VINTAGE

THE DEPRAT AFFAIR

ROGER OSBORNE

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About the Book

Detective story, social history, human drama, *The Deprat Affair* recreates the hothouse atmosphere of colonial Indo-china in the early twentieth century. Among its cliques, its bitter rivalries, its nepotism and favours, how are we to disentangle the scientific, the moral and the legal ‘truths’ of the affair? Most of all, the story centres on one compelling individual – Jacques Deprat. En route to a golden future as one of France’s greatest geologists, he is suddenly accused of fraud and plunged into a desperate fight to save his reputation. Convicted of placing European fossils among samples collected in Indo-china, he is dismissed from his job, and expelled from the Société Géologique de France. Thrown out of the science to which he has given everything, he re-invents himself, changes his name, and begins not one, but two fascinating new lives – each as extraordinary and colourful as the one he left behind. And even in the manner of his premature death, Deprat proved his ability to shake the world. Eighty years on from his conviction, the truth of the Deprat affair is still in doubt – and is still passionately debated among French scientists. But innocent or guilty, Jacques Deprat is an astonishing figure, whose capacity to overcome the world’s disgrace and the dissolution of his dreams makes an amazing and captivating story.

About the Author

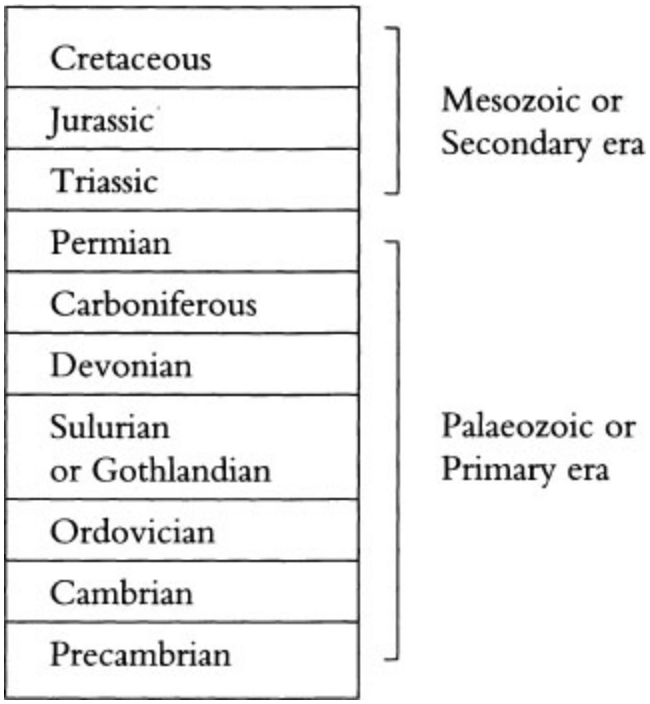
Roger Osborne trained as a geologist and then worked as a scientific publisher for sixteen years. He became a full-time writer in 1992. He is the author of *The Floating Egg: Episodes in the Making of Geology,* and co-author of *The Atlas of Earth History* and *The Atlas of Evolution*.

Illustrations

Maps

Photographs here and here

For Mary and Alfred



Geological periods of the Mesozoic and Palaeozoic eras, with the oldest at the bottom of the column.

The Deprat Affair

Ambition, Revenge and Deceit in French Indo-China

Roger Osborne

PIMLICO

Then there is the photograph. Three hundred or so men and women in their best suits and frocks, arranged in rows, in front of a university building on a bright Canadian summer morning. And until you know something of the story lying behind the photograph, it remains just that – row on row of anonymous faces perched above starched collars and beneath wide bonnets in a neatly composed period piece. Jacques Deprat is there, as is Honoré Lantenois, his boss, together with Pierre Termier and Alfred Lacroix. Nearly every leading geologist in the world is in the photograph, brought together to share their knowledge and increase their individual and collective understanding.

