places at times of persecution, clandestine masses during the French Revolution, masses in crypts or grottoes as at Lourdes, at Rocamadour, in the grottoes of the Vatican, etc . . . masses in mines or quarries, as, for example, in the salt-mines of Wieliczka, in Poland, where a subterranean chapel has been carved and sculptured from the salt. What numbers of masses are said every day on ships at sea, in woods, in the



MASS IN THE POT-HOLE OF ESPARROS

mountains, and even on the highest peaks by scout almoners; in the trenches and on the battle-fields by military almoners; in virgin forests as well as in the Arctic seas by missionaries!

The eucharist has been celebrated in all parts of the world; these pot-holes alone, these natural temples of the earth, these examples of cyclopean architecture, to whose inspiration our churches seem to owe their vaulted roofs, were still awaiting their act of consecration. These chasms which are a part of creation, the depositories, so to speak, of the secrets of the mineral kingdom (vastly greater than the vegetable and animal kingdoms), constitute a domain that is foreign to us, hermetically sealed, almost unknown, which I consider was well deserving of sanctification.

Now, God be thanked, it will await no more, for this sanctification has been completed by the hands and the ministrations of a young Béarnais priest, with a few spelaeologists gathered round him.

Shout, ye lower parts of the earth.

ISAIAH XLIV. 23.

Praise the Lord . . . ye dragons, and all deeps.

PSALM CXLVIII.

In the night of 14th–15th April 1945 the depths of the earth did shout; the deeps, in particular the pot-hole of Esparros, praised the Lord.

Emerging from the shadow the priest came forward into the sheaf of light from our lamps. Wearing the alb and a white chasuble with a green cross on it, and the maniple to match, he bowed before the altar.

We laid our helmets on the ground and, like the *orantes* of the catacombs, who prayed standing erect, we stood round the altar in a semicircle, an isolated island of light in the thick, eternal darkness of the cavern. Here, better than anywhere else, one could realize that the light which 'drives away the terrors of the night' is one of the important elements in the liturgical setting of the sanctuary. It bears witness to the fact and reminds us that in the early days the

Christians celebrated the holy mysteries at night, in commemoration of the Supper which Christ celebrated the evening of Holy Thursday about ten o'clock.

It was just midnight, the bell tinkled to announce that for the first time mass was about to follow at the bottom of a pot-hole.

I took a thin prayer-book from my pocket and tried to follow the mass, but the strangeness of the unusual surroundings, the haunting feeling of being 400 feet below the ground for this unique, extraordinary ceremony, distracted my thoughts and blurred the meaning of the words. The psalm *Judica me*, the confiteor, the introit, went by without my being able to fix my thoughts on them. The urgent invocations of the Kyrie brought me back to what was happening and the first words of the *Gloria* made me for a moment fully conscious of what I was repeating, but I soon fell once more to dreaming. The song of praise and adoration the angels sang in the countryside of Bethlehem reminded me that at the time of that first Christmas night, the pot-hole in which we stood had already been in existence for countless thousands of years, that this hall of which the most flamboyant style can give no idea, had come into being in geological epochs that took one back to fabulously distant times. Its dazzling decorations mysteriously fashioned in the eternal night of these chasms bear the mark of the Creator's finger. From the walls and the vaultings of the roof to which it had strayed, my eye came down to the altar, where the priest was now reading the gospel. My eye then fell on my nearest neighbour whose shoulder was touching mine. He too appeared to be in a dream. The mass proceeded in the majestic silence that characterizes huge caverns and deep abysses. Yes, this place in which we were gathered together was certainly a natural sanctuary of extraordinary dimensions, of which the crypts of our churches can give but a faint idea; crypts which were themselves originally inspired by the 'confession' of the early basilicas, the cavity dug in the floor of the sanctuary to preserve the relics of the martyr to whom the church was dedicated. The idea

originated in the fact that in the catacombs the tombs of the glorious Confessors of the Faith were used as altars. Gradually, however, I got my imagination under control and succeeded in following the mass better than by picturing all manner of subjects, ill-assorted, and too often non-sacred. It is possible, in some cases inevitable, that at late masses in towns the individual who is just one of a congregation following superficially or sadly indifferent, finds his thoughts straying and is merely anxious to get out, for he does not realize or forgets what is going on far away at the altar. But at this mass at the bottom of the chasm, so closely resembling a mass in the catacombs, one was conscious of the presence of Him who 'is everywhere, in heaven, in the earth, and in all places.'

A second and a third time the bell rang for the *Sanctus* and the elevation which brought us to our knees on the dripping floor of stalagmite.

'When the priest celebrates the sublime and awe-inspiring sacrifice at the altar the angels are present and their choir lifts its voice to sing the glory of the sacrificed,' wrote St. John Chrysostom. At the triple invocation of the *Agnus Dei* the surrounding silence was broken by a slight noise that came nearer, increased, and then decreased, a rustle of wings heard high up in the roof. No, it was not the angels passing, but some frightened bats that were crossing the hall, surprised no doubt at our invasion of their subterranean abode.

These small creatures, our sisters the bats as St. Francis of Assisi would have called them, remind us that these regions far below are not absolutely without life; that a cave-dwelling fauna, a strange enthralling one to study, exists deep down underground; a fauna that is indeed blind, but endowed with a sense that we do not possess, normally living far below, where we could not support life, for, as the catechism says: 'God cares for His world which He has created, He rules it by His Providence and nothing happens in the world save by His order or permission.'

The priest had just communicated and turned round to give the sacrament to all present; the sacrifice was complete, the mass at the bottom of the pot-hole ended. The programme for the night, however, was to continue with a second ceremony, the benediction and inauguration of the statue of Our Lady of the Chasms who had presided over the mass from the pedestal erected by Nature. Turning round to face us, the padre proceeded to address his faithful flock, the sharers of his adventures. He compared life to the crossing of a cave full of obstacles, tracing a parallel between the vicissitudes, the snares, the ups and downs of life on the one hand with the natural obstacles, the climbs, the arduous crawls, and perilous passages met with in the course of an exploration of a cave. Developing this theme appropriate to the surroundings we were in, and bringing out the special misfortunes of the times through which we were passing, the deep abyss in which civilization had all but foundered, he exhorted us to pray more earnestly than ever to her who might intercede for the poor human creatures clinging to the slopes of that abyss, Our Lady of the Chasms.

After this very fitting topical allusion, the padre spoke in more conversational tones to inform us how struck he had been during the ceremony by the wild and at the same time dazzling splendour of the scene and also by the complete, almost overwhelming silence of this natural crypt, so vast in size and hollowed out at such a depth in the bowels of the mountain.

If the question of the utility or at any rate the appropriateness of celebrating mass in the deepest part of an abyss has been raised, and if I have tried to justify it in my answer, a question of the same order might be expected as to the erection in such a place of a statue of the Virgin to be known as Our Lady of the Chasms.

Just as I hope to have brought out clearly the connection between the eucharist and places underground, so I hope to succeed in my effort to prove that the erection of such a statue underground is neither an original idea nor an anachronism, nor least of all is it meaningless.

Indeed, if it seemed an odd thing to discuss—as far as I know it had not been attempted till I did so in a previous book—the part played by caves in the life of Christ, it should not be forgotten that the Virgin Mary has also had a definite connection with caves.

So that if the statues of the Saviour's mother exist in immense numbers all over the world in the most diverse places and under a very great variety of titles, there should be nothing surprising in the thought of a modest little statue being set up at the bottom of a pot-hole to be invoked there by those who specialize in the perilous adventure of descending such abysses.

The first grotto to play a part in the life of the Holy Virgin is obviously the one in which she was born in Jerusalem, a troglodyte dwelling either of natural formation or a hollow excavated in the rock such as exist in large numbers in the East.

This humble dwelling, inhabited by St. Joachim and St. Anna, was situated outside the town near the Washpool. On the site of this hypogeum was erected the basilica of St. Anna, later St. Mary of the Nativity. Below the right-hand side of the transept extends a crypt, which is the original house or at all events the subterranean portion of what was the house where Mary was born.

The second grotto connected with Mary, that of the Holy Family or the Annunciation at Nazareth, was as small and humble as the subterranean dwelling at Jerusalem. It comprised two rooms; the first, built of stone, gave access to a subterranean room, excavated in the rock, an arrangement quite usual in Palestine, where innumerable caverns or shelters under overhanging rocks have been and are still used as dwellings, either by simply walling up the entrance or by adding on one or two more rooms in front. The entrance hall to the home of the Holy Family has long since disappeared, but the underground portion has survived. The Virgin was working in this room (the apochryphal gospel of St. James the Less asserts that she used to spin

purple cloth) when the archangel Gabriel appeared to announce the heavenly message to her.

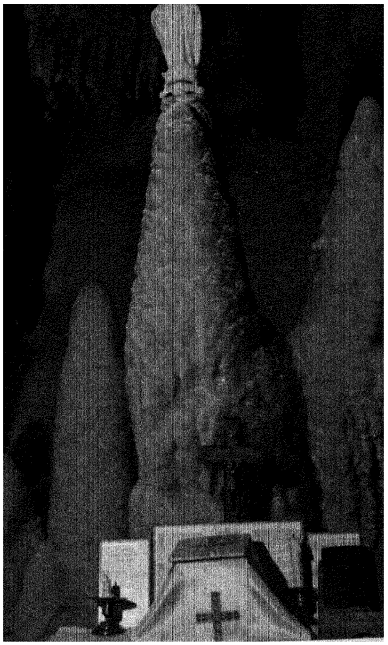
About the year 360 Joseph of Tiberias, a converted Jew, was commissioned by the Emperor Constantine to build a basilica on the site of Mary's home. This church of the Annunciation was destroyed and rebuilt several times in the course of ages. Under the high altar can be seen a staircase of fifteen steps going down into the grotto. On the spot where the Virgin remained while the archangel was speaking to her, the altar of the Annunciation has been set up, and at its base this inscription is engraved on a marble slab: 'Verbum caro hic factum est.' (Here the word was made flesh.)

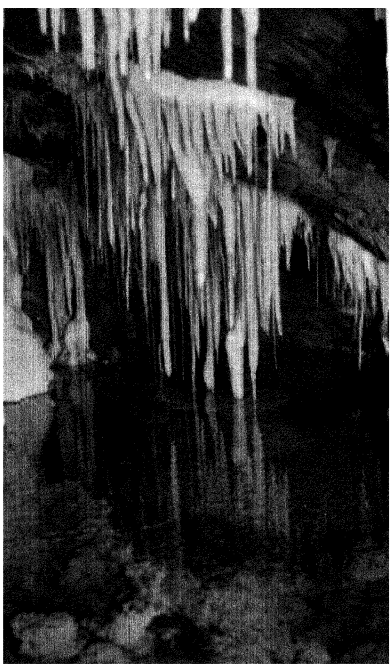
A third grotto, and rightly the most famous of all and held in universal reverence, is that of the Nativity at Bethlehem, where Mary gave birth to Jesus.

This natural cavern, like so many others in the limestone formations of Judaea, has been enclosed since A.D. 327 in the crypt of a basilica. Originally the grotto measured about 40 feet by 10 feet and was 12–13 feet high. At the present day the natural walls have disappeared under the rich coverings which it has been thought fitting to lavish on them to hide the sublime nakedness of the rock. The grotto used to be completely dark but for the constant light emitted by a great number of silver lamps.

Having regard to this subterranean trilogy in the Virgin's life, can one be surprised at the numbers of subterranean sanctuaries dedicated to the mother of the Saviour? Is it not quite natural that since the eleventh century there has existed in the crypt of Chartres Cathedral a chapel dedicated to *Notre Dame de sous terre*? It should not then be surprising that we have ventured to put a statue of the Virgin in a pot-hole of this department of Hautes-Pyrénées, not many miles away from the grotto of Massabielle where the Virgin manifested herself, appearing eighteen times to St. Bernadette. Why did the Immaculate Conception choose this region and this modest cave, to be known everywhere in future as the Grotto of Lourdes?

THE ALTAR AND STATUE
OF OUR LADY
OF THE CHASMS





STALACTITES
OF ESPARROS

She has told no one why, not even the small shepherdess, her confidant; but I venture to think that this miracle was foreordained and prepared for in the distant past. It is a fact that the cult of Mary has always been a very pronounced and living influence in the Bigorre region. It was to the cry 'Notre Dame! Bigorre!' that the Comte de Bigorre led his men into Jerusalem by the side of Godefroy de Bouillon. This war-cry of the men of Bigorre has sounded through the centuries of the whole long, disturbed history of this region, and the motto 'Notre Dame! Bigorre!' still figures in the count's coat of arms.

Few French provinces possess a constellation of sanctuaries of the Virgin comparable to that of the department of Hautes-Pyrénées. Chapels, oratories, pilgrimages, cairns dedicated to the Queen of Heaven, abound in it and the *santètes*—humble rude statues of the Virgin—are found set up at the entrances to the narrow precipitous gorges in its mountains.

It seemed, therefore, quite fitting to place yet another statue in this pious district of Bigorre, and, going a step further and deeper than in the grotto of Massabielle, to seal it to the bottom of the finest cavern one could imagine, in the pot-hole of Esparros.

In view of its underground destination and the constant humidity of the cavern, the statue could not be of plaster, stucco, or cast iron: it would have rapidly deteriorated or rusted. Two materials seemed, on the other hand, to combine the best conditions for resistance: marble and porcelain. It was porcelain that was chosen, not just any chance specimen of a lot, but a figure rendered venerable by its age and its long stay in the family of one of our party.

Ever since the year 840 an oratory dedicated to *Notre Dame de Bon-Conseil* had existed at Lyons on the hill of Lugdunum. In 1165 another chapel was built there, which was subsequently demolished by the Huguenots in 1562, but promptly restored. This chapel, sacked and closed in 1793 in the turmoil of the revolution, was reopened and

solemnly handed back as a place of worship by Pope Pius VII when he came to France for Napoleon's coronation. From the terrace the Holy Father gave his blessing to the town before an immense concourse below, said to have numbered 100,000 persons, massed along the quays. The first stone of the basilica of Fourvière was not to be laid till sixty-seven years later in 1872.

Among the crowd of worshippers and pilgrims, many of whom had come long distances for the visit of Pius to Lyons, was a little girl Marianne Moussy, accompanied by her brother and two sisters. All four had walked from their village, taking several days to do it with their baskets and the indispensable blue umbrella which every traveller carried at this period. The young pilgrims purchased a statuette of the Virgin in porcelain, which was carefully wrapped up and put into one of the baskets.

While the brother and two sisters were going about sightseeing and shopping, our young Marianne being tired was left in the Place Bellecour to keep an eye on the baggage and the umbrella lying at her feet while she sat her weary self down on a seat. But presently a woman who let out the chairs came up and demanded the price for her occupation of the seat, a farthing, which the small girl was unable to pay, for it was the brother who carried the purse.

Well, the pilgrims returned to their village and the statuette was handed down from mother to daughter for 140 years, bringing us to the time when the great-grandson of Marianne Moussy, my friend Gattet, persuaded his mother, herself now over eighty, to break through the long pious tradition.

Leaving the banks of the Rhone, where it had so long presided in the place of honour over the family destinies, the madonna of Lyons resided for a few days in my study surrounded by the loveliest stalactites I had brought back from my campaigns underground. And it was there that I packed her up carefully and there that she ceased to see the light of day, for she was only unwrapped at the bottom of the

pot-hole where she will reign henceforth over the realm of silence and darkness.

For this once, however, the hall was exceptionally well lit and animated. Father Lafargue, standing at the foot of the column, read the prayers of dedication and, rising on tiptoe, sprinkled holy water over the madonna from a small flask; a benediction *sub conditione*, for it was not known whether the statuette had been previously blessed.

