

MARTEL'S VISIT TO MENDIP IN 1904 PART OF HIS INTERNATIONAL STRATEGY?

by

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(with a contribution by W. I. Stanton and D. T. Donovan)

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ABSTRACT

On June 14th and 15th 1904, Martel visited the caves at Cheddar and Wookey Hole, and also saw other cave entrances and karst features on the Mendip Hills in Somerset. He noted particularly the way that caves there were entered by digging, the significance of the Dolomitic Conglomerate in determining the age of some of the caves, and the subsidence of Wells Cathedral supposedly caused by St. Andrew's Well. His visit is examined in the wider context of his deliberate 'internationalization' of cave studies.

INTRODUCTION

Fifty years have passed since the death of the distinguished French speleologist, E. A. Martel, and it is therefore fitting to re-examine the visit he made to Mendip in 1904.

Édouard-Alfred Martel (b.1859; d.1938) was an active cave explorer from 1888 until 1914, recording some 1,500 caves. He continued his cave studies for the rest of his life, and published some 20 books and 780 papers on the subject (Shaw, 1979, 1980).

Martel deliberately encouraged cave study world-wide. Of his 26 annual 'campaigns' of exploration, 15 were outside France in 17 countries, and in addition he made many lecture tours and other visits abroad. At least 53 of his published papers appeared abroad, several of them translated into foreign languages.

The Société de Spéléologie, which Martel founded in Paris in 1895, enjoyed high scientific standing from the outset and it was one of the means by which he contrived the extension of cave study into an international subject. Many papers by foreign authors were published in its periodical, *Spelunca*, and many more were by French authors about caves in foreign countries. The Society exchanged its publications with foreign journals, and the many long primary bibliographies in *Spelunca* included literature from all over the world. The remarkably high proportion of foreign members of the Society is shown in TABLE I.

Martel's visit to Great Britain in 1895 deserves mention at this point. In addition to his celebrated first descent of Gaping Gill (Anon. 1895b), he visited several well-known caves in Derbyshire, to study any regional characteristics they might possess, and also some less easy caves in Ireland (Martel, 1896a-g, 1897a, b). As the translators of the Derbyshire section of his *Irlande et cavernes anglaises* (1897a) pointed out (Martel, 1914), 'It is perhaps difficult to realise that the only comprehensive work on English and Irish caves has not been written in the English tongue'. He had 'obtained from the French Government . . . a scientific mission in the name of the Minister of Public Instruction to make a comparison between the grottoes and subterranean waters of Great Britain and those which I had already

examined in France, Belgium, Austria, and Greece' (Martel, 1897b, p. 500). Ever seeking to arouse and encourage cave research wherever he went, he wrote (1897b, p. 500): 'The principal aim . . . was to attract the attention of English scientific men and tourists to all that still remains to be done and to be found in the natural caves of Great Britain.' In the course of the visit he also delivered a lecture on caves at the International Geographical Congress in London (Martel, 1896h).

Baker (1904) acknowledged Martel's success in stimulating cave interest among the British: 'Since 1895 cave-exploring has become a more popular pursuit, thanks largely to the example and enthusiasm of M. Martel. Clubs and societies have taken up the work, and both the scientific and the sporting attractions of cave-exploring have received general acknowledgement'.

The only other visit Martel made to Great Britain, besides those of 1895 and 1904, had been in 1870 when he was a child (Casteret, 1943, p. 229).

TABLE I—*Foreign individual membership of the Société de Spéléologie (derived from Anon., 1895a, 1904e, 1909)*

	1 May 1895	1 Sept. 1904	1 Oct. 1909
England	3	7	5
Ireland	1	1	1
Belgium	2	6	6
Germany	3	5	4
Switzerland	3	1	1
Austria*	12	14	12
Hungary	1	1	1
Bulgaria	—	1	—
Bohemia	—	1	—
Bosnia	—	1	1
Serbia	1	1	—
Greece	1	1	1
Italy	1	4	2
Spain	2	2	2
Morocco	—	—	1
Algeria	2	2	2
Venezuela	—	—	2
U.S.A.	0	5	3
total foreign membership	35	58	46
total membership	140	174	138
% membership foreign	25	33	33

*International boundaries were different then. Austria incorporated Trieste and part of what is now Yugoslavia.

THE VISIT TO MENDIP

In 1904, in addition to his main 'campaign' of exploration in the Dauphiné region of France, Martel spent a few days on Mendip in June. He was taken into Wookey Hole and the two principal caves at Cheddar; and he visited a number of cave entrances and other karst sites on and around Mendip. This account is based mainly on the newspaper reports (Baker, 1904; Anon., 1904a, b, d, probably written by Baker), on Martel's (1905) own description of his visit in *La Nature*, and on the entry in the Gough's Cave visitors'

book (Gough, 1899-1918). His observations on St. Andrew's Well at Wells are treated separately later in the paper. The article in *The Bath Herald* (Anon., 1904c) gives no information about the visit, being just a summary of recent discoveries by Balch and others.