You will see thousands of similar photographs framed and hung on walls of scientific institutions, reproduced in conference proceedings and kept in scrapbooks. They all look the same because they all follow the rules of such compositions. They are the passive, visual records of meetings, conferences and congresses. They are souvenirs, but they are also the key to an unspoken code. The official photograph of the 1913 World Congress of Geology is like a map of a strange country. To begin with it is a pleasant confusion of intertwining lines, but when we understand its conventions and begin to pick out its landmarks, it becomes the guide to an unseen landscape.

In the Toronto picture we see Deprat, a 33-year-old researcher from a colonial backwater, sitting on the grass next to Frank D. Adams, President of the World Congress, at the centre of the front row. The man chosen by his peers as the leader of their science, the king of their profession, has in turn chosen Jacques Deprat as his court favourite. This is no simple matter. Deprat must have been ushered forward, passed up through the ranks. Perhaps it was Termier, his mentor, who introduced him at an appropriate moment to someone close to Adams, or to Adams himself. Science, we need to understand, is a very peculiar combination – an intellectual meritocracy operating in a social oligarchy. Born

and nourished by the decline of religious absolutism and the fading divinity of kings, science has retained a touch of the eighteenth-century court in its language and its doings. At every gathering you will see older men with clean-scrubbed youths at their shoulder. These are their favourite students, intended to carry the flame of their masters' work into the next generation. They must be introduced to those who matter, by those who matter. Their entry into the oligarchy must be carefully planned and promoted.

And when it comes to the photograph, the oligarchy is not only asserted, it is itself graded. So the kingpin is at the centre of the front row. On each side, in descending order, are the *éminences grises.* Scattered about the second and third rows are the rising stars, together with those who never quite made it to the top. Behind them and off to the sides are the 'participants' – those who come to the conferences to represent their institutions, but who are not invited to its highest councils.

Deprat must have known, as the lens cap was removed and the glass plate exposed, that everything was now possible for him. Everything that he had worked for in his life – the hours, days and months of tireless, slogging, lonely fieldwork, the manoeuvring, the hateful toadying, the disappointments in France, the sheer expenditure of energy in Indo-China – had led up this moment. And from this moment anything and everything might flow. His colleagues were telling him what he himself had always believed – he was something special, and he was bound for glory.

In contrast Honoré Lantenois is at the far right of the panoramic photograph, as far from the centre as it is possible to be. He has spent a lifetime in the service of his country. Having been an engineer in the Corps des Mines, Lantenois came to geology late in life, but with the passion of the convert. As Chief Mines Engineer in the French colony of Indo-China he fought to gain control of the old, moribund Service Géologique, and then reorganised it into a real

scientific institution. He recruited the young Deprat to be its first Chief, and then watched as the young man walked away with *his* prize. Deprat's brilliance, his youth, his energy and his arrogance have made Lantenois feel irrelevant. And now he watches from the sidelines as Deprat, the man he has come to despise, takes his bow on the world stage, ready to take on a leading role in the science that Lantenois has come to love. The world of geology is not very large, Lantenois must know that there will never be any escape from Deprat. The younger man will eclipse him in everything, and will be ever-present in his life.

If we were in a spy film, the Toronto Congress photograph would be projected on to the wall of a darkened room, wreaths of blue smoke wafting across the solitary beam of light. A voice would call out for the technician to zoom in on two faces in the crowd. First Deprat – young, smiling, relaxed, happy, confident – his face refusing to accept the rules of the game, refusing to maintain a dignified restraint; the language of his body telling the story of the days leading up to this moment, of his irrepressible surprise and delight. Then Lantenois, his face similarly beyond the control of convention – angry, resentful, wounded, desperate. He wavers between a rejection of the camera, and a determination to stare it down. Between an instinct to rush away from his enemy's hour of triumph, and his duty and desire to be included in this body of men – it is, after all, an honour to be in the photograph. He is disappointed by something which he finds it hard to understand, because it is something that cannot be allowed for – the unfairness of the world.

And then, as the viewpoint is drawn back again, the two faces in the crowd remain highlighted. All of the others, despite their rank and achievements, are bit players in this drama. The two men are picked out, their faces look at us from eighty-five years away. It is what we know about the things to come that makes them so hypnotic. When we look

at this photograph we are not just looking at a snapshot in the flow of events, we are witnessing an event in itself. And we see that in this manufactured event there are motives for the dark deeds that will follow. Here, preserved in one grainy image, are the victim and the executioner. All that remains is to discover which is which.