A solemn form of service exists, designed to bring the blessing of heaven on the preparatory work when a church is built, 'the benediction and laying of the first stone.' At this ceremony is performed the rite of 'aspersion of the ground and foundations,' in the course of which the bishop walks over the site of the future church, sprinkling the foundations with holy water and chanting a magnificent prayer in which he says: 'Let the powers of evil flee and let the angels of peace come in.' There can never, in fact, be any certainty that the site selected is not tainted, has not been of ill fame in the past, or desecrated; has not been the scene of some crime. In the case of certain sanctuaries the question has arisen and been argued at length, not, it would appear, without good reason. At the bottom of the pot-hole of Esparros there was nothing to fear, no suspicion of that kind; before our visit no man had ever come into it since the creation of the world; the place had remained virgin, immaculate as the stalactites and the crystals which have been growing in size and beauty for hundreds and thousands of years.

The statue of Our Lady of the Chasms is of modest size, none could be more modest, but it has its place henceforth in the grandest, the richest, and the oldest sanctuary there can be, dating back far beyond the early basilicas of the Christian era, beyond the appearance of man upon the earth.

The benediction of the statue ended, the priest asked us to recite aloud with him ten *Ave Maria*, which he terminated with a triple invocation addressed to Our Lady of the Chasms. After this a slight uncertainty was noticeable in

the ordering of the ceremony; the religious programme had been completed and I felt some hesitation in beginning to address the company. It is true that what I had to say or rather to read was not my own and was to be expressed in the language of the Muses. I drew a sheet of paper from my pocket, unfolded it, and read the following verses, the work of Mlle Anna Gattet, my friend's sister.

A NOTRE-DAME DES GOUFFRES

Sainte Vierge Marie, glorieuse Madone
De tant de sanctuaires et de lieux vénérés,
Manquait-il un fleuron à ta belle couronne,
Sous quels titres encor pouvait-on t'implorer?

Sur la terre en folie vois les pauvres hommes,
Ils cherchent un refuge, ils sont las car ils souffrent.
Fuyant ces vilenies, ils te tendent les mains,
Abîme de repos, 'Notre-Dame des Gouffres!'

Quand las de la route et des pierres et des ronces,
Et plus tristes encor de la méchanceté,
Pour retrouver la paix sous la terre ils s'enfoncent,
Ils goûtent de la nuit l'âpre félicité.

O Vierge, viens régner sur ce vaste domaine
Où l'homme, découvrant ces sublimes beautés,
Comme toi recueilli, loin du bruit, de la haine,
Peut louer le Seigneur en toute humilité.

Comme elle nous manqua la grâce souriante
—Pour placer ta statue dans la paroi fleurie—
De celle qui, toujours modeste et si vaillante,
Mourut, te consacrant sa petite: 'Marie.'

Au décor féerique des régions souterraines,
Ad augusta per angusta,
Notre-Dame des Gouffres est désormais la reine
Du solitudo beata.

Mary, Holy Virgin, the glorified Madonna of so many sanctuaries, so many holy places, was some small flower still lacking in your lovely crown? Was there some further title with which to address you in our prayers? Look down on the poor race of men on this earth gone mad; they seek a refuge, they are weary, for they suffer. Longing to escape from all this baseness, they stretch out their hands to thee, the resting-place for all, 'Our Lady of the Chasms!' Weary of the stones and brambles of the road, grieving still more for the evil in men's hearts, in their search for peace they plunge underground to taste the stark felicity of night. O Virgin, come to extend your reign over this vast domain where man can find those beauties that elevate the mind, can silently meditate like thee, far from the noise and hatred of their kind, can praise the Lord in all humility! To place your statue on the richly sculptured wall, how sadly we missed the charming grace of that ever modest yet so valiant lady who died dedicating to thee her own small 'Marie.' In this fairy palace of the underground world, 'a glorious end by narrow ways attained,' Our Lady of the Chasms reigns henceforth, the Queen of Blessed Solitude.

I was deeply moved as I finished the reading of these verses in which such a delicate allusion was made to the companion who first went down with me into this pot-hole of Esparros, and into many others, for she was the first woman to explore chasms and caves!

The memory of her was, I know, in the minds of all during the ceremony and Father Lafargue just before, in his address, had carried our thoughts up with him in his allusion to her invisible presence.

Night was now far advanced; the priest took off his vestments, put out the candles, and removed the vessels from the altar. Everything was put back into the case, we were ready to be off, and we left the hall, lamps in hand, to the chanting of *Salve Regina*.

The statue faded from sight and disappeared as we looked back, the hall relapsed into a darkness that was perpetual

and complete. Our Lady of the Chasms would assuredly be henceforth queen of *beata solitudo*.

We wended our way back through the scenes we had admired a few hours previously. We soon arrived at the foot of the ladder hanging in the great shaft, whose ascent we had to make to emerge from the pot-hole. Having reached this point we halted beside a portion of the sacks and bags left in the vast antechamber. This was the time to break our fast and take in sustenance; nor was this festive hour lacking either in picturesqueness or gaiety. It was followed by the tedious, interminable climb back to the opening above at the surface, patiently endured but quite exhausting. We had gone underground in the twilight at 8.30 and were now reappearing in daylight at 7.30 soon after sunrise, to a concert of bird song in which the notes of the thrush and the cuckoo predominated, with the sound of the bells of Esparros coming in at intervals.

The angelus had rung its message the day before just as we were taking the plunge below, and now again, eleven hours later, by a providential and most appropriate coincidence, the angelus was ringing to greet our reappearance.

A fortnight later I went down the pot-hole again with Gattet to carry out the fixing of the statue to the top of the column on which it stood. After he had completed the job satisfactorily with cement, I deposited in a crevice near by a hermetically sealed flask containing the official account of the mass at the bottom of the pot-hole, a copy of Mlle Anna Gattet's verses, a few photographs taken on that memorable night, and a newspaper bearing the date of 15th April 1945. (V day fixed for celebrating the victory of our arms.)

This subsequent visit to the Esparros pot-hole was short and secret, Our Lady of the Chasms has begun her reign in the depths of one of the finest chasms known.

May all spelaeologists and all workers underground adopt her as their patron saint and implore her divine protection in the hour of danger.

PART TWO

THE DEEP PLACES OF THE HUMAN SOUL

Let us seek then as searchers who have to find, and let us find as finders who have still to seek, for it is written: He who has reached the end is only at the beginning.

SAINT AUGUSTINE.

I

THE PLACE OF CAVERNS IN MYTHOLOGY

There opens a vast cave hollowed out in the Euboean rocks; a hundred broad avenues lead up to it, it has a hundred doors, whence proceed a hundred voices which convey the answers of the Sibyl.

VIRGIL, *Aeneid.*

With its legends handed down to posterity, with all the accretions of new imaginative tales in which the poets have rivalled one another in making it yet more marvellous, mythology is often apt to appear a hopelessly extravagant jumble of nonsensical stories, especially if we remember only the singularity of the adventures it records.

It is nevertheless certain that the legends of mythology conceal very deep mysteries and make allegories of what are real and important events. They generally had their origin in things that actually happened, and it was in no vain intent that the ancients instituted ceremonies of initiation in which, without any doubt, the veil was lifted.

What has come down to us is a series of fables distorted by popular ignorance and changed in form by the audacity of poets. Learned mythologists have tried to interpret and elucidate these riddles, but probable and ingenious as these explanations are, they do not, as a rule, take us beyond conjecture. I have no intention myself of entering on a path so beset with pitfalls and uncertainties; my intention is simply to point out and emphasize the important part played in mythology by grottoes.

The myth of infernal regions in the bowels of the earth is common to many peoples of the distant past, and we find their mythologies abound in fables and adventures whose scenes are laid in the world below.

There existed in the past an actual complicated topography of this lower world and the description of the infernal

regions has haunted human imagination through the ages. Tartary was the abode of the wicked, the Elysian Fields were reserved for virtuous souls; the souls of those who were neither good nor bad wandered hither and thither. . . .

The abodes of darkness are generally situated at such a depth that no mortal, even by journeying to the interior of the earth for a year, can reach them. Moreover, the infernal regions are surrounded by a wall of fire, by thick darkness, and by a foaming river.

Pluto, with Proserpine, reigns over this awesome realm below, its bronze gates being guarded by Cerberus the three-headed dog and by the Furies. The other monarchs are the three judges, Eacus, Minos, and Rhadamanthus, the three Fates, Destiny, the Household Gods, and Charon the ferryman of the Styx. Besides the Styx, whose meanderings, according to Virgil, encircle the infernal regions nine times, and whose Nymph lived in a grotto close to it, several other rivers are included in the lower world. Acheron, whose name in Greek signifies trouble, chagrin, grief, was thrown down into hell by Jupiter because its waters had quenched the thirst of the Titans in their battle with the gods. The source of Acheron was in the marsh of similar name in Epirus and flowed for a long way underground before entering the Adriatic, which no doubt gave rise to the fable of its passage through the infernal regions.

Erebus, the son of Chaos and Night, who played a part in cosmogony by giving assistance to the Titans, was transformed into a river and hurled to the very bottom of hell.

On entering the land of shades the dead had to immerse themselves in the waters of Lethe, where they lost all memories of their life on earth. This Lethe was a river in Cyrenaica which flowed underground and came out near the port of Berenice, which gave rise to the idea, as in the case of Acheron, that it passed through hell. Cocytus, another river of the infernal regions, was fed only by the tears of the damned.

The belief in a hell underground led the ancients to the

logical deduction that natural cavities and openings in the earth were gates or porches which gave access to it. A number of caverns and chasms, even volcanoes, were reputed to communicate with the land of shades and many a story relating to descents to the realm of Pluto is connected with some particular chasm. Even the places where streams disappeared and burst out again did not escape this shady reputation.

These 'mouths of hell' were well known and a geography of the lower regions was in existence, a collection of information for the use of pilgrims who made a speciality of visiting and haunting these awe-inspiring ventilating shafts of the infernal regions. The cave of Acherusia in Epirus, the mouth of Pluto in Laodicaea, the cave of Taenarum in southern Greece, the cavern of Lake Arverna in the Campagna, and that of Enna in Sicily were some of the most famous. It was through these openings that the dead set out on their last journey to the land of shades under the guidance of Mercury, whose special duty it was to escort them through the long descent into the interior of the earth.

Volcanoes and other places impenetrable to men were also reputed to be vent-holes of hell; as in the case of Lake Aornas (Avernus), from which issued exhalations so poisonous that the birds that flew across dropped into it. In the neighbourhood of Olympus bursts of flame came out of the ground (probably fumaroles of volcanic origin) which were regarded as a sequel to the battles of the Titans with the gods. At Pisa there was a temple to Ceres on the spot where it was believed her daughter had been carried off by Pluto. Proserpine having picked a plant with a hundred blooms, the earth trembled and opened; a thick cloud rose, and out of it emerged black horses with reins of gold, pulling the dark chariot of the king of the infernal regions. He carried off Proserpine and horse and carriage all went down into the abyss which immediately closed up. The scene of this abduction was claimed by the people of Eleusis and also

by other Greeks who would point out fissures in their districts through which Pluto had emerged. The Sicilians also used to point out near Enna a cavern for which they claimed the exclusive right to this legend.

Despite the dangers of the long, fearsome journey and the obstacles accumulated at the approach to the lower regions to prevent access or escape, mythology furnishes various examples of descents into the land of shades and returns to earth, effected by gods, by demi-gods, by heroes, and even by mere ordinary mortals.

Mercury, the god of travellers on the earth as well as to the world beyond, was the guide appointed to escort the dead to Hades, and as such was constantly completing the long descent below. He appeased the wrath of Cerberus by showing him his wand.

Hercules, another specialist in dangerous travelling, paid several visits to Pluto, among others for the purpose of bringing back Thesus and Alcestis. On one occasion he actually came out via the cavern of Acherusia on the shores of the Euxine, dragging Cerberus along after him, having succeeded in putting a chain and muzzle on him, at the request of Eurystheus, king of Mycenae. When released the monster hurried back to his cave beside the Styx. When on sentry duty at the gate of Hades, Cerberus let through without any difficulty the souls who were on their way to add to the multitide of shades, but he showed how ferocious he could be to the living who attempted to enter.

Ceres, searching for the daughter carried off by Pluto, also got past the threshold of the forbidden realm, but having infringed the rule of observing a total fast which was in force down below by eating seven pomegranate seeds, she failed to obtain the definite return of Proserpine to earth.

As an exceptional favour Adonis was able to enter the infernal regions and come out again. This young man had been killed by a boar out hunting. Proserpine was captivated by his beauty, brought him to life, and kept him by her in the lower regions for half the year, the rest of his time

being spent with Venus, who was also infatuated with this lucky mortal.

Psyche, a young princess whose beauty aroused the jealousy of Venus and the love of Cupid, was given immortality by Jupiter, but in the course of the persecutions and the ordeals she suffered at the hands of Venus, she had to go down into Hades with a message for Proserpine. She went there through the grotto of Taenarum not far from Sparta. A voice instructed her in all she had to do to carry out her perilous expedition.

Aenas went in by the cave of Lake Avernus. He was guided by the Trojan prince Deïphobus, who put Cerberus to sleep by giving him a cake made with honey and poppy juice. He went down following the directions of the sibyl.

Among his many famous and legendary exploits, Theseus, urged thereto by his friend Pirithoüs, went so far as to descend into Hades to carry off Proserpine with whom he was in love. Pirithoüs was devoured by Cerberus, while Theseus was kept prisoner, loaded with chains, by Pluto, till Hercules arrived and set him free.

It was on no amorous adventure, but from the supreme, sacrificial nature of her love, that the heroic Alcestis, wife of Admetus, king of Thessaly, went down into Hades instead of her sick husband whom the oracles had condemned to death. So Alcestis accomplished the terrible descent, but Hercules, touched by such sacrifice, went down once more among the shades and brought back this virtuous wife.

A kind of demi-god of the heroic epoch in Greece, Orpheus succeeded in making the difficult descent and arriving alive in Hades by the cave of Taenarum. While Deïphobus, Aeneas's friend, had sent Cerberus into a deep sleep with a poppy cake, Orpheus obtained a like result with the strains of his lyre. It was not by any means his first attempt of the kind, since, thanks to this instrument, its fortunate and talented owner used to charm lions and tigers and even caused rivers to interrupt their flow! Thus Orpheus won his way into the realms forbidden to the living;

when there he so pleased and charmed Pluto and Proserpine with a solo on his lyre that enraptured by the music they granted their enchanter permission to take his wife back to earth. A condition was, however, imposed; the lucky musician must walk in front of his wife without looking back till they came out again. Either from forgetfulness or impatience to look on the beloved features once more, the unfortunate man looked back before reaching the appointed limit and so lost his Eurydice for ever.

Finally, let me quote a last traveller to Hades, Ulysses, who went down there in the course of his great adventures merely to consult the soul of the famous seer Tiresias as to what lay before him.

Other chasms, known by the names of Plutonia, Charonia, Heroa, were visited at considerable risk by persons eager to know the fate in store for them and who were taken down there at the peril of their lives. Pausanias has described in great detail his own descent into one of these oracle-giving caves.

Without extending further our survey of these fissures leading to hell and other local subterranean caverns, with which we might couple more domestic altars and graves dug below the surface, where spirits could be summoned, it is to be noted that on no subjects has the fabulous tale had such a free run. An expert writing on these dark mysteries, J. de Mirville, has this to say about the fable of this type: 'In the full light of the sun it was so daring, it showed so little scruple under the open sky and on the surface of the earth that anything must have seemed easy to it in the dark atmosphere of Tartary.'

Let us leave then for good, as too deep and too fabulous, this realm of Hades and its dependencies, and come to what can fairly be called grottoes. Our only difficulty will be to make a selection from those in which mythology abounds.

The caves of the sibyls may be taken as a transition from the caves of the lower regions that were largely fictitious to others, for the sibyls haunted real grottoes. These latter

were supposed to be connected with the lower regions, not as a way of transit for the shades, but for oracles, breaths of inspiration, exhalations which used this way out to the earth's surface, where pythonesses and sibyls collected them and interpreted them with the help of priests. Certain sibyls lived, or at any rate prophesied, in caves, as for instance the Cumaean and Delphic sibyls. Others placed themselves over fissures from which rose emanations which put them into a trance.