Martel arrived in Wells on Monday 13th June, accompanied by his wife, Aline. The visit was made at the invitation of Balch and Baker, and for some (or probably all) of the time he was accompanied also by J. W. Puttrell (climber and cave explorer, of Sheffield), Fred Botterill (of the Yorkshire Ramblers' Club), Harry Bamforth (photographer, of Holmfirth) and R. D. R. Troup (one of Balch's fellow Mendip cave explorers).

On the day of arrival Martel and his wife were shown over the cathedral by the Dean. The next day started with a visit to St. Andrew's Well, and the party then proceeded to the top of Mendip. They stopped to examine swallets at Hillgrove and then went on to 'the great basin on Bishop's Lot, near the Hunter's Lodge. M. Martel was unable to decide from the data on the surface whether this is a true swallow, formed by drainage from the surrounding area, or a depression caused by subsidence into a cavity underneath' (Anon. 1904a).

The entrances to Eastwater and Swildon's Hole were next seen, and the classic photograph was taken by Martel of the fish pond at the entrance of Swildon's (FIG. 1). The stream had been dammed in the previous year but the pool soon afterwards drained away through underground channels. Having heard about the exploration of these two caves, Martel commented on the way in which they had been entered by digging out the chokes that had originally blocked them:

Balch and his colleagues used manual clearing [désobstruction artificielle], a method I have been recommending for some time, to gain entry to blocked swallets which, unexpectedly, were found to lead to long underground stream systems. In one of these, Swildon's Hole, they penetrated in 1901 to a depth of 120 m and successfully drained an underground sump. In Eastwater Cavern it took ten days to clear a way 30 m through clay and rubble and they were then able to reach a depth of 150 m with 600 m of passage running towards the rising of the Axe of Wookey Hole, which lies 1,500 m away and 40 m above sea level. (Martel, 1905)



FIG. 1—ENTRANCE OF SWILDON'S HOLE IN 1904,
SHOWING THE FISH POND
Photograph: E. A. Martel

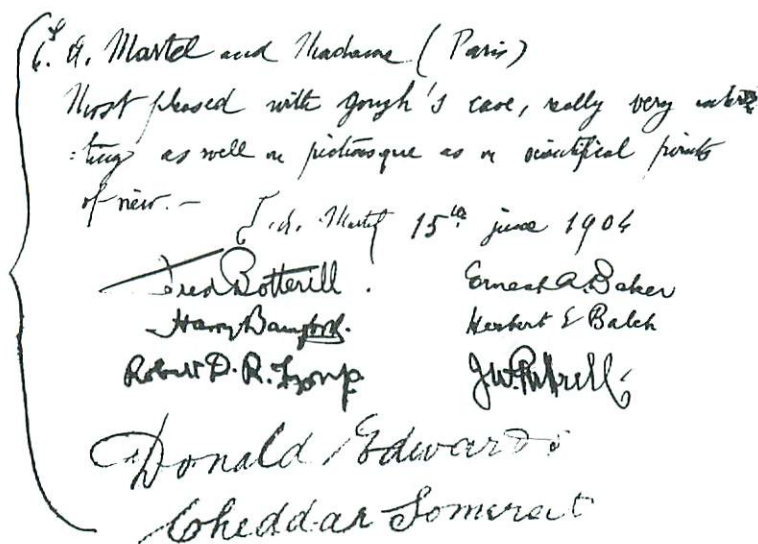
It was raining heavily by now and the party drove via the Devil's Punch Bowl depression to the entrance of Lamb Leer. Then:

Another halt was made to see the new swallet created by the sudden subsidence of the bed under a large pond at the lead works, near Hunter's Lodge. Yawning gaps opened in the limestone, and the whole body of water ran away into the joints of the strata, in spite of every effort to close the breach. Although it appears on the surface as if this new cavity lay on the south of the watershed, the core of old red sandstone is actually to the south, and the stream, as soon as it got its liberty, ran away in the direction of Bristol. (Anon., 1904d)

The swallet is the one known as Wheel Pit (NGR 5477 5143), near the present Waldegrave Pond (Barrington and Stanton, 1977, p. 173).

Wookey Hole and the caves at Cheddar were visited on Wednesday June 15th. At Wookey Hole he followed the usual tourist route and then climbed by rope ladder to the upper chambers discovered the previous year. The Wookey Hole visitors' book of the period, now in private hands in the village, makes no mention of the visit; nor does it ever record the names of the exploring parties. The cave was almost totally undeveloped for tourism at that time, and the prestige value of an entry in the book evidently did not occur to George Adlam, the farmer who provided guides for visitors wishing to see the cave.