Part One

Before the Storm

1 France, 1880–1908

You have no idea of the intrigues that go on in this blessed world of science. Science is, I fear, no purer than any other region of human activity, though it should be. Merit alone is very little good; it must be backed by tact and knowledge of the world to do very much.

Thomas Huxley

JAQUES FRANÇOIS GEORGES Deprat was born in 1880 in the small town of Fontenay-aux-Roses, on the outskirts of Paris. His father was a teacher of *lettres* at the private college of Sainte-Barbe in the town. The family, of which Jacques was the only child, was not well off, but unusually literate, with extensive and enthusiastic knowledge of the classical world. In later life Jacques Deprat described his father as a Hellenist,

Like so many families in nineteenth-century Western Europe, the Deprats had moved within a few generations from a background of rural peasant life into urban trade and then into the professions. The families of Deprat's parents had made archetypal progress through the layers of French society. Their history reads like the encapsulation of the social history of an entire continent. Jacques Deprat's paternal great-grandfather had been a cobbler, coming from a family of peasants probably originating in the Savoie region. His grandfather was a tailor and, like thousands of other French artisans, he wanted his children to take advantage of the education on offer in mid-nineteenth-century France. Education was the route to becoming a member of a profession – the goal that traders held out for their children so that they would not have to work so hard for so little reward as the generations who went before

them. So Jacques Deprat's father Amédée acquired an education, which enabled him to achieve secure, if modest, employment. In three generations the Deprats had lifted themselves from peasants living with the ever-present threat of famine, to schoolteachers in a thriving industrial state. They may have wondered where they might go from there.

The family moved to the town of Moulins when Amédée Deprat found a post at the *lycée*, and then to Besançon, capital of the eastern part of France known as Franche-Comté, in 1893 when Jacques was thirteen. Though Besançon was remote from the great cities and centres of learning of France, its location was a blessing for the young Jacques Deprat. Here, on the lower slopes of the Jura Mountains, he became fascinated by the natural world. And as he grew older he ventured to the high country of the Jura and the Swiss Alps to the south. He had already been given his first geology handbook at the age of eleven, and had become passionately interested in rocks and plants. Now in the Jura natural history in general, and geology in particular, began to be his obsession.

But as well as being an enthusiast for natural sciences, Deprat was also fond of literature, being familiar with Goethe, Schiller and Shakespeare as well as French and classical writers. Throughout his autobiographical novel *Les Chiens aboient*[1] Deprat is keen to show that the two can go together, that a cultured and creative mind could also be a scientific one. He reports that someone said to him when he was twenty years old that you cannot be both an artist and a scientist, you must decide which, or you will end up as neither. But he writes that he always believed these two things co-existed within him.

A 'classical education' was still a strong element of the French school system, but for most students Greek and Latin literature must have been a curiosity. Deprat, doubtless through his father's influence and enthusiasm, seems to

have been genuinely fascinated by the classical world, and by literature. His father's enthusiasms fit well with those of a good number of nineteenth-century French schoolteachers. Like Amédée Deprat, most had come from backgrounds which were certainly uncultured and possibly illiterate. Knowledge of, and familiarity with, the classics was the achievement that had lifted their lives above the humdrum existence of their forebears. Their attachment to the classics, and their fight to keep them on the school syllabus, were less a conservative reaction than a personal expression of indebtedness.

At one point in *Les Chiens aboient,* Deprat paints a charming picture of a scene from his youth:

> Geology strongly attracted the poetic side of his nature, and he had no greater joy than going with his father on an excursion into the mountains, finding fossils and rocks which he would examine on their return. The marl-pits of the Jura, the quarries, rich in well-preserved fossils, enabled him to seek out the remains of vanished ages, while his father, learned, but not attracted to experimental sciences, sat beneath a pine tree and peacefully read some Greek text.