The sacred tripod of the sibyls came originally from Delphi, where many of the possessed, overcome by the vapours, had fallen into the chasm. These accidents became too frequent, and a means of avoiding them was sought by setting up above the natural fissure a thing called a tripod, because of its shape with three supports, and a woman was commissioned to get on the tripod, from which she could without risk receive the prophecies. In the *Aeneid* Virgil describes at length the way the sibyl delivered her oracles in the cave at Cumae and in so doing has immortalized her predictions.

The pythoness or pythian was the priestess of the cave at Delphi dedicated to Apollo; she got her name from the serpent Python slain by the god. Apollo was one day wandering on Parnassus, near Delphi; as he was passing in front of a dark cave a monster darted out at him with horrible hisses. It was the serpent Python, the terror of the locality. Apollo slew it with an arrow, removed its skin, and with it covered the sibyl's tripod. He also instituted the Pythian games to commemorate his victory.

The Hydrophoria were festivals or funeral ceremonies observed among the Greeks to commemorate those who had perished in the flood which Deucalion survived. Water was solemnly carried in vases to be poured down the opening of a pot-hole about a cubit in width near the temple of Jupiter, through which it was believed the water of the flood had flowed away.

All sorts of personages haunted caves: nymphs, satyrs,

eagypans, etc., whose extraordinary doings are the subject of mythological tales. Nymphs and naiads in particular were frequenters of the places underground and many caves were used by them as dwellings. The Corycidal nymphs got their name from the cave at Corycium; the Libethridal nymphs from the grotto of Libethra in Macedonia; the Sphragitidal nymphs from the cave of Sphragidion at the top of Mount Cithaeron in Boeotia; others again lived in grottoes where sacrifices were offered to them. The nymph Echo, condemned to repeat only the last word of her questioners, withdrew to the grottoes where she suffered a final transformation into rock.

The centaurs also used caves as dwellings, for mythology mentions the caves of the centaurs Chiron and Pholus.

The Titans who came up against the Giants in the battle with the gods, were involved in many subterranean contests and almost all of them ended in being put underground; the Titans being hurled into the lower regions where they were guarded by the Giants, who were given the privilege of guarding them in the lowest part of Tartary.

Mythology is very confused and sometimes contradictory accounts describe the exploits and misfortunes of Orion, who built an underground palace for his father Neptune; of Enceladus, who was shut up underground by Jupiter in the island of Inarima, where his convulsive struggles and fiery breath produced the eruptions of Etna; of Gyges, who was in like manner shut up below by Saturn, then set free by Jupiter, only, it is true, to be charged with Briareus and Cottus with the safeguarding of the Titans in the caves of Tartary. As for the Cyclops, they had their subterranean dwellings where they worked under the supervision of Vulcan, who had himself spent nine years forging jewels for the lovely Thetis in her cave.

The gods themselves, including the most powerful, those for whom a habitation underground or in a grotto may seem unexpected and paradoxical, had their subterranean adventures and their subterranean temples. The Sun himself had

his sacred grotto, his *spelaeum*, the spot chosen for the celebration of the mysteries and festivals of Mithra, which were forbidden by the orders of Gracchus, the head of the praetorium. As for Apollo, another sun god, he delivered his oracles in the cave at Delphi and we know also that he killed the monster Python in a cavern of Parnassus.

The scene of Jupiter's birth was a cavern in Mount Dikta in Crete. His mother had chosen this place underground to hide the birth from Saturn who had the unpleasant habit of eating his children. Curators armed with lances stood in the cave with shields which they clashed together for fear Saturn might hear the infant's cries. In 1906 this grotto of Dikta was investigated by the archaeologist Hogarth, who collected from it antique pottery, very early bronzes, and two-headed axes, the symbol of the Cretan Jupiter.

Diana also paid a visit to a cave, albeit against her will, for she was shut up there for a time by the giant Orion.

Mercury, mentioned already as an escorter of souls to Hades, was born in a cave and developed a very early liking for caves if legend is to be believed. While still in the cradle he had stolen fifty heifers from Apollo and hidden them in a grotto. But Apollo discovered them and in great indignation brought Mercury in his cradle before Jupiter.

The god Pan had his grotto on Parnassus, and researches carried out in this cave have produced, among other finds, a remarkable gold vase richly ornamented.

Ceres, who had her hide-out in a cavern, had also several subterranean temples, that of Enna in Sicily being the most famous. Cybele likewise had a cavern dedicated to her, that of Methydrium in Arcadia, which none but priestesses could enter.

Aeolus, the god of the winds, kept them chained up in a cavern in the Aeolian islands: the cave of Aeolus. His chief lieutenants were Boreas, Eurus, Notus, Zephyr, and Aquilo. Somnus, the god of sleep, son of Erebus and Nox, has his palace in an unknown cave where the sun's rays never enter. At its entrance grow countless poppies and soporific herbs.

The river of Forgetfulness flows in front of this cave and not a sound is heard save the soft murmur of its waters. Somnus reposes in a chamber on a feather-bed enclosed by dark curtains; the Dreams lie round him, and Morpheus, his chief minister, keeps watch to see no noise occurs.

Echidna, a deity of the ancient Greeks, half pleasant-faced nymph, half serpent, dwelt in a cave far from gods and man. She bore the giant Typhon a dreadful brood: Cerberus, the Hydra, the Chimaera, etc. . . .

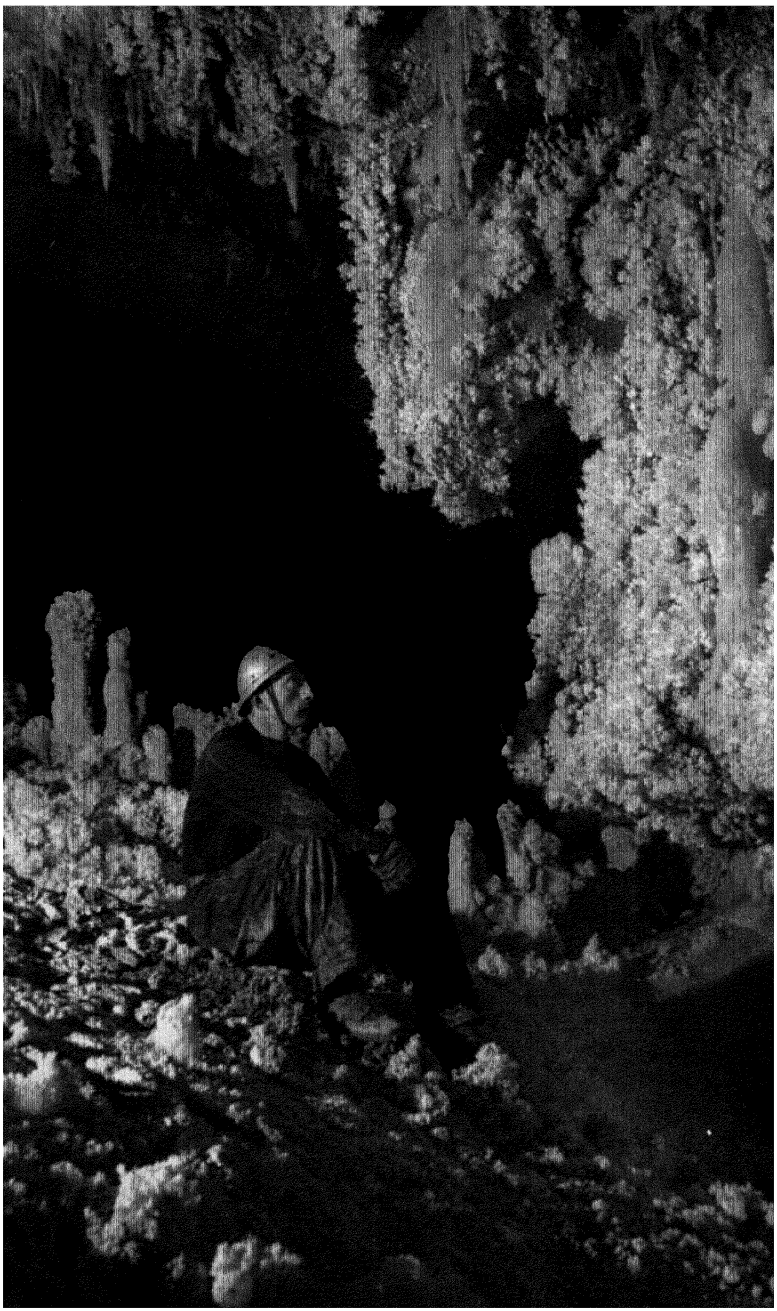
Hermaphroditus or Androgynes, the son of Mercury and Venus, was brought up in the caverns of Mount Ida.

These names are, I think, sufficient to show how greatly the fables of mythology have been inspired by the mystery of the invisible world and by caves; but I am anxious to get on to the less fabulous adventures of mere mortals. These tales, which are more human and more probable, though still extraordinary, are not lacking in picturesque touches. Some of the episodes are very simple, while others bear the peculiar stamp that belongs to mythology.

Let us glance first at the miraculous tales, and begin with the story of Epimenides which is quite clearly akin to what has become known everywhere as the tale of the Sleepers, to which the tale of the Sleeping Beauty may owe its origin.

Epimenides, a Cretan philosopher who lived in Solon's temple, was sent into the countryside when a boy to guard the flocks. He lost his way and entered a cave where he fell into a sleep which lasted fifty-seven years. When he woke up he no longer knew anybody and nobody knew him. The rumour of this miraculous occurrence spread all over Greece, and Epimenides was looked upon as being in favour with the gods. He was named the new Curetes and people went to consult him as an oracle.

Another poor shepherd, Gyges, went down one day into a chasm which had opened after heavy rain. He found there a ring which he slipped on to his finger. When he turned the stone of the ring inwards he became invisible, a



IN THE POT-HOLE OF ESPARROS

convenience which gained him many advantages, among others, that of being king of Lydia.

Caves proved less propitious for Philoctetes who had inherited the arrows of Hercules. Having hurt himself with one of these arrows, he developed an ulcer which stank so much that he was left in the isle of Lemnos where he lived alone like a leper in a grotto.

The caves of mythology are alternately well disposed or hostile to men and heroes. The cave of Ceira near the Danube was a boon to the Giants who took refuge in it after being defeated by the gods. Caves were equally propitious for the Themisonians, whose women and children found sanctuary in a grotto in Phocis during an invasion by the Galatians. To commemorate their salvation, which they attributed to Mercury, Apollo, and Hercules, the Themisonians set up at the entrance of the cave a statue representing their protectors to whom they gave the additional title of Spelaean gods.

In the cave of Dikta where Jupiter was born were bees which fed the god with their honey. These bees were sacred, so when, long after the birth of Jupiter, four men went into the cave to steal the hives they were not only stung all over but the god's own thunderbolts struck and killed the sacrilegious thieves.

One day when the Sabines were sacrificing to the god of death, Soranus, enormous wolves came up to the altar and carried off the victims. Their pursuers were led up to a dark cave where some of them were suffocated by mephitic vapours, while others carried back a form of pestilence to their fellow countrymen.

One of the strangest tales about caves in mythology is certainly the famous adventure of Ulysses in the cave of Polyphemus. Ulysses, having landed on the shore of the Cyclops' country, entered the cave of Polyphemus with a dozen of his companions, while the owner was feeding his flocks near by. While the party were having a look round the cave Polyphemus came back and closed the entrance

with a rock which, according to Homer, twenty yoke of oxen would fail to move. By the light of the fire he lit, the Cyclops discovered the intruders. Ulysses proceeded to address him, telling him they were on their way back from the Trojan war, that the storm which had broken up his ship had thrown them on the shore, and asked, in the name of Jupiter, to be treated in accordance with the laws of hospitality. The Cyclops cared not a straw for Jupiter and devoured a couple of Greeks. Next day he went out with his flock after closing the cave as on the previous day. In the evening he returned and ate two more of the prisoners. Ulysses managed to make him drunk and put out his one eye with a spear. The Cyclops roared and brought the other Cyclops to the spot; then he was obliged to feed his flocks and felt them with his hands to prevent Ulysses and his men stealing away among them. But the latter hung themselves on to the under side of the rams which were of great size and succeeded in escaping. The grotto of Polyphemus described by Homer has been identified by the Hellenistic scholar Victor Bérard, who places it in the island of Peregril north of the coast of Morocco.

Caves have not always been the setting for tales that are fabulous; I propose to end with some episodes that are no more than actual occurrences and are none the less interesting.

What, indeed, could be simpler and more likely to happen than the tragic adventure which Ovid describes of the young Atalanta who went into a cave with a young man called Milanion and were both devoured by a lion and lioness?

There is a touch of the miraculous in the no less tragic end of Polydamas, the famous Thessalian athlete, who, after performing many great feats, perished through over confidence in his great strength. He entered a cave with a few friends to enjoy its cool shade when fate ordained that the ceiling was suddenly seen to crack and threaten to come down. His friends fled directly they saw the danger. He alone remained and tried to hold up the rocky roof with his

hands; but the mountain side was collapsing and he was buried. A statue was put up to his memory in the stadium of the Olympic games.

Another gloomy tale is that of Menecaeus, son of Creon, king of Thebes, who was designated by the oracle to be the sacrifice offered to Mars, because a dragon, a son of the god, had been slain by men. Menecaeus went off alone and stabbed himself in the dragon's cave, the dragon itself being stained with the victim's blood.

Another dramatic episode is associated with the cave of Cacus. This giant and brigand stole the oxen of Hercules and made them walk backwards into his cave in the Aventine hill. Misled by this ruse Hercules failed to find them, but one day, passing the place with his flock, he heard one of the captive beasts begin to low. Hercules broke open the door of the cave, recovered his oxen, and dealt with Cacus.

More gracious and romantic than the foregoing is the story of the suckling of Romulus and Remus by a she-wolf in the Lupercal grotto near the Tiber, from which the animal had rescued the two infants. While the she-wolf was suckling them, a woodpecker was sent by Mars, the father of the twins, to bring them food every day in the grotto.

Let me end this collection of cave stories with yet one more, borrowed from the inexhaustible resources of mythology.

Two shepherds were feeding their flocks on Mount Lissus near Ephesus. Having noticed some bees coming out of a cave, one of them had himself let down by a rope to collect the honey from the hive. In addition to the expected booty he discovered treasure. The shepherd who had remained outside the cave drew up the treasure by means of a basket tied to the end of the rope and left his companion in the cave, never doubting he would perish there. The prisoner gave way to utter despair, then fell asleep, and Apollo appeared to him in a dream. The god told him to make wounds on his body with a stone, which he did. Vultures were soon attracted by the smell of the wounded flesh,

flew into the cave, and bore the unfortunate man out. As soon as his wounds were healed he laid his case before the judges of Ephesus, who executed the other shepherd and restored the treasure to the one who had been saved. The latter had a temple built on the mountain side in honour of his liberator, under the title of Apollo Vulturius (Apollo of the Vultures).

This last tale seems to me completely typical, and to account for the evolution of many of these mythological stories. The first part, originating in an actual occurrence, becomes complicated by a second fabulous addition, in which the miraculous is brought in to intensify the interest, as in fairy tales. Taking a general view, it may be said that mythology is, to a certain extent, the ancestor of fairy tales, just as prehistoric times and the cave men have probably, through the influence of oral tradition, inspired mythology itself; this would explain why the world below plays in it such an important part.

II

CAVES IN SACRED WRITINGS

They went about in sheepskins, in goatskins; being destitute, afflicted, evil entreated (of whom the world was not worthy), wandering in deserts and mountains and caves and the holes of the earth.

HEBREWS xi. 37–8.