The usual sights were seen at Cheddar by M. Martel, who was accompanied by his wife. They were greatly pleased with the kaleidoscopic beauties of Cox's Cavern, which will soon be enlarged by the addition of a newly discovered chamber. The Great Cave, or Gough's, was more interesting from the speleological point of view, with its huge vaults leading up to independent swallets, and its wells or avens leading down towards the course of the river that formed the ravine and the caves ages ago. (Anon., 1904d)



E. A. Martel and Madame (Paris)
 Most pleased with Gough's cave, really very interes-
 ting as well as picturesque as on scientific points
 of view. — E. A. Martel 15th June 1904
 Fred Botterill. Ernest A. Baker
 Harry Bamford. Herbert E. Balch
 Robert P. R. Thompson. J. W. R. Bull
 Donald Edwards
 Cheddar Somerset

FIG. 2—ENTRY IN THE GOUGH'S CAVE VISITORS BOOK, JUNE 15th 1904
 Reproduced by courtesy of Mr D. W. Gough

The Gough's Cave visitors' book (Gough, 1899-1918) has the following entry, signed by Martel and the others (FIG. 2):

E. A. Martel and Madame (Paris)
 Most pleased with Gough's cave, really very interes-
 ting as well as picturesque as on scientific points
 of view.

Donald Edwards, who joined them for this visit, was a Cheddar tailor and a friend of the Gough family.

According to contemporary handbills for Cox's Cave, its visitors' book (which can no longer be traced) was inscribed:

Never saw anywhere such graceful and charmingly coloured stalactites in about 600 visited caves. Quite unique. (Cox, 1906a, b)

Also quoted in an advertisement is a passage from Martel's article (1905):

... the whole effect, in spite of its miniature dimensions, is quite fantastic, and absolutely unlike anything one has hitherto seen. (Cox, 1906b)

These comments are noted here because they had a significant impact on the cave's advertising (cf. Irwin, 1987).

There were only these two days of cave visiting, and presumably Martel left the next day. There is no indication that he remained in England any longer and the Mendip visit was evidently the sole purpose of his coming.

Baker (1904) attributed the cursory nature of Martel's cave visits in Mendip, not to shortage of time alone, but to physical frailty:

To judge from the picture in "Irlande et Cavernes Anglaises" of his descent into Gaping Ghyll, M. Martel had aged considerably in the nine years that have elapsed since that brilliant exploit. The effects of long and frequent exposure have rendered him unfit to undertake exhausting work any more, though he is as enthusiastic as ever. It was arranged, therefore, that he should drive to the various points of interest with Mme. Martel, while the rest of the party should accompany them on bicycles, and where necessary fix up ladders to enable him to reach such things as the upper series of caves in Wookey Hole. ... M. Martel would not attempt the arduous task of a personal descent into the Eastwater Cavern, but contented himself with an examination of the superficial features and with investigating the interior by proxy.

This frailty must have been the result of temporary ill-health, for in the following year he was exploring caves up to 155 m deep with shafts of 100 m. He was, however, 46 years old by then and his severest explorations were behind him.

THE RESULTS OF THE VISIT

It is clear that Martel did not set out to make any new explorations in the Mendip area; indeed he did very little exploring at all. What then did he aim to do, and what did he achieve?

There seem to have been two objectives of his visit:

- (a) to broaden his own experience;
- (b) to create and encourage another international link in the cave world.

Martel's Conclusions

It was Martel's practice not only to explore caves but to study them and their associated karst hydrology. Just as in 1895 he had visited tourist caves in Derbyshire, so in 1904 he studied the characteristics of the Mendip karst.

The effect of the Dolomitic Conglomerate on the major risings interested him particularly and his remarks (Martel, 1905) were translated in *The Netherworld of Mendip* (Baker and Balch, 1907, pp. 30-31). A clearer and more accurate translation is as follows:

Owing to the presence on the flanks of the Mendip Hills of Triassic Dolomitic Conglomerate (Keuper), deposits of Rhaetic age and of possibly Pleistocene alluvium lying unconformably on the Carboniferous Limestone, the water of the risings emerges in three ways:

- A. through large fissures in the limestone itself ... (at Cheddar, etc.)
- B. through fissures in the Dolomitic Conglomerate (the Axe at Wookey Hole, etc.)
- C. through apertures blocked by alluvium (at St. Andrew's Well at Wells, etc.).