This vision of harmony across the generations belies the difficulties and paradoxes that Amédée Deprat faced in his life as a teacher – some of which were echoed in the tempestuous life of his only son. The attitude towards education and towards schoolteachers in France at this time was highly ambiguous. Among the growing middle classes in particular, belief in education, both as a virtue in itself and as passport to success in life, was very strong. It has been said that education was venerated almost to the point of being a substitute for religion as the locus of all virtue.

There is no question that the renowned centralisation of French education promoted a welcome sense of national unity. The Franco-Prussian War, which culminated in the Paris Commune in 1871, had been a national humiliation and was followed by virtual civil war. It has long been held that the 'idea' of France as a unified nation and culture was

created and sustained in and by her schools, but the resources given to schools and teachers to carry out this great task were pitiful. Not only was the pay of teachers uncommonly bad (a survey of teachers' salaries in Europe placed France last out of twenty-five countries), their social status was also extremely low. As well as that, the prospects for promotion were restricted, since it was impossible to pass from one grade of school to another without undergoing a rigorous and exhausting set of examinations. Within the system, the only realistic way of advancement was to move. And this is what many teachers, including Amédée Deprat, did.

The consequence of all this was that Jacques Deprat's family gave him the advantages of a fine education and strong emotional support. But they could not give him the two things they did not have – money and status. It was this combination of a highly educated, well-trained and brilliant mind with a legacy of social inferiority that was to prove so crucial to Jacques Deprat's downfall.

Deprat decided to follow a scientific career. He loved the idea of a geologist's life, as an explorer, out in the hills and mountains, using his brain and hands to discover the history of the Earth. He was, no doubt, a romantic, strongly drawn to the natural world, and in particular to its high and remote places:

> The science of the Earth attracted him irresistibly . . . It relied on all the other sciences, and also summarised them all. It was the breathtaking poem of the history of the planet, full of great images. It appealed to the strength of those spirits capable of visualizing phenomena on an extraordinary scale, of embracing at one glance immense successions of events, the life and death of entire groups of animals, the changing of the oceans over thousands of years, the formation and complete erosion of great mountain chains, worn down over countless myriads of centuries, of exercising mental faculties after ingenious analysis, of conceiving in the folds of the earth a prodigious mechanics, out of all comparison with the possibilities offered to men. And the life of the true geologist, was not that of a 'coquillard' [shellfish] living among the drawers of specimens, or

> the bookish professor of science, but was a wonderful life, spent in large part on long rambles, hammer in hand, on the pathways of the mountains. (*Les Chiens aboient*)

Jacques Deprat had two great strokes of fortune in his scientific education. First, a new university was created at Besançon in 1896 – the year before Deprat left school – and second, a young man named Eugène Fournier was immediately appointed to teach the course in geology. The inspirational example of Fournier confirmed everything that the young Deprat had felt about geology, and from then on he determined that geology would be not just a subject for study, but his life's work.

The state of higher education at this time was highly peculiar to France, and was to have a decisive influence on the explosive events to come in Deprat's life. A book published in 1875 said bluntly that 'there is no higher education in France'. This was only a slight exaggeration of a situation that had come about through the vagaries of French history. In 1789 the national government that came into power after the Revolution closed all the twenty-two universities in France. In their stead a hodgepodge of institutions with a seemingly unregulated set of differing functions came into being. Universities as disinterested places of learning were done away with and replaced by specialised institutions. These new colleges provided vocational training for the liberal and technical professions. But whereas this might have been designed to be a more rigorous and comprehensive system it became, on the whole, hopelessly lax. The old universities were mostly deconstructed into their constituent *facultés,* whose main function was to award baccalaureat certificates to *lycée* students (the head of a *faculté* was often *de facto* Director of Education for a department or region) and to give out degrees, or more descriptively *licences,* i.e. litences to practise. But the *facultés* had almost no students and very few staff. The lectures were open to the public, and were

mostly attended by retired people and some students from local *lycées* or secondary schools. The undergraduate population had more or less disappeared. In this sense the 1875 author was entirely correct – higher education did not exist. The exceptions to this sorry state of affairs were the so-called Grandes Ecoles – institutions whose influence in and on nineteenth-century France was pervasive.