Seeing that saints are beings detached from earthly things and having their thoughts turned heavenward, their eyes skyward, it will seem *a priori* surprising that caves could play a part of any importance in their lives. There seems, indeed, to be something definitely contradictory between aspirations, ecstasies, and divine joy on the one hand, and on the other, the darkness, the feeling of oppression underground, the sepulchral atmosphere of the black abodes which popular imagination has, in all ages, regarded as the realm of the infernal regions. Despite this seemingly opposing character and incompatibility, it is clear that caves have their importance and occur frequently in sacred writings, for these writings abound in episodes, in scenes and adventures, for which a great number of caves provide the setting. No doubt, as we all know, there were certain hermits and lovers of solitude who occasionally chose caves and grottoes in remote desert places as their way of escaping from the world; but is there any doubt that this life was also lived by whole legions of saintly men?

Is it commonly known that human beings of all ages, in all states of life, in every period of history, and in most diverse countries have lived in caves, facing the most frightful ordeals and pious austerities? Is it further known that this army of saints has been recruited, not simply from the ranks of obscure anchorites, but also from bearers of the greatest names in the history of the Church? Fathers and doctors, apostles, great healers, founders of great orders, princes of

the Church, even popes, appear in this list, to which should be added saintly women, heroic youths and maidens, and even children.

Without attempting to deal exhaustively with the connections of caves with sacred records, I shall take instances in chronological order, from the earliest centuries down to our own times. Nor shall I, describing various episodes, try to draw any exact distinction between actual historic facts and legend—even though it be the Golden Legend—but, allowing for a certain amount of embroidery and inevitable embellishment in this domain as in so many others, there is a residue of facts that can be checked, to give to historic events of this nature their full value and interest.

We know that Christ personally conferred on many caves of different kinds an incomparable, imperishable distinction. We can even add that caves played a part in His life that was not merely an episode in it, but was continuous, and the occasions of their occurrence are both numerous and important; for not only was our Lord born and buried in a cave, the annunciation of His birth took place in a cave; in a cave was also found the cross on which He suffered. The first saint I shall notice whose destinies were linked with caves was Jesus' own cousin, John the Baptist.

St. John the Baptist was, in fact, born in a grotto (a troglodyte dwelling like many others in the East) at Aïn Karem, four miles from Jerusalem. The hollow is still shown, now enclosed within the chapel of the Nativity of St. John the Baptist where the forerunner must have been born. Shortly after that event, St. Elizabeth withdrew to a cave when John was just over a year old (at the time of the Massacre of the Innocents by Herod). She remained there forty days, and we are also told that Zacharias was put to death for not revealing the cave that gave them asylum.

A league away from Aïn Karem, in the place called St. John's Desert, is another cave, the grotto of Sapsa, where St. John the Baptist is said to have lived as a hermit on locusts and wild honey till the time when he began to preach

in the great desert flanking the Jordan. And finally, according to the Golden Legend, John the Baptist's head was buried in a cave where it was discovered much later in miraculous circumstances.

On the day before Jesus' death, the apostle Peter is said to have entered a cave while unforgettable events were happening. When, in the house of the high priest Caiaphas, Peter, having twice denied his Master, repeated his denial, Jesus, under the insults and blows of the soldiers and servants, turned round to look at His disciple. The latter realized his cowardice and remembered the word of the Lord: 'Before the cock crow, thou shalt deny me thrice.' Ashamed of his apostasy, Peter fled in despair and went to weep over what he had done in a grotto which is still visited, a few hundred yards away. Up till the twelfth century this grotto was contained within the walls of a sanctuary long since destroyed, called the Church of St. Peter-in-Gallicant (*in galli cantu*).

One of the twelve apostles, St. John the Evangelist, who became the first bishop of Ephesus, was arrested in that town in A.D. 95 during Diocletian's persecution. He was taken to Rome and thrown into a cauldron of boiling oil without taking any hurt, then banished to the island of Patmos, one of the Sporades which he converted to Christianity. There he wrote his Apocalypse in a grotto, now contained within the monastery of St. John. The descent into it is by a staircase of forty steps and a hole is shown, hollowed out of the rock, where the saint laid his head when he slept.

Another apostle had his dwelling in a cave but not of his own free will. That was St. Paul, who was imprisoned in a grotto in Malta for two years before being taken over to Rome, there to perish by the sword the very same day on which St. Peter was crucified in the year 66.

St. Paul's grotto was a hollow in soft limestone rock, and it proved possible to remove large quantities of the stone from the walls. For a long period bits of this stone were sent off

to all parts of Christendom under the name of *pietra della grazia*. The grotto has long since been converted into a sanctuary.

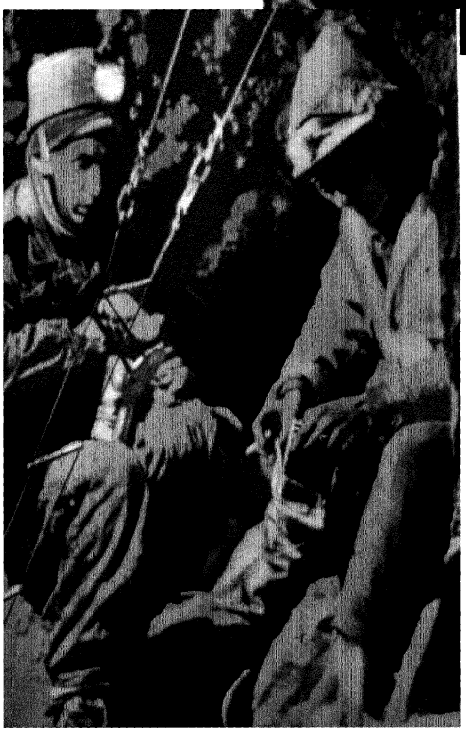
St. Jerome, who was born about 340 in Dalmatia, spent the first years of his life in the desert of Chalus in Syria; his last thirty-five years he lived at Bethlehem where he chose for his abode a grotto close to the grotto of the Nativity. It was here that he produced his immense literary work, including a Latin translation of the whole Bible. It was from the depths of this same cave that he sustained famous controversies with the whole civilized world, and it was here he lived, a lonely ascetic and mystic, till his death at the age of eighty. Here too he was buried and his tomb remained in the grotto for centuries.

The great invasion of the West by Christianity began in the first century, spreading from the Mediterranean ports where the early bearers of the Gospel landed. According to tradition Mary Magdalene, Martha, Lazarus, Maximus, Sidonius, and Trophimus arrived on the shores of Provence. Leaving her companions to their apostolic work, Mary Magdalene looked for some solitary spot where she could live as a penitent in contemplation. She went inland into the mountains and selected for her dwelling a grotto in the hill country of Saint-Pilon, not far from Marseilles, which was later known by the name of Sainte-Baume (*baume* meaning grotto). There she lived for thirty-five years engaged in prayer, and only went down into the plain to complete her long period of expiation and her life in an oratory.

By the end of the third century, Sainte-Baume had become a place of pilgrimage and St. Cassian there founded a community of monks who lived in holes in the rock. Before long paths were made across the face of the mountain and a hostel for pilgrims was established. Thus originated one of the most celebrated places of pilgrimage in Christendom; for Sainte-Baume knew many centuries of splendour up to the Revolution when it was all smashed up, pillaged, and burnt.

ERTAUD EMERGING
AFTER FIVE DAYS AND
SIX NIGHTS BELOW





ERTAUD AND GACHÉ
AT THE RELAY
130 METRES DOWN

One of the apostles of the first century who, following in the footsteps of the companions of St. Mary Magdalene, came over to Europe to convert its various countries was St. Beatus, the apostle of Switzerland. By the shores of the lake of Thun at the foot of the Beatenberg, in one of the most popular beauty spots of Europe, there are two low grottoes known as the Beatus-Höhle, the grottoes of St. Beatus.

One of them is of vast size with a rough floor and a subterranean stream running through it which issues in a picturesque cascade; the other, which is small and dry and partly of human construction, is regarded as the hermitage of the saint, who ended his days there in A.D. 110 after a long life of abstinence. His remains were exhumed from the cave in 1528 and preserved in a monastery at Interlaken. Prolonged and sanguinary battles were fought between the Protestant authorities and the Catholics to prevent the latter from continuing their pilgrimages to the grotto, which was walled up and reopened several times.

An individual who has been neither canonized nor beatified, but who had the wonderful privilege of receiving Jesus Christ in his house, the prince of the publicans Zacchaeus, possibly deserves to be mentioned among those who have lived as a hermit in a grotto. According to an old tradition, confirmed in a bull of Pope Martin V in 1427 and further confirmed by recent discoveries in sacred writings, the Zacchaeus of the Gospel came to Gaul and withdrew to a solitude in the Quercy district, where he lived in a grotto near a chapel dedicated to the Virgin by St. Martial, bishop of Limoges.

This pious hermit was given the soubriquet of Roc Amadour (Lover of the Rock). Subsequently this place of pilgrimage which took the name of Notre Dame de Rocamadour, had a great vogue; it still attracts large numbers.

About the year 260, St. Privat, Bishop of Mende, established a retreat in a grotto above the town. He differed from all the other cave hermits in furnishing his grotto with all the industry and elegance available; his was not so much a

hermitage as a residence where he liked to retire and write in solitude.

The development of Christianity in the early centuries of the Church's life was characterized by emergence on the scene of hermits, which is one of the most astonishing manifestations of ascetic austerity in human history. There took place at this period a veritable exodus into the deserts of Mesopotamia, Arabia, Syria, Palestine, and Egypt, to whose solitudes flocked thousands of anchorites yearning for isolation, silence, and mortification of the flesh. Most of them chose for their domicile either natural caves or grottoes or cells which they excavated for themselves or adopted former tombs and disused sepulchres. This phenomenon resembling a second Cave Age, which in the third, fourth, and fifth centuries was marked by the voluntary claustration of vast numbers of pious individuals, is one of the most surprising and edifying facts in the records of our race.

All these ascetics, whether solitary anchorites or cenobites grouped in communities, come under the denominational category of the Desert Fathers; they constitute a great legion which must include many saints 'whose names have perished as though they had never been,' for numbers of them lived far from every human contact in absolute isolation.

There were some, however, whose lives were marked by such strange occurrences and such exceptional austerities that their names have come down to us across the centuries and have given them their places in the lives of the saints.

St. Paul of Thebes, also known as Paul the Hermit, honoured by all recluses as their founder, withdrew into the desert of the Thebaid at the age of twenty-three. Advancing far into these immense solitudes, he stopped at the foot of a mountain and made his way into a cave the back of which was closed by a great stone which he succeeded in shifting. Behind it the cave opened out into a sort of chamber open to the sky (probably it had been a subterranean hall whose roof had collapsed) in which he found a large palm-tree with a

stream flowing at its base. St. Paul made the grotto his home and spent ninety years there in meditation and prayer, living on the dates from the tree and having only the water of the stream to drink. Here in the lonely caves of these remote solitudes originated the esoteric or inward mysticism which was at its height in the early centuries of the Christian era.

In imitation of Paul the Hermit, thousands of anchorites abandoned the world to withdraw into the desert. Among these was St. Onuphrius who lived for sixty years in a grotto of the Thebaid; another was St. Jerome who lived a hermit's life in the desert of Chalus near Antioch and later in a grotto at Bethlehem where he was, in fact, buried. St. Chariton in the fourth century founded a monastery near Bethlehem, and then retired to a huge grotto (Merharet-Kharitoum) and there gave himself up to silence, prayer, and meditation. This cave, situated above a precipice, is of vast size and complicated structure comprising many storeys.

St. Theodosius the Cenobiarch began his hermit's life in the cave of the Magi near Bethlehem before founding a monastery. Sallust, the Bishop of Jerusalem, appointed him superior of all the cenobites in Palestine.

St. Macarius spent long years in a tiny grotto in the desert of Scete, whilst at the same time St. Nilus was occupying a cave in Sinai.

St. Simon Stylites, best known for his stay of thirty years on the top of a pillar, was also a subterranean hermit. In Syria, near the convent of Sesan, he entered a deep cavern rendered formidable by its being haunted by demons and serpents. He fasted in it all through Lent. As Easter approached, the abbot with a few monks, anxious at not seeing Simon, ventured into the cavern and discovered the hermit in an exhausted state but in an ecstatic trance.

St. John Chrysostom, who became one of the greatest doctors of the Church, was baptized in Antioch at twenty-two years of age and felt the attraction of the ascetic life. On his mother's death he left all and went to live with the hermits of Syria. After that he went alone into the

mountains and lived for two years in a huge cavern before returning to Antioch.

St. Porphyry, Bishop of Gaza, was born in Thessalonica in 353. When still a youth he left his family and his homeland to go into the desert. At twenty-five he joined the Egyptian hermits in the desert of Scete and spent five years there. He then went to Jerusalem and established his solitary home in a cave by the Jordan. The dampness of the cave brought on such infirmities that he was compelled, after a few years, to retire to Jerusalem.

In A.D. 350 St. James of Nisibis withdrew, when quite young, to a cave in the desert. St. Julien Sabas (so named because of his wisdom and prudence) was an anchorite in Mesopotamia in the fourth century. After spending several years in a damp, gloomy cavern near the town of Edessa, he retired to another cave on Mount Sinai.

St. Euthymius lived from 473 onwards in the grottoes and rock cells of Palestine, among them being the famous cave of Adullam, a total of sixty-eight years of solitude.

St. Pachomius, another of the Thebaid hermits, himself described to Palladius how, to escape from the temptations that beset him, he made his way quite naked into a grotto where he knew a couple of hyenas had their den. As the animals were coming out in the evening to seek their prey they smelt the saint's body. He expected to be devoured at any moment, but the hyenas withdrew without doing him the slightest harm.

St. Saba, who was born in Cappadocia in 439, lived for a long time with a lion in a cell excavated in the rock. Later he lived as a hermit in one of the numerous caves in the Kedron valley before founding the monastery which bears his name. On the precipitious sides of the deep ravine of the Kedron many caves can be seen, some of them natural, some hewn out of the rock. The anchorites living in them could only go up or come down by the help of ropes or ladders. The monastery itself, perched on the brink of a precipice, can be reached only by ascending dizzy paths and

stairs. In memory of the lion which was their founder's friend, the monks still throw down bread to the bottom of the ravine for the jackals and other wild animals which come in the night to drink at the spring of Aïn mer Saba, carrying on in this way from one age to another a bond of brotherhood between human and wild nature.

St. Athanasius, the Patriarch of Alexandria and doctor of the Church, after being condemned to death by the emperor Julian, had to escape into the Thebaid and hide there in various caves.

I could not forgive myself if to this rapid and far from complete list of saintly persons, hermits for long or shorter periods of austerity, I did not add one of the most moving of all the notable figures in this epoch rich in examples of heroic renunciation of the world.

About the middle of the fifth century, a young, obscure monk shut himself up in a tiny grotto in the valley of Jehoshaphat, to fast and meditate in silence. This new arrival, known only by the name of Pelagius, was noted for the rigour of his acts of penitence and isolation from human contacts, despite the apparently precarious state of his health. He was rarely to be seen, he spoke to no one, and passed his whole life in prayer. After four years he was so utterly worn out that some of the monks went up to his grotto, but were only in time to witness the last moments of this young and too ascetic anchorite. But their astonishment and appreciation were unbounded when it was found that this pious hermit was a woman. They learned that the hermit was, in fact, a young dancer from the theatre in Antioch, celebrated for her beauty, who had been converted and, after changing her name from Margaret to Pelagius, had come to live and die in secret as a hermit in the humble cave which was her tomb. The relics of St. Pelagia were placed in an urn and remained in the grotto till the thirteenth century.

After their martyrdom in the arena of Anazarba in Cilicia during Diocletian's persecution, the bodies of St.

Tarachus, St. Probus, and St. Andronicus were secretly removed by three Christians, Mark, Felix, and Verus. Under cover of night they transported the bodies of the three martyrs to a grotto in the neighbouring mountains and there buried them. After which the three devout Christians resolved to pass the remainder of their days in this grotto in saintly meditation.