This second way means that it will be possible, particularly at Wookey Hole when the present explorations have widened the new passages, to see whether the Dolomitic Conglomerate is regularly laid down on the Carboniferous Limestone along the ancient shore line or deposited as pockets of infilling in pre-existing voids in the limestone. That is to say it will allow the verification of Balch's hypothesis (already suggested by Boyd Dawkins in 1874) that certain Mendip caves are of very ancient origin, even before the Keuper period. The appearance of the conglomerate below the roof in Wookey Hole seems to me to support this idea.

Some confusion seems to have arisen over Martel's views on the formation of Cheddar Gorge. Baker and Balch (1907, pp. 17-18) quote him (from Martel, 1905) as saying:

The numerous dried valleys (Burrington Combe, Cheddar Cliffs, etc.), which cut through the circumference of the Mendips, witness, as everywhere, to the ancient superficial flowing off of the rivers, and to their capture by the natural wells, successively opened and enlarged in the cracks of the Limestone rock.

and they seem to accept that this contradicts Balch's belief that the Gorge is an unroofed cavern. On the other hand, elsewhere in the same article Martel (1905) clearly writes:

It is very probable, in conformity with Mr Balch's idea and the theory that I have several times advanced, that successive collapses have led to the formation of this valley or gorge which is now completely dry since its former stream was captured by the swallets on the plateau.

Not surprisingly, this passage was later cited by Balch (1935, p. 113) with approval. Perhaps when the relevant chapter of *The Netherworld of Mendip* was being written, the author had seen only an early and incomplete draft of Martel's article for *La Nature*, which appeared in the issue for December 1905.

What might have been Martel's most important observation, had it not been based on a misunderstanding, concerns St. Andrew's Well. It is reprinted later in this paper, with comments by Stanton and Donovan.

International Aspects

The international links, major and minor, formed as a result of the 1904 visit, were:

- (a) Martel's publications in France on his visit;
- (b) the appearance of a paper on Mendip caves by Balch in *Spelunca* and its consequent dissemination world-wide;
- (c) Martel's position as an honorary member of the Mendip Nature Research Committee;
- (d) the mutual influence of the two important cave photographers, Bamforth and Martel;
- (e) the use of Martel's name in Cox's Cave advertising for the next 20 years or more.

Martel's own publications have been adequately covered in the previous pages.

Balch's (1904b) paper 'On the caves and underground watercourses of the Mendip Hills . . . (explorations 1901-1904)' appeared in French in the December 1904 issue of *Spelunca*, occupying 33 pages. Although never published in English at the time, the manuscript was reproduced in facsimile by Stanton (1969, pp. 65-112), who points out that it is an early draft for part of *The Netherworld of Mendip*. Balch's manuscript has a few annotations in Baker's hand and these have been incorporated in the French version,

TABLE II—*U.K. and U.S.A. members of the Société de Spéléologie (from Anon., 1895a, 1904e, 1909)*

Name		Martel's visits	Joined	Member at 1 May 1895	Member at 1 Sept. 1904	Member at 1 Oct. 1909	Publications in 'Spelunca'
<i>Great Britain and Ireland</i>							
Macotta, Frederick	London	July-Aug. 1895	1895	Yes	Yes	-	1899
Stirrup, Mark	Cheshire		1895	Yes	Yes	-	
Oldham, Richard Dixon, F.R.S.	London		1895	Yes	Yes	Yes	
Scharff, Robert Francis	Dublin		1895	Yes	-	-	
Wright, Perceval	Dublin	1904	1895	-	Yes	Yes	
Wells, Samuel	Goole		1896	-	Yes	Yes	
Barnes, Jonathan	Manchester		1897	-	Yes	Yes	
Slingsby, Wm. Cecil	Skipton		1897	-	Yes	Yes	
Lambert, Frederick	London		1902	-	Yes	-	
(Balch, H. E.)	(Wells)		-	-	-	-	1904b
<i>U.S.A.</i>							
Owen, Luella Agnes	Missouri	1912	1895	-	Yes	Yes	1896 1897 1898 1899
Call, Richard Ellsworth	New York		1896	-	Yes	-	1897 1914 (with Hovey)
Hovey, Horace Carter	Massachusetts		1897	-	Yes	Yes	1899 1904 1909 1914 (with Call)
Van Epps, Percy Myers	New York		1898	-	Yes	Yes	1899
Blackall, Christopher Rubey	Philadelphia		1900	-	Yes	-	

J. W. Puttrell of Sheffield, England, was evidently a member at one time (Anon. 1931), but not in these years.

which differs from the original only by some reparagraphing. Among the photographs illustrating it are seven taken by Martel, including the 1904 view of Swildon's entrance already mentioned. A postcard written in English by Martel to Balch on 30 October 1904, and now in Wells Museum, makes arrangements for the return of half-tone blocks borrowed from Balch, no doubt those for the seven photographs by Bamforth already used in *The Climbers' Club Journal* (Balch, 1904a). The postcard also asks for the loan of some slides, for lecture purposes on the Continent. Balch's (1904b) *Spelunca* article would have reached the full membership of the Société de Spéléologie and also the 13 institutions which subscribed and the 99 which exchanged publications. An abstract of it was published in Italy (Feruglio, 1905b).

