in the cavity of the uterus and its neck, or to the mere hæmorrhagic habit, I have for many years resorted, with encouraging success, to plugging *the os uteri itself*, instead of the vagina. It occurred to me that the usual plan of filling up and distending the vagina by pieces of sponge or a handkerchief was a clumsy, painful, and inefficient mode of opposing mechanical resistance to the exit of blood from the undeveloped uterus, when its orifice could so easily be brought into sight. Acting on this idea, I have in many instances brought the cervix uteri into view, and passed inside the os two or three small pieces of cotton, tied to a piece of thread, which I wedge in firmly, covering the whole cervix with two or three larger pieces left in close contact with it on the withdrawal of the instrument. In nearly all the cases in which I have resorted to this plan, I have easily arrested the hæmorrhage. Indeed, this modification of the usual plan appears to me so simple and so consonant with common sense, that I cannot but think that it will be often adopted in severe cases. In the ordinary operation of plugging the vagina, that canal has to be distended by a large mass of sponge or linen, soaked with clotted blood, which often interferes with the functions of the bladder and rectum, is invariably a source of great discomfort to the patient, and is not always efficient. By the plan I describe, the end proposed is much more effectually compassed, with scarcely any annoyance to the patient beyond that which the use of the speculum occasions.

"Owing to the natural contractility of the cervical canal, and the pressure of fluids behind, if the cotton be not well pushed in it is soon forced out. The plug may be left without renewal twenty-four or even thirty-six hours; but, in the latter case, it is generally expelled spontaneously. A small piece of sponge may be used, and is more likely to remain *in situ* owing to its expansion; but as it must necessarily be very small, it is more likely to be permeated by blood. If sponge be used, great care should be taken to extract the piece passed into the os, to which a small piece of thread should always be tied, as the os uteri might not be able to expel it alone, owing to its mode of expansion.

"Plugging the os uteri in the way described is by far the most effectual way of arresting the hæmorrhage which precedes and accompanies abortions, when, as sometimes occurs, it resists the usual treatment, and becomes alarming. The following case will illustrate this mode of treatment and its marvellous efficacy. A healthy lady, thirty-two years of age, came up from the country to consult me. She had been married twelve years, had had five living children, and subsequently four miscarriages. Each miscarriage had been attended with gradually increasing hæmorrhage. On the last occasion, she nearly lost her life, and was greatly alarmed at the idea of again becoming pregnant. She presented uterine symptoms which led me to discover the existence of extensive ulcerative disease of the cervix uteri; no doubt connected with one of her pregnancies, and the cause of the miscarriages. I cured the disease, and sent her home. A few months afterwards, she became pregnant; and, in her alarm, again came up to town to be near me, although I rather dissuaded her from the step, which I did not consider necessary. At about the termination of the third month of pregnancy, I was sent for one night with the intimation that flooding had set in. I went immediately; and, on my arrival, found the patient pale, all but pulseless, and lying in a large pool of blood. The hæmorrhage had commenced at half-past twelve; it was only two, and yet her state was alarming; the hæmorrhage was continuing profusely, and the loss had already been very considerable. I at once placed the patient on her back, to facilitate manipulation (with half a dozen candles on a table at the bottom of the bed), introduced a large conical speculum into the vagina, and, with the speculum-forceps and large pieces of sponge, rapidly cleared the speculum, which was full of clots and fluid blood up to the brim. This accomplished, I got the os uteri into view; found it rather open; from its orifice, a stream of blood was flowing as rapidly as from an open vein. I at once pushed in several pieces of cotton tied to threads, holding one down by the sound, whilst the next was being introduced, to prevent it from being washed away, and then packed firmly the upper third of the speculum with cotton around and over the cervix. Lastly, I slowly removed the speculum, forcibly supporting the cotton packing inside with the forceps to prevent its being displaced. I had the mass of blood in which she was lying removed. In the course of about twenty minutes, the colour began to return to the face, and the pulse began to be more perceptible, and, in a few hours, she was nearly herself again, although very weak. There was not subsequently the slightest hæmorrhage; it was permanently checked. Twenty-four hours after, I removed the plugging, and did not reapply it. No fresh loss of blood was experienced; and the next day, after a few uterine pains, a diseased ovum was expelled. This lady afterwards rallied in a few days. After the last previous abortion, she was ill for months."