Another similar event which took place in the third century gave rise to a story and later to a legend which won universal acceptance, that of the Seven Sleepers. In the year 250, under the persecution of Decius, seven young men, Maximilian, Malchus, Martinian, Denis, John, Serapion, and Constantine, made a confession of faith before the proconsul of Ephesus. Having succeeded in escaping shortly after, they hid in a cavern, where they were discovered and immured in it alive. In the words of a formula made sacred by martyrologists, they 'fell asleep in the Lord.' This expression, having been taken literally, gave rise to the curious legend of the Seven Sleepers, who were not to waken till A.D. 479 in the reign of Theodosius. Actually their remains were discovered by chance in the cavern and transferred to Marseilles and the cavern itself became a famous place of pilgrimage. According to the legend, the seven sleepers, on waking up, came out of their cavern and tried to buy food. As the money they offered was unknown they were taken for forgers and, as a result, the miracle came to light.

St. Urban I, pope and martyr, succeeded Pope Calixtus. The prefect Almacus had search made for Urban and through his betrayal by a certain Carpasius discovered him in a grotto where he was hiding with three priests and had him thrown into prison. He refused to sacrifice to idols and was put to death under the Emperor Alexander.

In the great days of the Desert Fathers there were persons living this solitary life elsewhere than in the East. We have already seen that St. Mary Magdalene in Provence, St.

Privat in Auvergne, and St. Beatus in Switzerland lived as hermits in grottoes. But there were yet other anchorites who were cave-lovers and, moreover, in climatic conditions in which the hermit's life was even more meritorious in the matter of austerity than in the grottoes of Asia Minor and Egypt which were generally dry, healthy, and reasonably mild in temperature. Between the third and fifth centuries hermits were to be found in Europe and even in the northern parts of Europe.

St. Gatian, destined to be the founder of the Church of Tours and its first bishop, set off from Rome, entered Gaul, and established himself at Tours where he succeeded in making some converts among the heathen. But he was obliged to keep his apostolic mission secret, and for this reason decided to celebrate the divine mysteries in a grotto which is still shown at Marmoutiers.

St. Martin, a Roman soldier, went to serve in Gaul, the country he was later to evangelize. It was in Gaul occurred the well-known episode of the cloak which he cut in two to share with a beggar who was freezing to death at the gates of Amiens.[1]

St. Martin gave up his military career, became a disciple of St. Hilary, and later withdrew to a grotto near the one inhabited by St. Gatian, the first bishop of Touraine. Eighty of St. Martin's disciples followed him into seclusion and made private cells for themselves in other grottoes. From this settlement in caves arose the huge and famous abbey of Marmoutiers, where we can still see the grotto of St. Gatian, that of St. Martin, and those of the latter's disciples, in particular the grotto of St. Brice, who succeeded St. Martin as Bishop of Tours.

[1] It has often been asked why St. Martin divided his cloak with his sword instead of giving it to the beggar. The reason appears to be this: St. Martin was then a mere private soldier, and if he had given away his cloak he would have been guilty of misuse of military property. By sharing it the fault became less serious and, what was more important in this case, less obvious, for the cloak of the Roman cavalryman, cleverly rolled, might still pass muster when inspected by the adjutant.

Among the saints who made only a temporary stay in caves I must mention St. Felix of Nole. During a persecution in A.D. 256 this saint only escaped by fleeing through the woods and dashing into a cave. His pursuers, following hard after him, arrived almost on his heels at the entrance to the cave, but were put off from entering it by the fact that spiders' webs covered the whole opening. The pursuers passed on and looked elsewhere for the man who had just been snatched from a martyr's death by this miraculous intervention.

St. Patrick landed in Ireland in 432 and preached the gospel there. Through his preaching, Ireland, formerly the home of idolatry, soon earned the appellation of the Isle of Saints. Patricius or Patrick often withdrew to pray in a deep cavern on an island of Loch Neagh in the province of Ulster. For long this grotto was a celebrated place of pilgrimage and many were the legends that became connected with it. By entering it and spending the night there in prayer and fasting, after being duly prepared for it by the sacraments, the faithful were assured of passing through Purgatory and all their sins were forgiven them.

St. Patrick's cave is also known as the Purgatory of St. Patrick, on account of the paintings representing the pains of purgatory and of hell which adorn the walls.

St. Patrick was a Frenchman who brought fame to an Irish grotto in the fifth century, while St. Colomba, an Irish monk, lived and died in the sixth century in an Italian cave. It is recorded in his life that one day he had to dislodge a bear which had taken up its quarters in the grotto he used as a hermitage.

At this same time two other famous saints, also in Italy, had adventures underground: the founder of a great order, St. Benedict, and a great pope, St. Gregory the Great.

Born at Nursia and twin brother of St. Scholastica, St. Benedict left his family at the age of fourteen and spent some time in a monastery at Afile and later made his way to Subiaco, where he chose a dwelling in a grotto in the wild

gorge of the Arno. This grotto was a hollow in a steep wall of rock and difficult of access. Another recluse, a monk named Romanus, brought him food in a basket tied on to a rope with a small bell attached to it. For three years St. Benedict lived thus on the scraps left by another hermit! Some shepherds walking over this lonely country looking for sheep that had strayed, saw him one day and at first took him for a wild beast, for he was covered with hair and dressed in skins. Gradually his retreat became known and people came to visit him and consult him. His virtues attracted disciples, and before long their number became so great that several monasteries had to be built in the neighbourhood. Later on he founded a new colony at Monte Cassino and laid the foundations of the celebrated Order of the Benedictines. His famous *Rule*, which has given its definite, universally accepted form to the monastic organization in the West, is more precise, more methodical, than the established orders in the East and is more appropriate, better adapted to the climate, the needs, and the aptitudes of the people of Europe.

St. Gregory, Gregory the Great, whose name is associated with plainsong, the Gregorian ritual, and other institutions, accepted only with great reluctance the honours bestowed upon him and which eventually led him to the papal throne. A doctor of the Church, then Bishop of Syracuse, he was actually elected pope in 590, and it was at this election there occurred the unprecedented event related below. Having been elected despite his opposition, St. Gregory had himself carried off in a large wicker basket by some tradesmen whom he had paid to do it and who succeeded in getting him out of Rome with their animals and merchandise. By disguising himself he managed to slip away alone and conceal himself in a cave in the depths of the woods. The Romans, inconsolable at their loss, searched everywhere for him, and finally discovered him and brought him back by force to Rome, where his consecration took place.

It was not to avoid the bestowal of honours, but to escape

from human justice that in A.D. 860 a man wrung by remorse took refuge in a grotto of Montserrat, near Barcelona. St. John Garinus expiated there in the severest penitential austerities a crime committed against Riquilda, daughter of Count Wilfrid the Hairy. The grotto of this saintly hermit, situated not far from the celebrated monastery of Montserrat, is visited to this day by numerous pilgrims; a black cross on the surface of the rock indicates the entrance, which is by no means obvious and is on the brink of a precipice.

At the beginning of the eighth century, St. Giles, belonging to a noble Athenian family, was shipwrecked in the Mediterranean and cast on an island where he took refuge in a grotto inhabited by a hermit. Later he landed at Marseilles, lived for some years at Arles, then went out into the countryside and made his home in a grotto by the banks of the Gardon with the venerable hermit Veredemus. After living with him for two years, finding the numbers of visitors a great annoyance, he plunged into the forest and found a suitable haunt in another cave (La Beaume de St. Gilles which is still greatly revered). There he lived in the company of a hind which provided him with milk. One day the king's sons tracked this hind which took refuge in the grotto. Neither the huntsmen nor the dogs were able to get near it. Next day the king, the bishop, and a great crowd returned to the spot; they cleared a way to the grotto and were astounded to discover in it a hermit with the hind at his feet.

St. Giles had been wounded by an arrow from one of the huntsmen, but he made light of it and refused the king's presents, his only request being that the money might be used to found a monastery which became the monastery of Saint-Gilles-du-Gard, between Arles and Lunel, on the Petit Rhone. The hind has become the emblem of the saint and figures on the town's coat of arms.

St. Odilia, who lived at this time in Alsace, was not a hermit; she spent but a few moments in a minute grotto, certainly the smallest in all sacred writings. Affianced against her will, for she had made a vow of chastity, Odilia

fled from the castle of Adalric, Duke of Alsace, her adoptive father. Changing her princess's clothes for a beggar woman's rags, she made her way to the Rhine and got taken over in a boat to the Swiss side. But Adalric followed her with a troop, crossed the river and was about to recapture her. Odilia was terrified at seeing the approach of her pursuers. Leaning against the rock along a ledge of which the path ran, she prayed to God. The miracle happened: the rock opened. Odilia hid in it and Adalric passed by without discovering her. From this opening in the rock there issued a cascade which still exists and every year numerous pilgrims flock to it.

St. Bruno, the founder of the Carthusian Order, who lived in the eleventh century, had a vocation for a hermit's life, but his wish was persistently opposed. Only after considerable resistance did he obey the orders of various bishops and of Pope Urban II summoning him to their presence in difficult situations. He was, however, able to partly satisfy his hermit's instincts by withdrawing to the fearsome solitudes of the future Grande Chartreuse, to which he came with half a dozen companions in 1080. In later years, when he was leading a hermit's life in the desert of Squillace in Calabria, he was found one day at prayer by Roger I, Count of Sicily, who was out hunting. The count got off his horse, gazed for a long time at the hermit, admiring the fervour of his devotions, then went up to him and was charmed by the kindly spirit and the interest of his conversation. Shortly after the count made him a gift of large estates on which St. Bruno built the Chartreuse della Torra.

It will be seen from the above account that there were few women who adopted the hermit's life and it is easy to understand the reasons. Nevertheless, it is right to add to the names of Mary Magdalene and St. Pelagia, already mentioned, that of St. Rosalia who, in my humble opinion, was perhaps the most transcendent and most heroic devotee of solitary life in caves in all the sacred writings.

This virgin, born at Palermo in the twelfth century, was

the daughter of a Seigneur de Roses, a descendant of Charlemagne's family. From her earliest years she had a contempt for the vanities of this world. At fourteen she left her father's palace, taking with her nothing but a crucifix and her disciplinary implements. She established herself in a grotto in the Quisquina hills close to the snows which cover their slopes for several months of the year. She spent several years there and then went on to Monte Pellegrino where she adopted a still colder grotto. The roof was so low it was impossible to stand up, and the whole cave was full of mud. For eighteen years she lived there in incredible hardship, sustaining herself on roots, herbs, and acorns. In this earthly hell she led an angelic existence and died from her self-imposed privations in the prime of life. St. Rosalia's two grottoes have been converted into sanctuaries and are very popular objects of pilgrimage.

With the thirteenth century appeared on the scene the most subterranean-minded of hermits, certainly the most ardent seeker and frequenter of caves, François de Bernardone or St. Francis of Assisi, the founder of the Franciscans, of the Mendicant Orders, and of the Third Order.

It would need a special chapter to enumerate and describe the many hermitages of this saint, an exceptional saint from every point of view. As St. Antoninus of Florence wrote: 'At one time he was hiding in lonely grottoes, and at another he was continuing his pious work of rebuilding churches.'

From the grotto in the neighbourhood of Assisi, where as a young man he came constantly to pray, to the grotto of Alverno where he received the stigmata, it is hard to keep count of the *erimi* and *retiri* of St. Francis. The grottoes and rocks of Greccio, of Poggio Bustone, of Carceri, of St. Urban near Narni, Fonte Colombo near Rieti, Mont-Casal near Borgo San Sepulcro, the cavern of Celle near Cartone, les Côtes near Nottiano, Sarteano near Chiusi; all of them caves in which he spent days and nights upon his knees in solitude and silence.

Beside the evangelist and the missionary, there was in St.

Francis a hermit, and in every country to which he journeyed he looked for and visited the secret oratories that caves afford.

A disciple and contemporary of St. Francis, from whom he received his mission to preach, known as St. Antony of Padua though he was born in Lisbon, imitated his saintly master, and travelled through France and Italy, drawing great crowds round him everywhere eager to hear his eloquent and constraining words. He was a teacher of theology in several large towns, Bologna, Padua, Montpellier, and Toulouse. He died prematurely at the age of thirty-five.

But he was an imitator of St. Francis also in his evident attraction to caves and hermitages. At the rustic convent of Monte Paolo in Italy, where he passed his novitiate, he was not satisfied with the isolated nature of the place and, as often as he could, went off to a secret grotto where, in prayer, in tears and penitence, he spent every hour which he was not obliged to devote to the service of the community. Later, in 1225, after preaching at Brive, he retired to one of the many grottoes in the neighbourhood and there took up again with joy the life he had led at Monte Paolo. The Grey Friars built a convent there which took in St. Antony's grotto.

Another saint of the school of St. Francis of Assisi was the Blessed John of Parma, who lived in a grotto of the convent of Greccio, too small to allow a man to stand up in it and in which the hermit had to sleep sitting, for want of room to lie down at full length. It was here that the general of the Franciscan Order remained for thirty-five years in prayer and acts of penance.

St. Philip Beniti, a native of Florence and a contemporary of John of Parma, at the age of twenty, entered the order of the Servites as a lay brother, having succeeded in concealing his noble birth and his doctorate. He worked in the fields and dedicated to God his long days of toil. In the evening he retired to a grotto behind the church and gave himself up to ecstatic meditations.

At the same period too, and also in Italy, St. Peter Celestine while still a youth withdrew to a cave for three years. He was discovered and fled from the disturbers of his peace on to Monte di Magella, near Sulmone, and there remained for a long time hidden in a great cave. This period of hermit life over, this one-time recluse earned such distinction in the ecclesiastical world that he was elected pope in 1292 as Celestine V.

Sacred writings provide one example at least of a saint who did not achieve sanctification in caves; far from it. I refer to the case of St. Giles Vailladoros, a Portuguese canon in the thirteenth century, who renounced his faith, unfrocked himself, and had himself instructed for seven years in a grotto near Toledo in the secret and accursed science of magic. After notorious and ill-fated adventures he was reconverted and died a saintly death in 1257.

The fourteenth century will only demand our attention for the brief attempt of which St. Catherine of Siena was the heroine. She was still under seven years of age when one day she was seized with the desire to live like the Desert Fathers whose history had been told her: so taking a loaf of bread with her she walked out of the town. Having gone some distance out and seeing no more houses near, she was satisfied she had reached the desert. Going on a little further, she was delighted at finding a grotto and entered it. She began to pray there and fell into a sort of trance, in which she learned that God did not wish her to persevere in her plans for such a life.

In contrast to this fleeting inclination for a hermit's life on the part of St. Catherine of Siena, her Italian compatriot St. Frances, the foundress of the Oblates, led a life of isolation in rather remarkable conditions. For it was in Rome, in a grotto excavated at the bottom of her garden, that she had her refuge from the world, passing days and nights in it in intimate communion with God.

About the same time and once more in Italy St. Francis of Paula, a native of Calabria, began the life of a recluse in a

grotto by the sea at the age of fifteen. By the time he was twenty, his fame having attracted disciples, he founded the Order of the Minims and built a church and a monastery.

Like Catherine of Siena, but a century after her, about 1480, St. Angela di Merici believed she had a vocation for the hermit's life. This virgin, who founded the Ursulines, was born at Desenzano at the foot of Lake Garda and became an orphan early in life. She and her sister were adopted by an uncle, and in their religious fervour had the idea of hiding in a grotto not many miles from the town. They were soon discovered there. They must then have been ten or eleven years old.

St. Ignatius Loyola, so called to distinguish him from a dozen other Ignatiuses, his predecessors, made war with Ferdinand the Catholic, was wounded at the siege of Pampeluna somewhere about 1530, became a convert during his convalescence, put on the pilgrim's dress and went off, first to Montserrat, then to Manresa, where he came upon a grotto. His instinctive horror for places underground gave fresh inspiration to his penitential spirit. He therefore retired to this cave which became the Cueva de San Ignacio. He lived in it, flogging himself with a chain four or five times a day. In this cave he also wrote his famous *Spiritual Exercises* and made the first plans for his Society of Jesus which he was to found a few years later.