It is interesting to see that this pattern of 'Visit to a foreign country, followed by publication in *Spelunca* by an author from that country' occurred quite commonly. It was often accompanied by the foreign author becoming a member of the Société de Spéléologie, which Balch never did. TABLE II shows that this relationship holds good to some extent for Great Britain and the pattern seems to have been part of a deliberate strategy by Martel to encourage cave study abroad. Liaison with the more distant U.S.A. (also shown in TABLE II), on the other hand, seems to have progressed well before his visit there in 1912.

The Mendip Nature Research Committee (originally the Mendip Nature Research Club) was not in existence in 1904 and Balch (1905) reported Martel's visit in the Annual Report of the parent body, the Wells Natural History and Archaeological Society. The new group was founded on January 2nd 1906 (duly but inaccurately reported to the world by Martel, 1906, p. 749) and Martel was an honorary member for the rest of his life. He was a subscriber to Balch's 1914 book on Wookey Hole.

It was only in 1903 that Balch and Baker finally met in Somerset, and they then worked closely together for many years. Both were cave photographers of some skill, but far more professional was Baker's exploring colleague Harry Bamforth, of Holmfirth, who was one of the party accompanying Martel's visits in 1904. Martel himself had published his book on underground photography the previous year and, in these formative years of the subject, the meeting of the two men must have resulted in some fruitful exchange of ideas.

Martel's complimentary remarks about Cox's Cave, both in its visitors' book and in his article of 1905, were seized upon by the proprietor to use in his advertising. They were quoted in several contemporary handbills, including the one reproduced by Irwin (1987, p. 29). In addition, the entire gable end (now destroyed) of a cottage immediately west of Holly House bore a large five-line inscription 'COX'S/CAVERN/VISITED BY/H.M. KING EDWARD VII./MARTEL SAYS THE BEST OF 600'. This was certainly present in 1908 when a photograph was taken by the Francis Frith Co., who published it as a postcard (FIG. 3) known to have been in use up to 1915 at least. A much longer inscription, with the same allusion to Martel, was in existence by 1925, when another Frith photograph was taken. When it finally disappeared is not known but postcard views showing it were still on sale in the early 1960s (Irwin, pers. comm.). Between 1905 and about 1931 many sets of Cox's Cave postcards bore the phrase '600 Caves visited by M. Martel, Paris. Cox's admired the most'.

The reaction of the rival proprietor, Gough (1906) was predictable:

All the beauty of Six hundred and 'One' put together is not to be compared with Gough's Beautiful Cave.