While the old universities had been officially downgraded and then left to decay, a new set of institutions was formed, ostensibly to provide technical skills and training. The Ecole Polytechnique with its associated colleges, e.g. the Ecole des Mines and Ecole des Ponts et Chaussées, were literally technical colleges. But soon after their formation, something quite peculiar began to happen. Because the *facultés* were held in such low regard and because there was no other higher education in France, the Ecole Polytechnique with its residential regime, its strict discipline and its intellectual rigour became, along with the Ecole Normale Supérieure, the place where the élite chose to be educated, and where they chose to educate their children. The 'normal' situation was reversed, and a technical education at one of the Grandes Ecoles was proof of membership of, and a passport into, the social élite. Technical education became highly developed, but its exclusivity was rigorously maintained. France did not produce a mass of highly trained technicians, but a small élite of engineers. The number of places in these Ecoles was restricted and the influence of this élite was clear. While graduates of the Ecole Normale tended to go into teaching or perhaps politics, the more avowedly technical Ecoles turned out 'engineers', who in reality became administrators:

> The Polytechniciens and the graduates of the schools of applied science [Ecole des Mines, Ecole des Ponts et Chaussées], of course had their own *esprit de corps,* which, however, was more tied up with control of the state administration . . . Because they were so comfortably ensconced in one sector of the economy they took care not to draw too much attention

> to their privileges, and they adopted a system of live and let live towards the rest of society. (Zeldin, 1977)

The bureaucracy of the French state and its various colonies was thus largely and quietly controlled by graduates of just a few institutions.

By the 1890s a general reform of higher education in France was desperately needed. The *facultés* had become reduced to the most pathetic circumstances. They survived in tiny cramped offices in the poorest quarters of French cities. Nor did this apply only to provincial institutions. The faculty of sciences at the Sorbonne was reported as occupying ‘a few tiny rooms, formerly used as kitchens and bedrooms by students’ in the 1870s. The equipment was, by the last decade of the century, at least fifty years old. Libraries had virtually ceased to acquire books and periodicals, and Clermont-Ferrand, one of the largest cities in France, had in 1876 in its Faculty of Letters a grand total of seven regular students.

If he had been born ten years earlier, Jacques Deprat’s prospects of higher education would have been dismal. And it is a fair bet that any ambitions he nurtured to become a professional geologist would have ended when he left school. The teaching of science in the *faculté* at Besançon had diminished markedly and the only route to academic or professional status was via the Grandes Ecoles. Although in theory these were open to entrance by examination, in practice getting through the exams involved expensive instruction and private coaching. Then, in 1896, a new Act was passed which created, and gave funding for, fifteen new universities, including the University of Besançon.

The founding of the new University of Besançon and the arrival of Eugène Fournier as tutor of the geology course, were decisive influences in Deprat’s life. Fournier was only twenty-seven, and brought with him his friend Arthur Bresson, who was just twenty-five. Under the guidance of

these two young teachers, Deprat became further enraptured by geology and was encouraged to follow his enthusiasm. He appears to have been a prodigiously energetic student. By the time he became a Bachelor of Science (Licencié ès Sciences) in 1899, he had already had his first paper published in the *Mémoires de la Société d'Histoire Naturelle* for the department of Doubs, placed three notes on the foothills of the Jura in the *Feuilles des jeunes naturalistes,* and in addition joined the Société Géologique de France. The following year he published a monograph on the Massif de la Serre in the society's journal. By the age of twenty he was on his way to becoming a scientist.

Once he graduated in 1900, Jacques Deprat needed to find work or a place to undertake further study. Despite its natural geological advantages, there was no opportunity for this precocious young man to advance his education or career in Besançon. The new university had no facilities for graduate students, so to get the further qualifications that would enable him to make a living as a geologist, Deprat had to pack his bags and go to Paris. His published work and presumably high recommendations from Eugène Fournier enabled Deprat to get a place in the laboratory of Alfred Lacroix, at the Muséum National d'Histoire Naturelle in Paris. It was not incumbent on Lacroix to take on graduate students and he would not necessarily have done this as a matter of course. We can assume that Deprat's work and personality (he would have attended for at least one interview) were unusually impressive.