The above extract from my work (1861) gives so full and complete an account of this mode of treatment, and of the manner in which I usually carry it out, that there is very little to add. I would remark,

however, that I use dry cotton only, and no styptic or caustic solution whatever. The perchloride of iron is totally uncalled for, unnecessary; for the plugging is in the cervical canal, and the hæmorrhage all but always proceeds from the uterine cavity. The treatment is as simple as corking a bottle. If the cork be well pushed in, no water (blood) can come out; the hæmorrhage is arrested in a few minutes, and the patient rallies all but immediately. I have had many similar cases since this was written, and no longer fear hæmorrhage in the undeveloped or slightly developed uterus. The process also appears to be entirely devoid of risk or danger. I have never had a bad symptom. The same cannot be said of uterine injections. The wife of one of my colleagues at Mentone died of tetanus after the injection of perchloride of iron into the uterus, to arrest hæmorrhage in early pregnancy. She would probably have lived, had plugging of the cervical canal been resorted to as above.

THE WEATHER AND HEALTH AT CANNES DURING THE SEASON 1878-79.

By WILLIAM MARCET, M.D., F.R.S.

THIS last winter on the Riviera turned out a disappointment so far as its weather was concerned, especially to those who had formed an opinion of the Mediterranean coast from the exceptionally fine character of the previous season. The number of days fine and wet registered from March 1878 to April 1879, compared with my records (two seasons at Nice and four at Cannes) for the previous six winters, is as follows.

Days Fine.		Days Rainy.		Rainfall.	
	1872-78.	1878-79.	1872-78.	1878-79.	Corresponding Six Months.
November ..	19.0	15	8.8	14	For Inches.
December ..	18.5	12	9.0	13	1876-77 .. 20.47
January ..	21.7	17	5.8	12	1877-78 .. 11.43
February ..	21.2	12	4.2	12	1878-79 .. 32.92
March ..	21.0	22	7.7	9	
April ..	18.2	12	10.7	16	

Although the rainfall has been this last season equal to that of the two preceding winters put together, with a comparatively small number of fine days, I believe I am correct in stating that the health of Cannes has in no way suffered from the inclemency of the weather. Indeed, patients have, as a rule, done well; there has been no epidemic; and the sanitary condition of the place has been particularly good.

As to the atmospheric humidity, a circumstance having a direct bearing on the health of the visitors at Cannes, if we adopt the readings of the dry and wet bulb thermometers at 9 P.M. as yielding the mean degree of moisture for the twenty-four hours (which I find, from observations made at 9 A.M., 2 P.M., and midnight, to be fairly correct), the mean relative humidity of the winter 1878-79, compared with that of the last four years at Cannes, will be as follows (saturation = 100).

	1874-78.	1878-79.	Rainfall. 1878-79.
November ..	71.4	70.8	7.154
December ..	74.3	73.8	3.721
January ..	71.1	74.7	4.204
February ..	70.3	78.0	3.118
March ..	73.5	76.8	7.555
April ..	75.2	75.1	7.166
			32.918

This shews a considerable increase of moisture, especially for January, February, and March. Still, compared with London, where the atmospheric humidity (as stated in the daily weather reports of the Meteorological Office) was nearly always very near to saturation, there is a considerable balance in favour of Cannes.

The degree of atmospheric moisture on the Mediterranean coast must be taken into account with reference to health. When the air is very dry, as happens during westerly and north-westerly winds, not only do the skin and throat often feel unpleasantly dry, but, by increasing the evaporation from the skin and lungs, a degree of cold is produced occasionally proving anything but harmless.

The following instances may give an idea of the influence of dry air on the human body. At 9 A.M. on the 9th of November last, the morning was cloudless and the air clear, after a gale of wind during the night. The dry bulb thermometer showed 52.2°, and the wet bulb 41.4°; the difference being 11.2°, which means that 11.2° of heat were being taken up from the mercury to convert the moisture covering the wet bulb into vapour. If the damp breathing surface of the

lungs be roughly considered in the light of a wet bulb thermometer, it will be obvious that the moisture of the lungs took that morning nearly 11.2° of heat from those organs to be converted into vapour.

Some years ago, during the month of August, I happened to bivouac at the foot of a high perpendicular cliff near the Otemma glacier, in Switzerland, at an altitude of about 9,000 feet above the sea. As I lay down to rest, there was nothing over my head but a sky speckled over with the brightest stars. The night was calm, but very cold—indeed, much below freezing; and, although my party was supplied with blankets, the dry frosty atmosphere, as it reached the lungs, was productive of very great discomfort. Supposing the temperature of the air to have fallen to 20° Fahr., which is probably not exaggerating the degree of cold, and a difference of 12° to have occurred between a dry and wet bulb thermometer, the cold produced in the lungs must have been, approximately, but little if at all less in its degree than that which would have attended the breathing of air at 8° saturated with moisture. It was only, in the present case, after making a thick woollen wrapper into a respirator, and getting head and all under the blankets, that I could have a few moments' sleep. On the following occasion, I was able to make a more correct estimation of the amount of heat taken from the lungs by dry air.