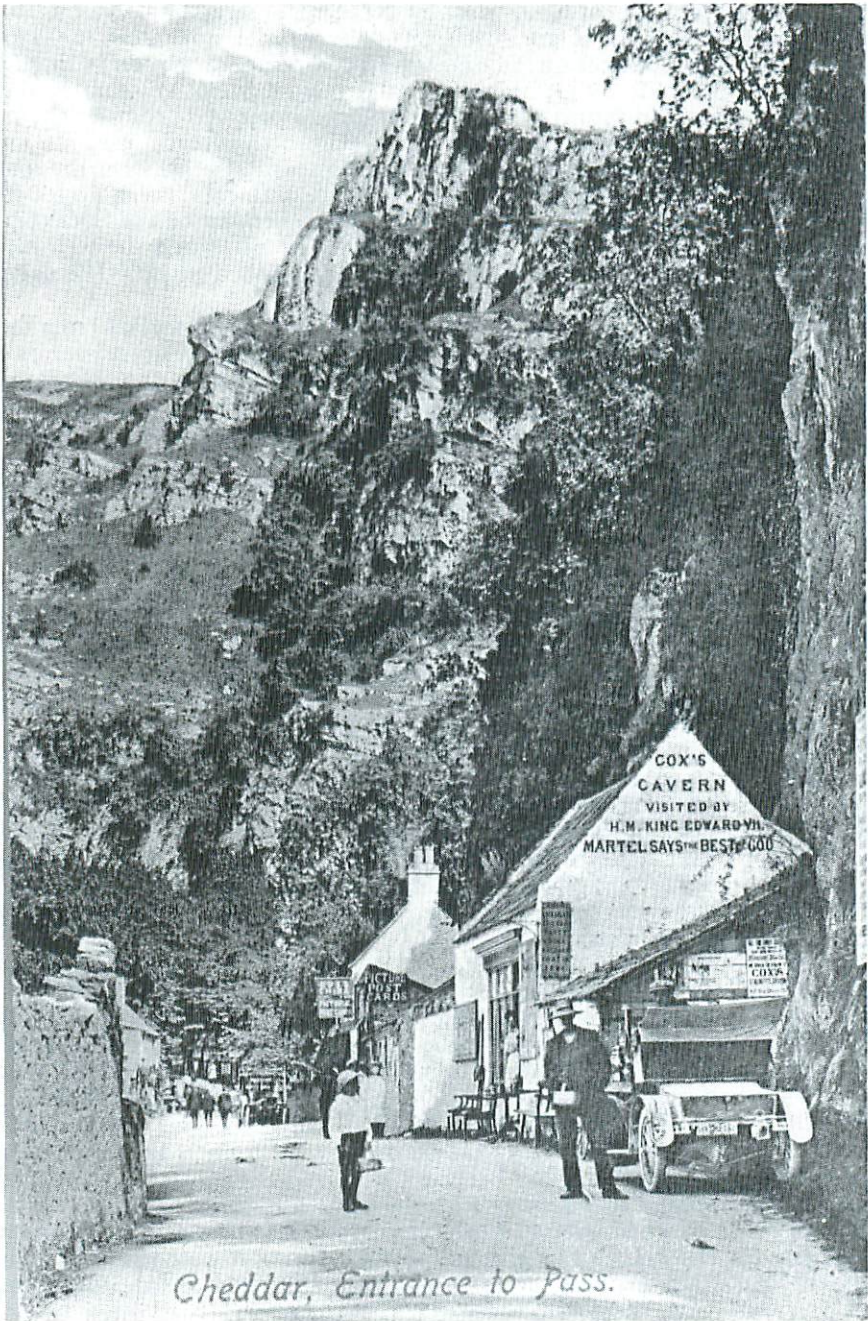


FIG. 3—MARTEL'S NAME USED IN A CAVE ADVERTISEMENT AT CHEDDAR, PHOTOGRAPHED IN 1908
from a postcard used 1st Sept. 1909

Preferring to forget Martel's (1905) remark that 'Contrary to its exaggerated claims, Gough's Cave is certainly not the most impressive in the world', Gough (1906) quotes the more favourable part of the sentence:

The Stalactites of 'Solomon's Temple', 'Niagara Falls', 'The Dome of St. Paul's', 'very well lighted with Electric Light—may TRULY be called THE MOST BEAUTIFUL IN ENGLAND.

ST. ANDREW'S WELL

Martel's (1904a) discussion on St. Andrew's Well with the conclusions he drew from information obtained locally is printed below in translation:

ON THE RISING AT WELLS (ENGLAND) AND THE RATE OF UNDERGROUND EROSION

by

E. A. Martel

Last June, at the invitation of Mr Balch, I examined several of the important underground discoveries made over the past three years by Balch and his colleagues in the Carboniferous Limestone of the Mendip Hills (Somerset) between Bristol and Wells. While recognizing the considerable geological and hydrological interest of these recent investigations, and particularly depths of 120 m to 150 m achieved as a result of unblocking shafts that were previously choked, I acquired a particularly interesting piece of information regarding the rising known as St Andrew's Well: it concerns the rate of corrosion and corrosion underground.

In the town of Wells itself, and by the east end of one of the most beautiful cathedrals in England, water gushes out of several exits, through sediments which hide the openings in the rock. This is the water that sinks 200 m higher up and 5 or 8 km away in the swallets (active sink-holes and shafts) on the Mendip plateau. The lay-out is remarkably similar to that of the spring and church of Vertus on the chalk (in the departement of Marne).

In 1895 the present Dean of Wells (who gave me this information himself) noticed some alarming cracks in the walls of the Lady Chapel and the Chapter House. To strengthen the building he arranged for underpinning of the foundations and in the course of this work, in the crypt itself, natural channels [*'canaux naturels'*] were found in the rock with water flowing through them towards St Andrew's Well. It was thus apparent that since the erection of the building (1242 to 1330 for the Quire and 1286 to 1302 for the chapter house), that is over a period of six to six and a half centuries, underground corrosion and corrosion had deepened these water channels by no more than 12 to 15 cm and brought about a separation of this amount in the foundations and a consequent overhang [*'une disjonction et un porte-à-faux de cette dimension dans les assises de l'édifice'*]. The building has only been saved from collapse long ago by the extreme slowness of this water action.