Deprat went to Paris in 1900 and remained there until 1904. He would not have received a grant in the form of a living allowance, but may have received some funding from the Académie des Sciences for particular pieces of work, and for the expense of typing and binding his thesis. Otherwise he would have had to fend for himself. Deprat's

family did not have the money to support a son living independently in the capital, but fortunately his cousins, the Lefebvres, lived in Paris. The Lefebvres had visited the Deprats in Besançon each summer, and they had travelled through the Jura and Swiss Alps together. Jacques boarded with them from 1900 to 1904. As well as this free accommodation there were canteens, which were really more like soup kitchens, provided for students around the Latin Quarter. The Muséum is on the edge of the quarter, near to the University buildings, so we can assume that Jacques Deprat was able to take advantage of this cheap source of food. Conditions for Parisian students had not changed much from the 1840s when Murger wrote *La Vie de bohème,* later immortalised by Puccini in *La Bohème.* Apart from his work, we do not know much about Deprat's life in Paris. The city was famous for its wild social life at the time, but Deprat would have been conscious of his dependence on his father's meagre salary. He seems to have been a diligent and conscientious student.

In Paris, under the supervision of Lacroix, Jacques Deprat studied for his doctorate. Lacroix was a mineralogist, who was to achieve great success studying the composition of the lava and magma from the Mt St Pierre eruption on Martinique in 1902. Deprat himself became interested in mineralogy – the study, usually through the examination of thin sections under microscope, of the minerals which comprise rocks.

His main interest, though, was in tectonics. The study of the large-scale forces and movements of the Earth's crust that are responsible for the creation of mountain chains, and the raising and lowering of continents, was of great interest at this time, particularly in France. It was French geologists, through their studies of the Alps in the late nineteenth and early twentieth centuries, who unravelled the complexities of tectonic forces, and won international acclaim for their

work. For an aspiring geologist in France, tectonics was *the* subject with which to be involved.

In 1902, while studying in Lacroix's laboratory, Deprat applied for and received a grant from the Ministry of Public Instruction to investigate the geology of the Greek island of Evvoia. He spent eight months on the island from April to December 1902 – this was to be the subject of his doctoral thesis. Evvoia (known in French as Eubée) is hardly an island, being separated from the mainland for the whole of its hundred-mile length by a narrow channel. A bridge links the island to Greece at Chalcis. The island covers a total of 4,000 square kilometres (160 kilometres long by 25 wide). Mapping and explaining the geology of such a large island in eight months was a huge undertaking for a relatively inexperienced graduate student. Deprat produced a 300,000:1 geological map which, it is now claimed, 'was considered the best geological map of any part of Greece for many years' (Durand-Delga, 1990).

The island had been studied in 1877 by a geologist named Teller, and Deprat managed to update his work considerably. Deprat found evidence of Palaeozoic rocks on the island, and did important dating work on Permian and Carboniferous rocks using fusulinid micro-fossils – the first time this had been done in Greece. In addition he found important Jurassic reef deposits and dated three stages of the upper Cretaceous period. He presented his thesis to the examiners at the Sorbonne in 1904. While being an impressive piece of work, it also offers a nice example of different types of scientific error.

Deprat dated some rocks on Evvoia as Lower Cretaceous – a period which is now thought not to exist on the island. Guernet's work in the 1960s showed that the fossils Deprat used to date the rocks are Jurassic in age. This was a minor misinterpretation by Deprat.

His analysis of the tectonics of the region was exactly in tune with the ideas of the time – ideas which are now

thought to be wrong. It was not until 1980 that, as Michel Durand-Delga wrote in his paper on the Deprat affair in 1990, ‘the extraordinary piling up of internal nappes in the Hellenides, of which Evvoia offers a beautiful example, was eventually recognised’.