Contemporaneous with him, a Negro, the son of a slave living in Sicily, went to live as a hermit in a grotto, enduring great privations there for some years. He is known as St. Benedict the Moor.

The seventeenth century produced a woman hermit in France, who for a long time remained a mystery under the misleading name of The Solitary of the Rocks; she has subsequently been identified with Jeanne-Marguerite de Montmorency. At seventeen this maiden left the royal court and worldly things and retired to a lonely, wooded spot in the mountains believed to have been in the Eastern Pyrenees. From a study of her correspondence with her

spiritual director, Father Luc de Bray, it would appear that she had adopted three small grottoes and dedicated them to the Holy Trinity. In these she spent her life in fasting and penitential austerities and sufferings comparable to those endured by St. Rosalia in her cave on Monte Pellegrino.

Modern times are not exactly favourable to the hermit's life, and besides this the Church does not look with favour on hermits save in exceptional cases, in view of the serious moral dangers incurred by these descendants of the heroic ages.

There are still hermits in the world, but their numbers are insignificant compared to those of the great periods of history which have been distinguished by so many heroic virtues. We shall therefore notice only one saint of the nineteenth century who has made a cave into a shrine, and she not a hermit. I have already mentioned her—St. Bernadette, to whom the Virgin appeared eighteen times in the grotto of Massabielle.

Finally, in our twentieth century, let me mention the hermit of Hoggard, Father de Foucauld, who would have loved to live in a grotto if he had found one at Tamanrasset, but who compensated for its absence in the grotto of the Holy Family during the time he spent at Bethlehem as a humble servant of the Clarisses. He loved to go and pray and meditate in this grotto, reminding himself that it was here that God was made flesh, that it was this place which the voices of Jesus, of Mary, and Joseph filled for thirty years; his eyes dwelt lovingly on those rocky walls and touched them with his hands.

Caves do undoubtedly suggest melancholy thoughts, but they are also favourable to peaceful contemplation, to meditation that exalts the spirit. For proof of that, we have only to turn to the legion of sages, philosophers, hermits, and saints, to the men, in fact, who count among those who have attained the furthest heights in the human scale, who have sought and found happiness and peace of mind in the torments and physical hardships of a hermit's life, in the depths

of caverns where men can still find solitude and meditate in darkness, in the stern silence of the rocks; the solitude which, as the poet says, 'concentre et fortifie les facultés de l'âme.'

It is of men like these that the author of the Epistle to the Hebrews wrote the words that shall provide my epilogue: 'They went about in sheepskins, in goatskins; being destitute, afflicted, evil entreated, wandering in deserts and mountains and caves and the holes of the earth, of whom the world was not worthy.'

III

THUNDERSTORMS AND CAVES

To probe the mystery buried in the depths, we have at times to direct our gaze upwards to the heights; the fires that still burn at the centre of the earth manifest themselves only at the summits of volcanoes.

BERGSON, *Energie Spirituelle.*

Does some connection really exist between thunderstorms and caves? Is there any possible relation between the former and the underground world? *A priori* it seems hard to imagine such a thing, and current opinion about lightning is too firmly anchored to the belief that it tends to strike high places for any easy acceptance of the claim that it is not less attracted by depressions in the ground, by grottoes, and the openings of pot-holes.

I shall not attempt to assert my belief in this claim and defend it till I have examined, if only cursorily, the extremely interesting and ill understood mechanism which regulates the distribution of the points at which lightning strikes.

Joseph Bouget is a naturalist in the fullest meaning of the word, a modest expert with a genius for observing. In addition to other subjects of observation and study, he has made a list of all the points struck by lightning of which he could obtain definite knowledge since the year 1900 in the district of Bagnères-de-Bigorre in the department of Hautes-Pyrénées.

The first inference to be drawn from this original set of statistics, one which at once strikes the eye and destroys our belief in the long-held views on the subject, is that in this very mountainous region it is not the summits which are most frequently struck by lightning.

These statistics, which at first sight seem to deviate greatly from the normal, point to no natural law, but rather to pure chance and to provide no particular indication

beyond that of instances of repetition, where lightning has struck the same spot for several years consecutively.

Joseph Bouget did, however, draw from his collected observations certain revealing indications; he found, for example, that certain rocks, the granites and schists among others, are struck oftener than others, limestone apparently enjoying the greatest immunity. By extending his field of observation to the vegetable kingdom our expert had no difficulty in ascertaining that in like manner different species of trees are not struck with the same frequency. The oak is struck oftener than other trees, then come chestnuts, and a long way after, in their order, resinous trees, birches, cherry-trees, and beeches.

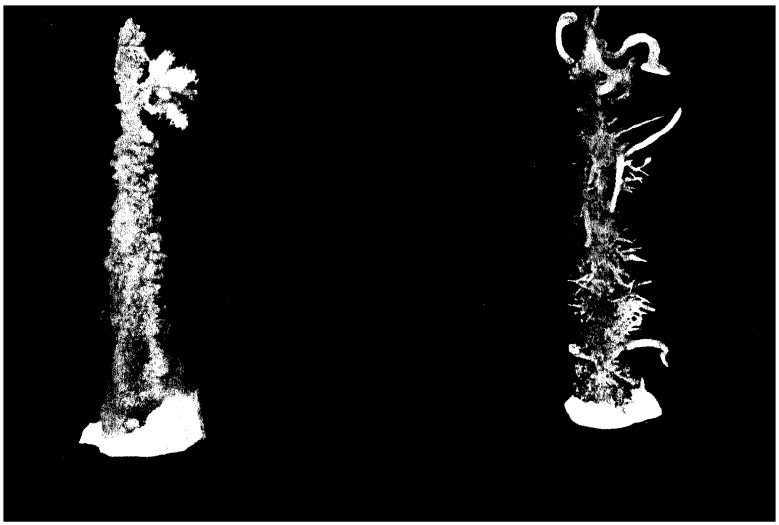
In many cases lightning shatters and destroys the tree, but still more often the electric discharge makes a long furrow along the main branches and the trunk. This furrow diminishes in time, but the scar remains visible throughout the lifetime of the tree; foresters are quite familiar with these very characteristic stigmata. Even more than the cases notified of trees actually being struck, these old wounds on trees formerly struck enabled Joseph Bouget to make very numerous observations on this subject which he has now been studying for over forty years.

The district of Bagnères-de-Bigorre, being very hilly and also very well wooded, M. Bouget was able to draw the following conclusions: lightning strikes trees of all shapes and sizes indiscriminately, whether they stand alone or on the edge of a wood or in the heart of a forest, whether they are on the tops, the ridges, or the slopes or in the valley bottoms. But what he found most puzzling was the evidence that there were certain zones of varying extent (from a few perches to two or three acres and more) inside which there were numerous trees showing marks of having been struck. These lightning-struck zones are hardly ever situated on a hill-top or a ridge, but, on the contrary, are generally in low ground or ravines, in the neighbourhood of springs or damp sites.

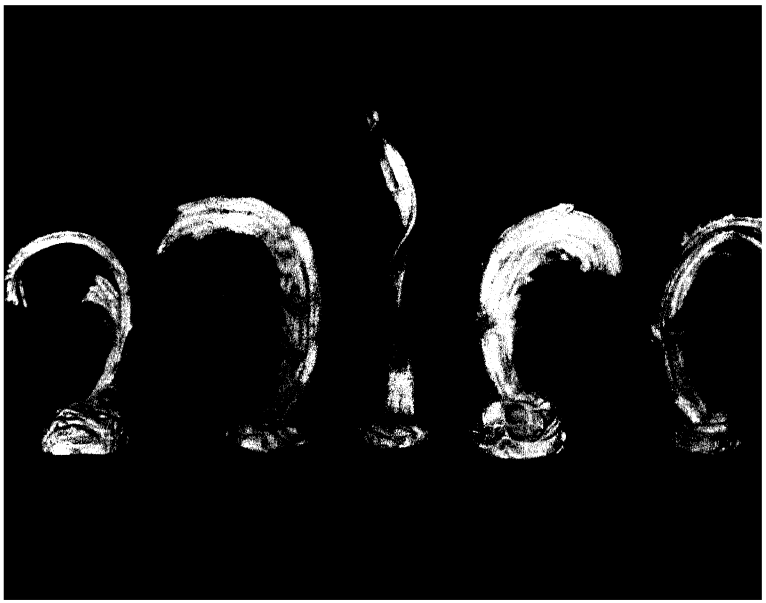
In no way put off by these results of observation, our patient investigator also visited the summits of the peaks which rise above the upper limits of the forests, and up there he found that certain mountain tops show no traces of being struck and that they never have been struck within the memory of man. The rocks of other mountains, however, in particular those of the Pic du Midi, showed frequent characteristic signs of having been struck: pits and furrows and shattering of the rock and fulgurites (vitrified rock). And here, a most important indication, the naturalist noted that the summits which escaped are of the limestone type, whereas the summits of granitic, schistose, or silicious rocks are frequently struck. The obvious conclusion must be drawn: the distribution of points where lightning strikes is determined primarily by the nature of the rocks. Those rocks which are the best conductors of electricity, that is to say, those most subject to electrostatic influence, are the ones that attract the lightning and are struck; the conformation of the ground plays only a secondary part, if any at all. In the forests the zones of trees most often struck are indications of a soil or rocky subsoil that attracts lightning.

Subsequent investigations, more and more carefully studied, enable us to regard it as an established fact that lightning tends to strike not only certain kinds of rock but further that it is attracted to the lines of contact of two sites which are geologically different. A certain shepherd's hut situated on one of these lines of contact of rocks of different constitution, having been struck and completely destroyed four times, afforded Joseph Bouget confirmation of his theory of this preference of lightning for striking at geological lines of contact.

The naturalist of Bagnères had reached this point in his investigations when in 1927 he secured the co-operation of the head of the observatory of the Pic du Midi, the physicist Camille Dauzère. The latter proceeded at once to develop and complete the valuable earlier observations of the self-taught expert and direct them towards a new hypothesis,



STALACTITES FROM ESPARROS



CROSIERS AND PLUMES OF GYPSUM
FROM LA CIGALÈRE

which saw in the degree of ionization of the air the reason why the lightning was attracted to a particular spot observed to be frequently struck.

There do, it appears, exist at the surface of the ground places where ionization is intense. When a storm is raging the ascending movement of the air (the movement which gives rise to the cumulo-nimbus we associate with storms) carries upwards ions which are continually present near the ground. In this way there is formed, vertically above the spot under consideration, an ascending column of ions which plays the part of a huge lightning-conductor, attracting and leading the lightning down to the ground.

That seems to leave us very far from any connection that might exist between lightning and caves; actually it brings us nearer to it and ready to arrive at a conclusion about it.

The ions which exist and are being continually added to in the atmosphere near the ground are produced by the radio-activity of the rocks. Now different kinds of rock are radio-active in varying degrees, and a representation of these radio-activities confirms with surprising accuracy the likelihood of rocks being struck: granite is the most, limestone the least, radio-active kind of rock; which accords exactly with the early experimental observations of Joseph Bouget, who had, as we saw, noted long before that granitic sites are the most frequently struck and had confirmed the almost complete immunity in this respect enjoyed by calcareous localities.

It was a confirmation and explanation of the extent to which the geological constituents of the ground influenced the greater or less frequency of attack by lightning. It afforded a similar explanation of the tendency for lightning to strike at lines of contact of different subsoils. These lines do, in fact, afford an easy escape for surface and underground waters which dissolve radio-active matter, which therefore tends to accumulate along them. Light is thus thrown on the influence of underground waters in attracting

lightning (an influence that had actually been previously noted but not explained by many observers). And this brings us to the heart of the problem of the connection between caves and what are so often called thunderbolts.

Some well-known experiments carried out by Elster and Geitel about the year 1900 showed that the air at the surface and in caves is radio-active. Subsequently Brunhes and David confirmed and explained the phenomenon of radio-activity in subterranean waters and the intense ionization of the air of caves.

Caves having been originally hollowed out by subterranean streams, the latter have deposited on the walls various radio-active matter extracted from the rocks. To these deposits must therefore be attributed this intense ionization of caves. And in consequence the currents of air circulating through great caves and pot-holes convey to the surface above air which is strongly ionized by contact with the deeply buried rocks of the earth's crust.

In summer, which is the season of storms, the difference of temperature between the warm air above the surface and the cool air of caves produces an outward-pouring stream of air. Caves breathe out at this season of the year (whilst in winter they draw in air); this air-stream issuing from the bowels of the earth is quickly warmed by the outside temperature and rises in an invisible column. When the next storm comes, this uprising column of intensely ionized air will capture the electric discharge and cause it to strike down at the entrance of the cave or the mouth of the pot-hole, unless it happens that the electric fluid rises directly skywards from the cave, for it must not be forgotten that ascending flashes occur. MM. Dauzère and Bouget have taken many measurements of the degree of ionization of the air of caves, and these figures have shown with convincing consistency the intensity of ionization in these caves.

We cannot now doubt that in the confined atmosphere of hollows underground there is an accumulation of ions resulting from the radio-activity of the rocks below. When

the Simplon tunnel was being bored a gneiss was encountered containing a strong element of radium, the breaking up of which caused a marked rise of temperature to as much as 130° F., a rise so great that vigorous means of cooling the air had to be employed to enable work to be carried on.

As there is some danger of all these conclusions being regarded as purely theoretical, mere hypotheses and points of view, let us pass to more tangible facts furnished by trees struck by lightning, the evidences of which are visible and indisputable. Having been invited to co-operate in the researches and investigations of my teacher and friend Camille Dauzère, I was able to confirm that trees situated in the neighbourhood of natural chasms in the earth, above entrances to caves, and near the points of emergence of underground springs are frequently struck by lightning.

At the pot-hole of le Tindoul de la Vayssière (Aveyron) which opens on le Causse and has a stream flowing at the bottom of it, the few oaks in the small wood surrounding the opening have nearly all been struck up to a distance of thirty to forty yards from the edge of the chasm.

At the grotto of the Fairies on Mont Olivet near Bagnères-de-Bigorre the chestnut-trees round the entrance almost all bear clear marks of having been struck.

At the Plan de Pouts, near Générest (Hautes-Pyrénées), the great oaks growing above several of the points of resurgence of an underground river show the stigmata and furrows made by lightning. At the grotto of Labastide (Hautes-Pyrénées) the villagers have for long noticed the attraction of lightning for this cave, and I have myself picked up under the great arch of the entrance a splendid fulgurite as big as my fist and completely vitrified.

The reader may have noticed earlier in this book the curious accident suffered by one of the explorers of the Henne-Morte, who was struck (without serious hurt) 200 feet down during a thunderstorm.

Martel, the apostle of spelaeology, the discoverer of the pot-hole and underground river of Padirac, whose opinion I

asked about the influence of lightning on caves, told me that during the violent thunderstorms of summer the Padirac pot-hole attracts it. He himself confirmed this on several occasions. As for the men who look after the pot-hole, they frequently observe evidences of the same thing: incandescence of the wire of the lightning-conductor, burning of the transformers, melting of the lead and gutta-percha of the cables, sparks and ball-like flashes coming down the chasm accompanied by the noise of thunder, which is re-echoed and amplified to an alarming extent by the sonorous nature of this natural shaft.

After evidence like this, the law appears to me to be definitely established, and an account of my own personal experiences would be only a monotonous list of additional confirmatory observations; I shall confine myself to a few complementary remarks on certain points. Here is one: if it is a fact that limestone is the rock which enjoys the greatest immunity from being struck by lightning, it is clear that this is true of compact and not of fissured limestone, for we have just remarked that when the limestone rocks are hollowed into caves they are dangerous and frequently struck, caves being found only in calcareous rock.

Another point to note: certain hollows, though large and very deep, and consequently associated with underground radio-activity and containing strongly ionized air, nevertheless do not attract lightning. The explanation is to be found in the fact that from some special whim of Nature's ways these caves or pot-holes expel air in winter and draw it in in summer, thus nullifying the influence of ionization on lightning in the hot season, the season of storms. Such hollows in the earth cannot therefore attract the electric fluid and there is little danger of lightning near them.