This historical and archaeological record of a particular instance of the results of underground erosion certainly does not justify any general conclusion. On the contrary, it shows how the rate of wearing away of rock by moving water must vary according to the hardness and extent of fissuring of the rock, the dip, and the flow rate, turbidity, temperature and content of the water, etc.; for J. Brunhes has described the very rapid formation of true whirlpool potholes [*'marmites de géants'*] in the soft molasse of the Maigrauge dam at Fribourg in Switzerland. Similarly, on several occasions between 1884 and 1890 I have noticed appreciable changes at underground waterfalls at Bramabiau in the Lower Lias.

It would be simple (useful as well, for predicting possible collapse) to set up a programme of accurate comparative measurements in underground rivers in limestones of different ages and of different characteristic: from the Precambrian of the Trou de Calel (Tarn) and the Devonian of Rémouchamps (Belgium), to the Upper Cretaceous of Trépail (Marne), the caves in the Miocene of Tarn-et-Garonne, and even in the tufas of Salles-la-Source (Aveyron) or Tivoli in Italy.

It seems to me that this aspect of rate, new in the study of underground hydrology, deserves serious consideration.

(12 December 1904)

The paper was noticed in Italian publications by Boegan (1905) and by Feruglio (1905a) who gave an abstract of it. The entire paper was printed also in *Spelunca* (Martel, 1904b) at the end of the paper by Balch (1904b). Martel (1905, 1921) restated its conclusions in his more general account of his visit and in a later book on underground water.

Comment by W. I. Stanton and D. T. Donovan

Martel's paper is a classic example of wrong conclusions being drawn from evidence gained casually at second hand. The underpinning of the Chapter House, carried out in 1897, has been researched and described by Colchester (1986). The Chapter House foundations, on its south side, were no more than 1.4 m deep and were based on unconsolidated subsoil. This was either made-up ground produced during the original levelling of the Cathedral site, or the Wells Gravel (Pleistocene), or both. There was no solid rock.

Following construction of the Chapter House in the later 13th Century the southern third of the building gradually settled and split away from the rest. By 1897, according to Colchester, there was a 10 cm horizontal gap in the foundations of the subsided portion and a vertical split up to 15 cm wide in the walls above. The 1897 works revealed evidence of earlier attempts to patch up the subsidence by inserting large flat stones into the gaps.

Excavations preparing for the underpinning works showed that water had flowed through the subsoil in the settlement area and had 'washed away the soil and smaller stones which bound together the big stones beneath the foundation . . . , large smooth boulders were found without any soil or mortar, where the foundations should be'.

Removal of fine-grained material by water passing through stony soil, leaving a voidy mass of jumbled clean-washed stones, is a common occurrence.

The voids between stones and boulders beneath the Chapter House, described to Martel by Dean Jex-Blake seven years after the 1897 works, were apparently interpreted by the visitor as being 'natural rock channels'. Martel assumed that the channels had been eroded in solid rock, not unconsolidated sediments, and his deductions concerning the rate of underground corrosion and corrasion were based on this misapprehension.

We learn from Martel's paper that the Lady Chapel also suffered settlement. Balch (1926, p. 16) remarks that 'in about 1890, it was found necessary to safeguard the eastern wall of the Lady Chapel which threatened to give way before the undermining action of the springs. Here channels were built and adequately supported, from which the water flows from the hidden springs beneath . . .'. Colchester also makes the point (p. 21) that under the Chapter House in 1897 'pipes were . . . built in, to enable any water to escape . . .'.

Martel evidently believed that the Chapter House works had intercepted caves through which water flowed to St. Andrew's Well. Balch, on the other hand, had no doubt that the Lady Chapel was threatened by one of the Well's satellite springs. These have formed in the ground between the Well and the Cathedral in response to the raising of water level in the Well by a total of 2.5 m, for a variety of purposes, since the 13th Century (Stanton, 1974). The final such work was the construction of the L-shaped pond that now encloses St. Andrew's Well; this took place about 1824 and it raised the water level about one metre.

A satellite spring erupted only 4 m from the wall of the Lady Chapel, by the flying buttress, in 1935 following heavy rain. This was the closest approach to the Cathedral by a spring in recent times.

Water level in the L-shaped pond and the satellite springs (46.0 m AOD) is normally one to two metres higher than the water table beneath the east end of the Cathedral. This was proved when a borehole was sunk beside the southeast wall of the Lady Chapel in 1955; the water levels in it, representing the Wells Gravel, fluctuated between 43.9 m AOD and 46.0 m AOD*. The underground stream rising to the springs must be effectively isolated from the surrounding gravels by the mainly artificial bunds that enclose St. Andrew's Well.

The works to underpin the Chapter House must have involved excavating well beneath the original foundation level which was, according to Colchester, at 46.3 m AOD. If they were not flooded (and there is no hint of this in the records) the erosion could not have been caused by the eruption of a satellite spring.