Nappes are slabs of rock formed by folds toppling over, which are then thrust over the top of lower strata (see page 57). We cannot call this an error by Deprat, since it would have taken a huge leap in understanding, for which the evidence may not have existed, for the young student to propose the type of tectonic history that is understood today. Nevertheless the relation between historical time and scientific truth and knowledge is particularly relevant to Deprat’s story, and it is interesting to see it emerging early in his career.

Another error in his thesis was potentially more serious. Deprat had something of a feud with a senior geologist named Emile Haug over the age of certain rocks, known as ‘schistes lustrés’, found in the Alps. The analysis of these rocks was important for untangling the complex history of the Alpine region – a major concern of French geologists at the time. Haug said that Alpine ‘schistes lustrés’ were Mesozoic in age, while Deprat had argued in 1904 that they were much older – i.e. Palaeozoic. Deprat then used his work on Evvoia to attempt to reinforce his argument. He said that glaucophane and lawsonite schists of Palaeozoic age found in Evvoia were formed in the same way as the Alpine schists. Unfortunately for Deprat, Haug was proved right about the Alpine schists, and this part of Deprat’s work was therefore based on an incorrect premise.

In his argument with Haug’s views, Deprat marshalled ‘evidence’ to prove a case. In retrospect his motives seem dubious – and his behaviour would have been as incorrect if he had been proved right as it was when he was shown to be wrong. Although we might presume that Deprat’s science became corrupted by his motives, this case is an illustration

of the tension that lies at the heart of all scientific work. While we now understand that the simple recording of information is only a small part of a scientist's work, we still underestimate the degree to which the making of acute and perceptive observations depends on a pre-formed idea. This obviously runs both ways – scientists make hypotheses out of facts and then test their hypotheses against more information. But a theory, or a hunch, or an idea, is the essential driving force of scientific investigation. And when a theory begins to conflict with the facts, science gets both interesting and potentially difficult for those involved. Should you fight for your idea in the face of apparently contrary evidence? Should you give it up at the first sign of any inconvenient facts? There is an obvious temptation to over-step the line and make 'wrong' observations to support a theory, as Deprat seemed to do in this case. If we believe he was a little too enthusiastic in his own support, it is worth pointing out that many other researchers shared his views, and that the argument over the age of the 'schistes lustrés' continued among geologists for another forty years.

Inaccuracies are inevitable in every scientific publication. Everyone from the neophyte researcher to the Nobel laureate either bases some part of his or her work on assumptions that are later superseded, or interprets material according to a contemporary authority which gives way to another in time. Nevertheless it is interesting to see that Deprat's thesis contained different types of error, and it is these differences which are fundamental if we are to understand a little of what science is about.

Deprat's thesis was, on balance, an admirable achievement and he was duly awarded his doctorate by the Sorbonne in 1904. It must have been a great and proud moment for his family and for Jacques Deprat himself – the only son of an impecunious *lycée* teacher awarded a doctorate from the University of Paris. He may have been

lucky that the new universities came into being at the right time for him, but he had made the most of his opportunity.

By the end of 1904 Jacques Deprat was a 24-year-old geologist with a doctorate from the Sorbonne, a solid reputation, a growing number of influential contacts and a determination to make his living in his science. What were his options? Unfortunately not many. He was about to find out that promising academic achievement was only a small part of what was required to make a career in science. Deprat would have dearly loved to get a teaching post at a university in France, but these were few and far between. The new universities had only been in full operation for six or seven years, so it is fair to assume that not much movement had yet taken place among the staff, while a post at one of the Grandes Ecoles would have been out of the question for a *universitaire*.

The best he could do at first was to take an unpaid job at his old college in Besançon, teaching a course in petrography. This branch of geology is to do with analysing rock content, usually by microscope, and classifying rocks. His old teacher Eugène Fournier gave him the job which, though unsalaried, had some advantages. First and foremost, Deprat had recently married his childhood sweetheart Marguerite Tissier from Moulins. The newlyweds were now able to live with Deprat's parents in Besançon, though the birth of two daughters in 1905 and 1906 must have begun to strain the family finances. Essentially they were all – four adults and two children – dependent for regular income on the small schoolteacher's salary of Jacques's father Amédée. Jacques was able to supplement this income by giving public lectures on geology, at which a small entrance fee was charged. This sideline was boosted by an upsurge of interest in geology among the French public, caused by a catastrophic natural disaster.