That was not the case with the underground hollow (whether natural or artificial we do not know) in which St. Augustine as a child with an unwholesome dread of thunder used to take refuge during storms. One day lightning struck his hiding-place and so upset the child that, if it did

not cure him of his fears, he learned on this occasion that places underground are no sure refuge from the fires of heaven.

Another point to notice; not like the above indicating exceptions to the general law. The enormous and exceptional ionization associated with volcanic eruptions, which are accompanied by a violent projection upwards of intensely ionized materials and air, is undoubtedly the cause of the many lightning flashes exchanged between the clouds and the crater during the eruptions.

And finally, let me end with a word in retrospect which will, after all, prove to be an anticipation; for I want to refer to the thunderbolts of Jupiter forged by Vulcan and his Cyclops in their workshop underground; those famous brazen thunderbolts which Mercury when a child tried to steal from the king of the gods out of the cave in which they were stored, but which he failed to carry off because they were too heavy.

Had the ancients, who were on occasions penetrating and subtle observers, noticed the attraction of lightning for caves and purposely imagined and disguised under a myth the subterranean origin of thunderbolts? If so, they seem to have anticipated by some thousands of years the entirely novel and surprising view about the influence on storm clouds of the deep radiations from the bowels of the earth conveyed by way of caves.

IV

A SURVIVAL FROM PREHISTORIC TIMES

The Primitive Calls of Mountain Peoples

Let us lose nothing of the Past, for it is only with the past we fashion the future.

Anatole France.

'This century was two years old' as the poet said—albeit he was speaking of the century to follow—when a notable event in my life took place: my first visit to a cave. I am right in calling it a visit, not an exploration, for, precocious as my taste for caves may have been, I would not suggest that my campaigns underground go back as far as my fifth year! But it is an undeniable fact that my future vocation of spelaeologist became a probability when I entered the rather humble cavern of Bacuran (in Haute-Garonne) with my parents, and my eyes eagerly took in its wonders. It was in this cave in the gorges of the Save in the Comminges country that the revelation fell on me like a thunderbolt; it was there that my love for the underground world sprang into being. I will not say the hold it took of me was dominating or immediate, but it arose from the vision that was then impressed on my mind at an age when the mind is most sensitive to vivid impressions. A single fact should be sufficient proof that this early initiation into the world below the surface was definite and decisive; namely, that in the thick impenetrable fog which has closed round what I recall of my fifth year, the memory of that wonderful day stands out clearly, ineffaceably impressed upon my mind.

Of that visit to the cave I shall say little, for this modest cave of Bacuran can show only one chamber and contains no stalactites. The one thing that brightened up our time there was the behaviour of one of my aunts, who drew back

with cries of horror at the prospect of descending the muddy slope at the entrance and ended by performing the descent seated on the slippery clay to the sad detriment of her white petticoat! This comic diversion did not, however, succeed in destroying the deep impression made on me or the rapture with which I gazed at the light effects when torches of straw cast a reddish glow on the twisted rock and on the vague receding vision of the mysterious vault above.

Why, you may well ask, do I introduce these childish memories? What have they to do with the subject of this chapter?

There was, perhaps, no need to go back so far or to go into such detail in treating my subject, but I am just about to reach it, and my only excuse must be that this question of primitive calls is closely connected with this first memorable visit of mine to a cave.

As we emerged from the entrance, our family party started along the lonely path through the gorge of the Save, whose stern, solemn scenery also made a great impression on me. On our coming to the end of our walk, at a corner where we came in sight of further visions of the wooded defile winding between great rocky walls, someone observed that the place was noted for the fine, prolonged echoes returned by these walls. Thereupon a competition was started, each of us having to shout his Christian name to awaken the famous echo. Those were still days when children did not speak at meals till dessert arrived and only spoke after the grown-ups: so the latter, one after another, shouted their name and the echo obediently repeated it several times. Finally, I, the Benjamin of the company, raised my shrill but feeble voice, which the echo was doubtless about to send back to me much attenuated, when a sort of miracle occurred.

To the general amazement, a clamorous shout, loud, prolonged, and wild, greeted my feeble cry, leaving me aghast. Twice more this awesome, mysterious cry rang out, striking a chill at my heart.

Every one burst into a loud laugh at the coincidence

except my startled self, and my father explained that the cries had been uttered by some shepherd looking after his sheep on the other side of the gorge and that the man must be a 'montagnol,' for it was the very distinctive cry of the shepherds of the Ariège. One of the party remarked facetiously that it might possibly be a cave man who had shouted; one of the men who had once haunted the prehistoric grottoes hollowed out of the rocky walls.

I have a dim remembrance of the journey home in the carriage when conversation turned on the prehistoric times when the gorges of the Save had been the haunts of men who hunted the reindeer and the bison. Tired out by the long day in the open air and lulled by the gentle trot of the horses I ended by falling asleep on my mother's knees. My dreamily receptive mind was never to lose the powerful impressions of that exceptional day, among them the vague but persistent conception that a cave man had answered, with a savage cry that came from the far distant past, my childish cry in the twentieth century.

Nearly half a century has elapsed since the above events occurred, and though I cannot put it as concisely and admirably as Alfred de Vigny, 'a great life is a youthful idea realized by riper age,' I can affirm in humbler style, but with unshakable conviction, that a vivid memory and the hold of an impression on a child's mind (the visit to the cave and the shepherd's cry) did, without any doubt, attract me and turn my attention towards the study of caves and prehistoric times.

As is the case with every specialist and every student of prehistoric things, I have a sort of professional bias, an almost irresistible tendency to be continually struck and puzzled by the possible connections between the physical and psychical reactions of modern man and those of prehistoric man. So many customs, beliefs, and reflexes come down to us straight from those earliest times of man's existence, we have inherited so much that has been bequeathed to us—often without our suspecting it—by our

remote ancestors of the Stone Age, that this introspective search into the past is found to be enthralling and often fruitful in results.

May I offer an example that will serve to end an overlong digression and bring us to grips with the problem of these primitive cries.

What are the natural reactions of schoolboys as they come out of the classroom and scatter in the playground? What does a young scout do on a scouting expedition when he finds himself in open country perched on some high point? What is the reaction of the townsman who has left his home in the city and finds himself on a mountain top or on a lonely shore or in the depths of a wood? In many cases they find a vent for the intoxicating effect of liberty and relaxation, for their satisfaction at finding themselves face to face with Nature by uttering cries, by calls that are more or less shrill and prolonged, generally discordant and unmusical, but which are, for that very reason, all the more interesting to note and analyse. I believe, in fact, and hope to convince you that spontaneous, instinctive cries have their origin in a very distant long-forgotten past.

Our archaeologists and anthropologists who, in the darkness and silence of prehistoric caves, search for traces of the remote ages of human existence, would do well to note and remember that, in contrast to the caves, a prehistoric message survives in the open air and in our own time, and is still being transmitted to us, a message to which the students of ethnology and folklore seem to have given too little heed, and from which they have not yet sufficiently profited: the primitive cry of mountain folk.

The wild call that is still to be heard in mountain solitudes, which comes to us as Pierre Loti says, 'du fond de l'abîme des âges,' offers one of the most fascinating problems of its kind, as striking a survival as the traces of prehistoric man still to be found buried underground or inscribed on the walls of caves.

This cry, which I am strongly inclined to consider

universal, occurs in all sorts of different localities. In France alone, my own incomplete information on the subject enables me to affirm that from Brittany to the Pyrenees, taking a line through la Vendée, the Central Massif, and the Alps, the primitive call exists and persists, a direct offspring of the Gallic *huchée* or call, handed down by the Celts, and before that by the Ligurians and Iberians, which takes us back to the threshold of the prehistoric era.

But let us first see what this cry is like now in the middle of the twentieth century.

While maintaining the kinship of a common origin, the call varies in different localities, just as does the name which is attached to it. Its name of *hihouhou* in Auvergne and *hifoufou* in Limousin (onomatopoeic names which give a good idea of the call) is none other than the *ohuc* of the Rouergue and many other regions (*ohuca*: *hucher*, call).

M. Gandilhon Gens-d'Armes, an archaeologist and poet, in his *Notes de Folklore* has insisted on the wide area of distribution and the very great antiquity of this call of the Auvergne and Rouergue region and has rightly noted its great similarity to the primitive calls preserved in various parts of France. He has reminded us that in his *Dictionnaire patois-français du département de l'Aveyron* the Abbé Vayssier has thus defined the *ohuc* or *ohucal*: '*Hué*, a prolonged call uttered by rough country-folk resembling the call of the screech-owl or the neighing of a horse!' And M. Gandilhon Gens-d'Armes adds: 'I believe the *hihouhou* produced in the throat is more like a horse's neigh than the rather plaintive call of the screech-owl. And would you not agree that the long, ardent call of the young rustic, especially that of the mountain folk, reminds you clearly of the guttural challenge of the war-horse with its tossing mane?' Any one who has heard the call of the mountain folk of the Pyrenees can be in no doubt that neighing is a far better description of it than the hoot of a night bird. Moreover, the different names given to the Pyrenean call have the same etymological source: *anilha* in the Catalan districts of the

Pyrenees, *hilhet*, *renhilhet*, or *arrenhilhet* in the central parts of the chain, are used for the neighing of a horse. The Basques near the coast use the name *irrintzina*, which in Euskara (Basque language) also means neighing, while the Basques of la Haute-Soule speak of *cinca*, a word also meaning the call or cry of the horse or simply the horse itself.

The Basque call is rather short compared to the long, startling *arrenhilhet* of the Ariège shepherds. The latter is a very prolonged shrill, piercing neighing, composed of sinister yappings and wild bursts of laughter, as it is well described by M. Jean Poueigh in his collection of *Chansons populaires des Pyrénées*.

If I may attempt a more detailed description, the *hilhet* of Ariège consists of a loud explosion tailing off into a cascade of trembling notes. Its distinctive character is due mainly to slight trembling prolonged in the throat on the syllable *hi*, following immediately on the first explosive shout. It is neither a tremolo nor a mere repetition of the same note, but a bit of both simultaneously. The name of the call comes from the sort of passionate neighing—*anilha*, to neigh—which you might say was uttered by some wild mare. Shorter and more snappy in la Haute-Soule, as I have already mentioned, longer and more variable in Ariège, the *hilhet* ought to be made 'full-throated,' in a shrill, strident, yelping utterance. It is a cry that carries to a very great distance; when heard in high, lonely places, especially at night, it is strangely startling and impressive.

In our day the primitive call is still to be heard in certain remote country districts, particularly in the mountainous parts of France. The young men in different villages challenge each other with it on holidays; it is also quite popular with conscripts, whose exuberance and carousals and occasional ragging are familiar enough. 'Joy, anger, a call for comradeship, a challenge to rivals, intoxication over wine or dancing—all those things still find expression among the mountains of the Central Massif in the strident *hihouhou*.'

Thus M. Gandilhon Gens-d'Armes. And Richepin writes: 'The peasant of Auvergne dances to the sound of his local instrument, and as he finishes, squatting on his heels, he utters the shrill, wild *hihou*, which is both the war-cry and the exultant cry of the descendants of Vercingetorix.' My list of instances must include the lonely shepherd who calls to dispel solitude, to awaken the echoes, and invite a response from some distant colleague with whom he may start a contest.

Certain groups of singers and dancers, who give folklorist performances in the local costumes, sometimes produce the call peculiar to the district. Whether it is because they are not very sure of it or because the atmosphere of solitude and wide-open spaces is lacking, or, what is more likely, because these young people are not real shepherds, their calls are less powerful, less prolonged, which is a pity.

It is a pity too that no one has ever carried out a comprehensive study of the wide area of distribution of this primitive call or of its significance and its remote origin.

I have not myself the material for such a world-wide investigation in time and space; I shall merely contribute my stone to the building in what follows.

The primitive or rustic call, comparable to neighing, is known, as we have noted above, in various parts of France, but it is also found in other countries. The Basque *irrintzina* is used in Spain from the province of Santander in the Cantabrian Pyrenees to Valencia. And what about the yodels of the French, Swiss, Italian, and Tyrolese Alps? Are not the shepherds and guides who yodel enthusiastically among the summits of the Alps giving utterance to calls which are analogous to the famous neighing of other regions? It will be no surprise to you to learn that an almost identical call is met with in Ireland, in Wales, and above all in Scotland, where it bears the name of slogan, a word which has gone through many changes and has moved a long way from its primitive significance, for it was once the war-cry of the ancient Scot, every clan having its particular call.

In 1934 I had the opportunity to ascertain that the *anhilet* of the Pyrenees is known and used by the Berbers of the Moroccan Atlas. Finding myself at the close of day in the Tazekka massif, where I was doing some spelaeological work, and having lost my way, it occurred to me to let out a *hilhet* to give my wife an idea of where I was, for I imagined she was in the neighbourhood with three Chleu porters. To my amazement the Ariège call, which is not a thing to improvise, being far too strange and complicated, was faithfully returned to me, though in even more guttural style, by a throat belonging to a native. I repeated the call, varying the final modulations, and I had an identical response. I went in the direction I believed would lead to my wife and saw a Berber shepherd whom I hailed for the third time; but when he recognized me for a European my challenger made off and refused to answer any more.

I remember having seen at Toulouse at the beginning of the century the troop of genuine Red Indians Colonel Cody, Buffalo Bill in person, was showing at that time all over Europe. These Red Indian warriors in the course of their battle scenes gave utterance to a war-cry which would have won acknowledgment from a Basque of la Haute-Soule. The fact should be set alongside an observation which the Correzian expert Bernard Marque mentions in his *Recherches sur nos Origines*. In 1917 some American troops were disembarking at Bordeaux, and these young soldiers were given an uproariously warm welcome. All at once certain definite groups of Irish origin among them stood up in the lorries that were taking them away and uttered resounding *hihouhous*! The Celts from overseas were saluting those over here in France as they might have done in similar circumstances 2,000 years ago.

I can add the further points that the *peones* and the *gauchos* of the Argentine pampas have a short sing-song *hihou*, while on the opposite side of the world the Sherpa porters of Tibet may be heard to give a yodel which an English climber has compared to the braying of an ass.

While doing their exercises on horseback the Cossacks utter resounding *hihouhous*, and likewise the Touaregs rush into battle yelling out harsh *hihous*. In a learned treatise on the mammoths of Siberia the Russian writer Pfizenmayer observes that the driver of his sleigh emitted sounds that suggested the howling of wolves, and then follow the words: 'You might think you were listening to an escaped lunatic, so strange was the effect of his laughter and his savage howling.'

That is, at present, about as far as my own inadequate information enables me to estimate the area of distribution. The extent of that area seems to me to be good evidence of the great antiquity of the primitive call. The Bible tells us that the Hebrews in battle uttered a cry resembling a horse's neigh.

The same call was heard in Gaul as the Roman legions approached a place and it conveyed warning when they moved away. The Gauls, and long before them the Celts, had their look out and assembly posts on high ground. It was there that the Gallic warriors had established the famous *huchées* or calls which so astonished Julius Caesar during his conquest of Gaul. He speaks of it in his *Commentaries* in his account of the revolt of the Carnutes which began with the murder of the Roman knight Fusius Cita whom the proconsul had appointed at Genobum (Orleans).

'The rumour of this event,' he tells us at the beginning of Book VII of his *Gallic War*, 'spread rapidly through every city, for, as soon as any event occurs important enough to be notified generally, the Gauls announce it through their calls in the country districts and along the roads; those who get the news then transmit it to their neighbours, as happened in this case, when what had occurred at sunrise at Genobum was known before the end of the first watch on the frontiers of the Arverni which are some 160 miles away.'

These outlook posts were maintained long after the Conquest. Fire-towers were set up later on the same sites and the memory of these signal fires has been preserved, either by

local tradition or by their names: Montigny (Mons ignis) and Champigny (Campus ignis) being the best known and least open to question.