In July last, on the summit of the Peak of Teneriffe, 12,200 feet above the sea, with a very high atmospheric temperature and a difference between the dry and wet bulb thermometers which must have exceeded 20° Fahr., I found experimentally that I exhaled a mean of five grains of water per minute, exclusively of the moisture naturally present in the air breathed. Now, according to Herschel (*Meteorology*, p. 51), every grain of water evaporated carries off with it sufficient heat to raise 960 grains 1° Fahr.; therefore the five grains of water exhaled per minute in my case represented an amount of heat carried away sufficient to raise 4,800 grains, or rather more than two-thirds of a pound, of water by 1° Fahr. per minute. At the seaside, on the Island of Teneriffe, the loss of water from the lungs was very much less. (*Proceedings of the Royal Society*, April 1879.)

I have had under my care for several seasons at Cannes a lady who is subject to cardiac neuralgia, with at times a weak and intermittent action of the heart. When the dry westerly (north-west) wind, known as "the mistral", blows, her cardiac symptoms usually set in and she becomes very weak, the temperature of the body showing a fall of one or two degrees below its normal condition. This patient is exceedingly susceptible to the action of cold, and, from the middle of winter till the spring has fairly set in, she is usually more or less ailing. As soon, however, as the weather becomes warm, her energy and vigour return, and she appears again as a person in good health. The influence of the dryness of the air in this case towards lowering the temperature of the body, through its action on the lungs and heart, is most clearly marked. In vain have I tried to dampen the air of her bedroom. A spirit-lamp and boiler failed to create impression on a hair-hygrometer, unless placed close to the steam. I am, therefore, led to conclude that it is not easy to moisten perceptibly the air of a room by the generation of steam with the ordinary means, and that this process is more uncertain in its action than is usually supposed.

It may be safely assumed that whatever favours evaporation from the lungs also facilitates the emission of carbonic acid. Dry air, therefore, will prove beneficial in assisting the lung-tissue to part with the carbonic acid which diffuses through it from the blood, while damp air will exert an opposite tendency. I have very little doubt that a ready evaporation from the lungs, together with an increased formation and a more free evolution of carbonic acid, are the main circumstances which account for the beneficial effects of high mountain-stations upon some cases of phthisis. They also go far to explain how it is that the inhabitants of mountainous districts beyond a certain altitude are not liable to consumption.

To return to the climate of last season at Cannes, the temperature of the air was decidedly lower than usual. This is shown from the following table.

CANNES (under a screen, near Seaside).					LONDON.
	Maximum.	Minimum.	Mean.	Mean of last Four Months.	Minimum.
November ..	56.1	44.0	50.1	54.4	35.2
December ..	49.0	38.8	43.9	50.9	30.8
January ..	53.7	43.5	48.6	49.3	28.6
February ..	56.2	43.6	49.9	48.4	33.8
March ..	58.4	46.0	52.2	50.7	34.5
April ..	60.6	47.6	54.1	56.0	37.2
Means..	55.5	43.9	49.8	51.6	33.4

The minimum thermometer under a screen, though freely exposed to

the changes of atmospheric temperature, does not give the actual degree of cold which would be felt by anybody out in the open air at the time, as the cold from *radiation* is not registered under these circumstances. A minimum thermometer remaining all night on the grass would, on the other hand, yield an extreme degree of cold, greater than that which would be experienced by a person in the open air. I have attempted, by taking the mean of the readings of the two thermometers, to obtain an idea of the temperature of the open air three or four feet from the ground. By observing on every successive day from April 27th till May 16th, 1879, three minima—viz., one placed on a table in the open air from three to four feet above the ground, a second on the grass, and the third inside the screen—the mean for the thermometer on the table freely exposed to the air was 46.5° , and that for the minima under the screen and on the grass combined 45.3° , the difference being only 1.2° . It may, therefore, be concluded that the method appears to apply approximately in connection with monthly means. Rather wide differences occurred at times in single observations. The means for the minima on the grass and under the screen, taken collectively, yielded the following figures, which may, I believe, be accepted as the approximate mean lowest temperature felt in the open air.