In May 1902 a volcano named Mt Pelée on the Caribbean island and French colony of Martinique erupted. The effect was immediate and devastating. A wall of gas, glass and dust, at a temperature of 800°C, immediately engulfed the nearby town of St Pierre, instantly killing all but two of its 28,000 inhabitants. This type of cloud is now technically known to geologists as a *nuée ardente* (literally 'blazing cloud'). There was little warning, as the side of the mountain was simply blown away and the gas emulsion travelled down the lower slopes at around 100 kilometres per hour. (It is now thought that the people of Pompeii may have died in a similar *nuée ardente* erupting out of Vesuvius in AD79.) Miraculously, there is one eyewitness account of the eruption, by a seaman who was lucky enough to be still on board his ship in the harbour when the eruption happened:

> As we approached St. Pierre we could distinguish the rolling and leaping of red flames that belched from the mountain in huge volumes and gushed into the sky. Enormous clouds of black smoke hung over the volcano . . . There was a constant muffled roar. It was like the biggest oil refinery in the world burning up on the mountain top. There was a tremendous explosion about 7:45, soon after we got in. The mountain was blown to pieces. There was no warning. The side of the volcano was ripped out and there was hurled straight towards us a solid wall of flame. It sounded like a thousand cannon.
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> The wave of fire was on us and over us like a flash of lightning. It was like a hurricane of fire . . . The hurricane of fire rolled *en masse* straight down upon St. Pierre and the shipping. The town vanished before our eyes. The air grew stifling hot and we were in the thick of it. Wherever the mass of fire struck the sea, the water boiled and sent up vast columns of steam. The sea was torn into huge whirlpools that careened towards the open sea . . . The blast of fire from the volcano lasted only a few minutes. It shrivelled and set fire to everything it touched . . .
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> Before the volcano burst, the landings of St. Pierre were covered with people. After the explosion not one living soul was seen on the land. (quoted in Press and Siever, 1986)

The impact of the disaster back in France was enormous. The photographs of the devastated town, which contained a substantial number of French citizens, brought home the incredible violence of the eruption. This was the age of

science, and the public wanted to know how the scientists could explain such an event. How could such a thing happen with so little warning? Scientists, too, were fascinated by the eruption and French geologists made straight for Martinique to study the erupted volcano and its glass and ash and lava. As we have seen, Deprat's supervisor Alfred Lacroix made his name in the study of the mineralogy of the Mt Pelée lavas. The interest in Mt Pelée continued for several years as more discoveries were made.

Though still waiting in vain for the opportunity of a salaried teaching post, Deprat did manage to get some fieldwork while teaching at Besançon. In 1905, through Lacroix's influence, he obtained a grant of 4,000F to travel to Sardinia at intervals over the next two years. Just as importantly, he became a *Collaborateur* in the Service de la Carte Géologique, a government body responsible for the geological surveying and mapping of France. Deprat worked in Sardinia and Corsica at intervals from September 1904 to the end of 1907. His mentor Lacroix had now been elected to membership of the élite Académie des Sciences in Paris, and Jacques Deprat began to send a series of notes on the geology of Corsica to the academy. The protocol was that scientists who were not members could submit short reports (Comptes-Rendus) to the academy, and these would be read to a meeting by an academician – if he thought them worthy of the academy's interest. Some of Deprat's Comptes-Rendus were read by Lacroix, others by Auguste Michel-Lévy, a well-known petrologist, who was an admirer of Deprat's work and Director of the Service de la Carte Géologique.

Corsica was a fascinating place for geologists, and Deprat made a significant contribution to understanding its geological history. The island has two distinct geological regions, east and west. Deprat suggested that the eastern side had been thrust or dragged over the western side. This idea was based on his discovery of a zone of crushed