Originally, as I have said, these *guettes* or observation posts on some dominating viewpoint, were occupied by observers, who, in case of a night alarm, would light a bonfire. At such a signal, fires were lighted, one after another, all round the horizon by watchers, and after the *huchée* or call which gave the preliminary warning of issue of news from the post, the message was transmitted either vocally or by a rudimentary code (for example, by occlusion of the fire with a cloak) and the enemy's movements were known in Lutetia (Paris) before he had even crossed the Loire or come through the Vosges.

In Champagne the eminences which overlook the great plain of the Champs Catalauniques, and which were used as observation posts by the Celts and later by the Gauls, and which, in course of time, were transformed into signal towers, are still called *houppes* from *huppa*, 'to call out.' In Brittany they are known by the name of *guel* from *guellet*, 'to see.'

Chateaubriand in an account which owes its inspiration to the *Germania* of Tacitus, describing in *Les Martyrs* the beginning of the battle of the Romans with the Franks, writes: 'The Franks hold their shields close to their sides and utter a roar like that of the sea dashed by the wind against a cliff. Then, all at once, uttering a shrill cry they begin to chant the *bardit*, a paean of praise to their heroes.' And further on he continues: 'A shout goes up from the ranks of the legions: "Long live the Emperor!" The Barbarians counter this shout with a frightful roar.'

I would give much to hear 'that roar like the noise of the sea,' that shrill cry just before the *bardit*, and that 'frightful roar' as the two armies prepare to rush at one another. 'And when night came to throw its mantle of darkness over the scene of all this human ferocity . . . the Barbarians would utter cries like the howlings of wild beasts. . . .'

Five centuries later similar cries and howlings were to accompany the avalanches of rocks the Vascons hurled down on Roland and his paladins in the defile of Roncevaux.

The Trojans, for their part, uttered their war-cry on perceiving the enemy, while the Greeks reserved theirs for the moment of attack. The Romans, before the columns moved forward, all uttered a shout (the battle cry). As for the Barbarians, as has just been told, their war-cry was such a fearsome thing that it was enough to cause a tremor in the very bravest of the Romans.

In our time, in modern armies, soldiers at the start of an assault and in the heat of battle utter shouts and hurrahs.

In the Middle Ages, however, the war-cry in common use in the ranks of chivalry had evolved and become somewhat civilized and regularized. Four distinct cries or calls were recognized: the rallying call which was almost always a chieftain's name; the shout of happy augury or successful issue which was uttered by a commander impelled thereto by a promise of divine help or a presentiment of victory (*Mont joie Saint-Denis*). The challenge shout was flung by a chief at his enemies and repeated by the soldiers as they dashed at their adversaries (*Passavant li meillor!*—the war-cry of the counts of Champagne). And, lastly, the watch-cry or general cry which is to-day the watchword or *mot d'ordre* and when shouted by the outposts was the equivalent of our present-day cry: 'To arms!'

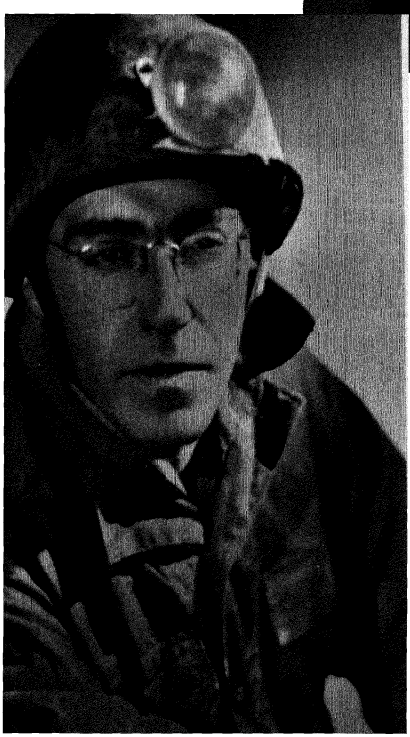
In heraldry, the war-cry, the call to arms, or merely the cry, is used of certain words which a nation, a town, or an illustrious house used to carry written on its banners, its coat of arms or crest, which warriors marching under its banner used to shout out as they moved into battle. (*Notre-Dame Bigorre!*)

Had not the Hebrews even in their day a call or cry, for the Bible tells us that the 300 warriors chosen in such a curious and careful way attacked and routed the Bedouin raiders, crying: 'For the glory of God and of Gideon'?

Absence of documentary evidence precludes any hope of

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the discovery by research into prehistoric times of what I have called the rustic or primitive call, but how can we refuse to believe that before the Gauls, the Ligurians and Celts, before the Hebrews, men had no other way of challenging each other, of hailing one another, or of communicating at a distance?

We cannot picture human life in prehistoric times without believing that the cave men must have had their outlook posts in front of their caves and on eminences. Assuredly they had, and were the first to have their calls of recognition and their rallying cries, their hunting calls and war-cries, to which presumably were added shrill whistles.

Many a time the steppes of which France then consisted must have resounded with the savage shouts of the beaters of the Magdalenian epoch, frightening the great herds of horses, bison, and reindeer and driving them back towards the hunters ambushed in some defile or towards the natural traps such as the rock of Solutré, to which the panic-stricken animals retreated and were forced to hurl themselves over its precipice. It is a method of hunting which still persists among many peoples and the expression *Chasser à cor et à cri* (Hunting with hue and cry or driving) is certainly derived from it.

How often these primitive Nimrods accompanied with yells their whoopings over the kill, the bloody ending, and the booty-laden return from the chase; how many times in the course of ages our human ancestors, standing at break of day on some lofty point, saluted with a shout of triumph the rising sun, while others braved the perils hidden in the depths of huge caverns and, advancing in the dim light of smoky torches, woke the echoes below with a chorus of terrifying yells intended to disturb and dislodge the huge and formidable bear that was the tenant of the cave.

The incitement to shout and sing in the resonant halls of caves had often struck me, and led me to speculate on what might have been the nature of the shouts and songs of prehistoric man in these places underground. Just as a child

or a man whistles or hums a tune at night to banish the sense of solitude or counteract the fear induced by loneliness or darkness, so the primitive troglodyte as he ventured into a cave must also have found relief in shouting. From long personal experience I have found that a man left alone on duty in a cave or on a rocky ledge in a great shaft cannot bear for long the oppressive silence and isolation without beginning to hum endless tunes or to utter calls at various intervals.

I will even go so far as to say that it has been in caves that I have heard for the first time the voice of certain friends of mine who had never sung or shouted in my presence in the open air.

Can we draw any conclusion from that? I dare not make such a claim, but who can say whether the impulse does not come from a vague and distant effect of nostalgia and a reminder of vanished times when humanity lived in caves?

The African pygmies who can communicate out of sight of each other and without speech, thanks to a language of whistles, are possibly a precious relict of these past ages. As for the mountain folk and shepherds with their primitive call, they are probably repeating, and have transmitted over hundreds and thousands of years, a message whose origin is lost in the impenetrable darkness of the past.

If this call is the special apanage of mountain shepherds it is because, as a philosopher puts it, 'the shepherd is the most conservative man to be found in the whole world.' It is to him we owe the transmission and survival, possibly in its original form, of this eerie, guttural call which our remote ancestors uttered in the forests of the Chellian epoch, in that troublous stage for the human race when man was still unable to make articulate sounds owing to his pointed tongue, when his narrow mouth with its low-roofed palate had as yet no language.

To repeat what Anatole France wrote: 'Let us lose nothing of the past, for it is only with the past we fashion the future.'

That precept justifies me in attaching some weight to this problem of the primitive call, which by its prodigious antiquity is certainly the most venerable and moving message ever transmitted by men. Let us not allow it to perish, this timeless *hihouhou* which 'reaches us from the furthest depths of the abyss of time' and links us to the remotest and hardiest roots of the human race.

INDEX

Accidents, 33–9, 44, 91
Adriatic Sea, 118
Aeneid, 123
Angela di Merici, St., 149
Anthony of Padua, St., 147
Arbas, 3, 4, 7, 23, 45–7, 50, 52, 84
Ariège, 3, 46, 70
Atlas mountains, 5, 29
Auriol, Lieutenant, 68

Bagnères-de-Bigorre, 86, 94, 152, 157
Bats, 105
Bats, ringing, 90
Baylac, M., 45, 48, 71, 75, 78
Beauvois, P., 94
Benedict, St., 142
Benedict, St., the Moor, 149
Bérard, Victor, 128
Berenice, 118
Bernadette, St., 108, 150
Bertarelli chasm, 72
Bethlehem, 102, 104, 108
Bigorre, Comte de, 109
Blanchetais, Mlle la, 48, 52
Bouget, Joseph, 152, 153, 154, 156
Bouiche, la, underground river, 25
Bouillon, Godefroy de, 109
Bruno, St., 145

Caille de Salies, Sergeant, 54
Camping underground, 58, 79
Carenini, Jean, 31, 34
Carton, Colonel, 91
Castéran, Jean, 24
Castéran, Pierre, 24, 25, 32–4
Casteret, Mme Norbert, 64, 70, 94
Casteret, Raoul, 19, 24, 25, 32–34, 88, 101
Cathala, Abbé, 48, 56, 57, 64
Catharine, St., of Siena, 148
Centaurs, 124
Centre National de la Recherche Scientifique, 45, 49
Chantiers de Jeunesse et Montagne, 24
Chartres Cathedral, 108
Chateaubriand, Vicomte de, 169
Chavigner, M., 51–3
Chevalier, Pierre, 19
Choquet, Mgr, 102
Clamagirand, Dr., 53, 59, 70, 75, 76, 77
Clément, M., 48, 78
Clottes, M., 94
Colour test for rivers, 46, 83
Compans, Pierre, 24
Constantine the Great, 108
Cosyns, Max, 18
Cyrenaica, 118

Danube, river, 127
Dauphiné, 19
Dauzère, Camille, 154–7
Delteil, Joseph, 25, 32–9, 43, 47, 50, 53–6, 80, 82

Delvigné, Louis, 26, 31
Depuy, Paul, 31
'Desert Fathers,' 136, 140
Deudon, M., 45, 46, 68, 70, 75
Dikta, Mount, 125
Dresco, M., 45, 46, 48, 53, 62, 63
Doumercq, M., 45
Ducos de la Hitte, Captain, 54, 56, 82

Engravings, prehistoric, 88
Ephesus, 130
Epirus, 118
Erosion by water, 21, 22
Ertaud, Jacky, 48, 55, 70, 71, 74, 75, 77–9, 80
Espagne, M., 14, 17
Esparros, pot-hole, 87, 91, 92, 96, 97, 102, 103, 108, 111, 113, 114
Esparros, village, 86, 90, 114
Explosives, 44

Felix of Nole, St., 142
Fossorier, M., 48
Foucauld, Father de, 150
Fouquet, Gaetan, 43
France, Anatole, 173
Francis of Assisi, St., 105, 146, 147
Francis of Paula, St., 148
French Alpine Club, 42, 49
French Resistance movement, 42
French Revolution, 102

Gaché, Raymond, 43, 44, 46, 48, 79
Gallic War, Caesar, 168
Garonne, river, 86
Gatian of Tours, St., 141
Gattet, Mlle Anna, 112, 114
Gattet, G., 87, 89, 91–5, 97–100, 110, 114
Générest, 157
Gens-d'Armes, Gandilhon, 164
Geological formations, 71
Gestapo, 42
Gethsemane, 102
Giles, St., 144
Giles Vailladoros, St., 148
Gregory the Great, St., 143
Guérin, Mme, 79
Guiers-Mort, cavern, 19

Hagiology, caverns in, 131–51
Heyle, pot-hole, 18, 29
Hogarth, D. G., 125
Homer, 128
Hydrophoria, 123

Ichac, Marcel, 48, 58, 59, 64, 75, 81
Ignatius Loyola, St., 149
Inscriptions, 94
Irrintzina, 163–73

Jerome, St., 133
Jerusalem, 107
John the Baptist, St., 132
John Chrysostom, St., 105, 137
John the Evangelist, St., 133
John of Parma, St., 147
Joly, Robert de, 3–5
Jonquière, M., 48, 78

Labaderque, 39, 47, 51
Labastide, grotto, 88, 89, 157
Labedan, Julien, 25
Lafargue, Father, 111, 113
Laguille, Lieutenant, 54, 56, 82
Lannemezan, 49
Lemnos, 127
L'Illustration, 88
Lissus, Mount, 129
Loti, Pierre, 163
Loubens, Marcel, 5–20, 24, 25, 32–44, 47, 53, 55–62, 66–70, 72, 74, 94
Loubet, M., 4
Lourdes, 102, 108
Lyons, 109

Maillard, Mlle Annie, 48, 52
Maille, François, 45, 48, 54, 56, 59
Maille, Jean-Paul, 45, 48, 54, 56, 59, 81
Maquis, 40
Marque, Bernard, 167
Martel, É.-A., 3–5, 18, 29, 84, 157
Martel, pot-hole, 18, 19, 23, 69
Martin, St., 141
Martin V, Pope, 135
Mary Magdalene, St., 134
Mass, celebrated underground, 64, 101
Maurel, Claude, 24, 25, 32–42
Mirville, J. de, 122
Moisson, 82
Mondin, M., 45
Montréjeau, 49, 86
Moussy, Marianne, 110
Mule, transport, 48
Mythology, caverns in, 117–30

Napoleon Bonaparte, 110
Nègre, M., 48, 55, 56, 82
Nymphs, 124

Odilia, St., 144
Oulad-Ayach, pot-hole, 29
Ovid, 128

Pachomius, St., 138
Paloumere massif, 46
Patrick, St., 142
Paul, St., 143
Paul, St., of Thebes, 136
Pelagia, St., 139
Pellegrin, Hubert, 14, 17, 19–21, 24, 25, 101
Pellegrin, Roger, 17, 31, 34, 39
Pêne-Blanque, pot-hole, 3, 7
Peregril, 128
Perrin, Henri, 24
Peter Celestine, St., 148
Peter-in-Gallicant, St., Church of, 133
Peteuil, M., 94
Philip Beniti, St., 147
Pic du Midi, 154
Pius VIII, Pope, 110
Pleyel, Salle, 40, 42
Pons, Marcel, 17
Pont-de-Gerbaut, pot-hole, 4, 5
Porphyry, St., 138
Poueigh, Jean, 165
Privat, St., 135
Puy-Montbrun, de, Lieutenant, 57
Pyrenees, 3, 5

Rations, 61, 76
Rhone, river, 110
Richepin, Jean, 166
Rieusset, M., 26, 32–4
Rivers in mythology, 118
Rocamadour, 102
Rosalia, St., 145, 146

Saba, St., 138
Saint-Gaudens, 39, 49, 80, 86
Saint-Martory, 49
Segouffin, Josette, 5–7
Seurey, M., 19, 20
'Seven Sleepers,' 140
Simon Stylites, St., 137
Simplon tunnel, 157
Snow underground, 8
Spéléo-Club de Paris, 3, 4, 43, 45–7, 49, 56, 62, 68, 78, 79
Spéléo-Club de Toulouse, 55
Stalactites, 8, 12, 95
Stalagmites, 98, 105
Storms, 91
Streams, underground, 15, 16, 45, 46
Susse, M., 45, 46, 48, 54

Temperature underground, 8, 10, 20, 32, 58
Theodosius the Cenobiarch, St., 137
Thomas, Ambroise, 15
Tiber, river, 129
Titans, 124
Toulouse, 80
Trombe, Félix, 45, 46, 48, 50, 53, 55, 58, 62, 63, 65, 75, 78
Trou du Glaz, pot-hole, 19

Vander Elst, 18
Vatican, 102
Vayssier, Abbé, 164, 166
Vigny, Alfred de, 162
Vigroux, Adjutant-chef, 54–6
Virgil, 118, 123
Volcanoes, in mythology, 119

Waterfalls, underground, 15, 16, 20, 21, 43–5, 53, 58, 61, 65, 66, 71, 75
Wieliczka, 102
Wireless telephony, underground, 68

Zacchaeus, 135