	1878-79.	1876-78.
November ..	39.0	45.7
December ..	33.9	41.3
January ..	38.7	38.5
February ..	38.9	38.8
March ..	40.1	39.7
April ..	43.5	46.5
	39.0	41.8

Therefore, the mean lower temperature of last season, as felt at night or early morning by a person in the open air, was lower than in the two preceding seasons by 2.8° only; while the means for each month, taken separately, never fall to the freezing-point. It is interesting to remark that the mean lowest temperature, as shown in this last table, for January and February, in the two preceding seasons, was much the same as in January and February for 1878-79 respectively, notwithstanding the fact that the weather was beautiful in 1876-77 and 1877-78, and wet and bad in 1878-79.

The maximum temperature in the rays of the sun was observed daily with a thermometer (black bulb *in vacuo* by Casella) placed nearly three feet above the ground. The mean monthly readings were as follows.

	Black Bulb Readings.	Black Bulb, minimum maxima for Solar Radiation.	London, Camden Square; G. T. Simons, Esq.		Excess for Cannes.
			Black Bulb Readings.	Solar Radiation.	
November ..	97	41	44.9	8.6	32.4
December ..	87	38	38.2	17.0	21
January ..	91	37	35.8	15.2	21.8
February ..	101	45	43.0	10.8	34.2
March ..	105	47	49.4	13.7	33.3
April ..	118	57			

This excess of solar radiation for Cannes over London is very interesting; and throws much light on the cause of the comparatively high temperature at Cannes. The direct solar heat is thus found to be much higher at the southern station than in London. In such a winter as we have just had, this excess of temperature shows the great value of Cannes as a health-resort for people living in London, and indeed everywhere in the United Kingdom. The cause of this increased temperature is, to some extent of course, the more southern latitude; but I believe it to be mainly a drier state of the atmosphere, there being a degree of atmospheric humidity much lower at Cannes than in London. It follows that, while in London the heat of the sun's rays is absorbed in winter to a very great extent before it reaches the earth, a similar absorption occurs in a much smaller degree in the southern station.

Cold and damp air, like dry air, exerts an influence towards lowering the temperature of the body; but, while dry air promotes the expiration of carbonic acid by increasing the evaporation of moisture from the lungs, cold damp air interferes in every way with the exit of the carbonic acid from the blood at the lungs, that acting indirectly as a cause of pulmonary irritation. While in the dry light air of Davos the blood becomes rapidly purified at the lungs of the carbonic acid it contains, in England the heavy, damp, and cold air opposes itself to the free passage of carbonic acid through the lung-tissue. At Cannes, although under a heavy atmospheric pressure, the warm and dry air breathed must assist towards the free emission of carbonic acid at the lungs, without exerting the influence which must result from the cold

mountain air towards the contraction of the pulmonary capillaries and a certain degree of interference with the pulmonary circulation.

Although we had no snow this last winter at Cannes, there was much more ice than usual. The effect of the sea as a source of heat was interesting to note; the mud and road-puddles being on several occasions frozen a few hundred yards from the shore, while soft and free from ice at the immediate seaside.

The temperature of the surface of the Mediterranean, taken daily at Cannes during the last six winter months, yielded the following monthly mean :

		1878-79.	1874-78.
November		58.3 ..	61.2
December		56.6 ..	57.6
January ..		55.4 ..	56.1
February ..		55.7 ..	55.5
March ..		58.1 ..	56.3
April ..		58.4 ..	59.5
Mean for the season		54.2 ..	57.7

Hence it will be seen that the temperature of the sea at its surface was less available than usual towards checking the fall of temperature of the air; still, while the mean atmospheric temperature for the winter was 49.8°, we find that of the sea higher by 4.4°; so that the store of heat from the preceding summer taken up by the Mediterranean certainly assisted towards the maintenance of a comparatively mild winter temperature of the atmosphere.

The following table gives the number of days the wind blew last winter at Cannes, the notes being taken at 9 A.M. and 2 P.M.:

	Calm.		Light to Fresh.		Strong to a Gale.	
	9 A.M.	2 P.M.	9 A.M.	2 P.M.	9 A.M.	2 P.M.
November..	17	9	8	16	5	5
December..	13	14	13	12	5	5
January ..	18	6	10	20	3	5
February ..	18	8	4	15	6	5
March ..	18	1	12	26	1	3
April ..	11	1	15	21	4	9

Different localities at Cannes are far from being exposed to the wind in the same degree: a great many of them are sheltered from the dry westerly wind; and at some places hardly any wind at all may be felt, while a gale is blowing at sea. The mistral, or north-west wind, is, I understand, stronger and more frequent at Toulon and Marseilles than at Cannes.