Probably, therefore, the Chapter House settlement was brought about by local surface runoff entering and eroding the subsoil, as could be caused by, for example, breakage of a surface water drain.

ACKNOWLEDGEMENTS

I am grateful to Douglas Gough, grandson of the cave discoverer, for allowing me to examine the early Gough's Cave visitors' book and to reproduce the entry concerning the Martel visit; to Chris Howes, F.R.P.S., for pointing out the significance of the meeting between Martel and Bamforth, and for photographing the Martel entry; and to the Francis Frith Collection for providing me with the dates of the photographs showing the Cox's Cave advertisements. Dr S. W. Taylor, of the University of Bristol, checked the accuracy of my translations and suggested some improvements.

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'JACK AND NANCY' AT GOUGH'S CAVE, CHEDDAR

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ABSTRACT

Legend states that Jack and Nancy Beauchamp showed Gough's Old Cave to the public in the 19th century and then went into partnership with R. C. Gough. Other evidence shows that a John Weeks managed the cave at that time. It is shown here, from primary sources, that 'Jack and Nancy' were in fact John and Ann Weeks, and some account of their activity is given.

INTRODUCTION

A local legend at Cheddar tells of a couple who showed The Great Stalactite Cavern (now known as Gough's Old Cave) to the public. They were a certain Jack and Nancy Beauchamp who lived in a small cottage against the cliff face (Fig. 1), the entrance to the cave being in their garden. After Gough arrived at Cheddar he is said to have gone into partnership with the couple, eventually gaining control of the cave himself in 1877. It was in that year that he extended the cave by the discovery of the Concert Chamber and re-named it The New Great Stalactite Cavern (Gough, 1879).



FIG. 1—A PHOTOGRAPH SHOWING JACK AND NANCY OUTSIDE THEIR COTTAGE IN 1860. THE PATH LEADS TO THE ENTRANCE OF GOUGH'S OLD CAVE, THE SIGNBOARD AND GATE OF WHICH CAN ALSO BE SEEN

Another legend circulating verbally in Cheddar is that Jack's mother originated from Banwell Abbey. She disgraced herself by marrying beneath her station and was thrown out of her home. She fled to Cheddar and is said to have lived in a cave and borne her child there.

The first legend was documented by Balch (1935), though an earlier mention '... of a certain "Jack and Nancy," and their donkey ...' had been made by Snell (1907). Irwin (1986) established that a man called Weeks appeared to be running the cave at the same time and leased the plot of ground in front of it in the later 1860s and early 1870s. Since then further research has attempted to find out more about these people.

FACTS AND DEDUCTIONS

Contemporary and other 19th century evidence indicates that:

- (a) In 1869 the cave was run by a man called Weekes (Hensler, 1968).
- (b) The photograph of Jack and Nancy was taken in 1860 (Collard, c. 1905).
- (c) In 1870 the guide was almost deaf (*Weston-super-Mare Mercury*, 2 July 1870).
- (d) In 1872 John Weeks was the lessee of the plot of ground that contained a 'garden with hut and cavern' (Longleat, 1872).
- (e) In 1873 Kilvert described his guide as '... a ghastly old man ...' who was '... almost entirely deaf ...' (North, 1968).
- (f) In 1879 Gough reprinted from a contemporary Isle of Wight newspaper* that:

... A Widow and her Son occupied the *outside* Chamber as a dwelling for 26 years from 1813 to 1839; their fireplace is still there. After the death of the Mother, the Son married and built a small room against the rock at the foot of the Cave, and lived there with his Wife 37 years. He died January, 1877.

From these facts a number of deductions and comments can be made:

- (a) The photograph of the couple show them to be in their 50s in 1860. If this is so, their birth dates would be about 1810.
- (b) The names by which they are known are in the familiar form; their actual names would be John and Ann. Inspection of the church records at Cheddar shows that the use of familiar names such as Nancy at baptisms was uncommon before the mid 19th century.
- (c) By 1870 the guide was 'almost deaf'. This would not be surprising if he were in his 60s.
- (d) The dates quoted in the Isle of Wight newspaper account are quite specific: the man married about 1840 and died in January 1877. (This assumes that occupation of the cave came to an end when his mother died. She was still living in the cave about 1838 (Thompson, 1838). No record of her death has been found.)

*Gough (1879) cites this as appearing in the *Rhyde Ventilator* for 23 August but no copy of this issue can be traced. This is perhaps not surprising as the *Ryde Ventilator* was sufficiently unimportant not to be listed at all in the *Newspaper Press Directory* of the 1870s although copies from 1871 to 1875 are held in the Isle of Wight Record Office. The British Library at Colindale has very few issues. The account does not appear in the *Ryde News* around that date.