Many people in England form an idea of the character of the air on the Riviera from that of the Atlantic seaside in the South of England; they compare it with that of Torquay or Bournemouth, or consider it perhaps somewhat like that of the Scilly Islands. This is quite a mistake; Cannes and the Riviera cannot compare with any place on the British coast. The climate is much drier, and the weather finer, with much more sunshine. A residence at Cannes, selected some little distance from the seaside, and somewhat above the sea-level, exerts a bracing influence, though not equal to that of Brighton or Hastings in the summer or early autumn. Such a climate has a decided influence towards equalising the circulation, and thereby checking congestions leading to hæmorrhage. As spring weather sets in, however, cases of hæmoptysis are occasionally met with; and I am in the habit of advising those who have suffered from pulmonary hæmorrhage to leave Cannes about the end of April. A residence at some sheltered place in Switzerland, such as Bex or Montreux, before moving further towards the British Channel, is I find attended, as a rule, with much benefit. Nothing, however, is so pleasing as the fine, fresh, bracing air of the British Isles, that welcomes one home like an old friend.

THE THERMAL SPRINGS OF ROYAT, LA BOURBOULE, AND CHÂTEL-GUYON.

By G. H. BRANDT, M.D., OPORTO.

THIS interesting group of mineral springs, situated in the middle of France, Department of Puy-de-Dôme (Auvergne), is remarkable for the great value of the distinct therapeutic action possessed by each of them. These three thermal stations possess waters of determined chemical properties; those of Royat are characterised by the large percentage of lithia they contain in combination with various salts, and iron and manganese, constituting a tonic alkaline water. La Bourboule springs are, no doubt, the most remarkable of all the known mineral waters in Europe, their chief characteristic being that they are the strongest arsenical waters yet analysed. Châtel-Guyon possesses the only laxative

waters in France; and they can compare favourably with the numerous springs in Germany and Hungary.

My object in bringing before the profession the importance of these three springs is, firstly, because little as yet has been said about them in England; and, secondly, to show the valuable therapeutic agents we have at our command to combat almost with certainty three classes of diseases, all of which are most intractable to the usual methods of treatment at present in use. Few diseases have been so thoroughly investigated as gout; in this class of disease, British authors have shown themselves pre-eminent, no doubt in some measure owing to its prevalence in England, and to the fact of many distinguished members of our profession having been themselves victims to the malady. Among the numerous authors, there is one whose name heads the list. Dr. Garrod has thoroughly worked out the subject, and all agree with his conclusions. His practical experiments have shown that there exists a solvent for the gouty deposits of urate of soda, and that that solvent is lithia; this question being settled, it remains to find out the best method of applying the remedy to the disease, so as to obtain the best results. Two conditions are requisite for carrying out this purpose; first, to place the patient in the most favourable conditions for treatment; secondly, to apply the remedy in its most potent form. To carry out the first indication, all, I believe will agree, that a healthy locality, with interesting scenery, rather a high temperature, where exercise can be taken in the air on flat ground, so as to encourage a free action of the skin, are most favourable conditions. To obtain the second indication—that of introducing the remedy under its most active conditions—few, if any, will deny that natural waters, containing the remedy in combination with other adjuncts prepared by nature, and offered to us under a proper temperature for external and internal use, are conditions we cannot obtain with all the wonderful chemical knowledge we possess; and why? Because there exists in these products of nature an active principle, invisible, imponderable, impalpable, which we cannot detect; and which gives power, action, animation, and certain virtues, which man can but poorly imitate and never equal.

Royat.—The numerous experiments made by competent observers, on thousands of patients under treatment at Royat, prove that the action of these thermal springs, applied in various forms and in a methodical way, are not only most beneficial in that obstinate disease called gout, but also in all the forms of the diathesis which modern pathologists have described under the name of "arthritis". I hope, by the end of next season at Royat, to be able to publish some interesting observations on the effects of mechanical massage on arthritic patients whilst under the influence of the mineral waters.

La Bourboule.—The mineral thermal springs of La Bourboule were known several centuries ago, as we see by a description, in 1540, of a rudimentary bath, in which patients from an infirmary in the hamlet of La Bourboule used to bathe. Owing to the small supply of water, the reputation of these springs did not extend much beyond the limits of the locality; and it is only within the last twenty years that their value has been justly appreciated, owing chiefly to the efforts of Monsieur Perrière, a most active and industrious man, who, by continued labours, discovered the great source to which he gave his name. This source affords an immense supply of water, at a temperature of 140 deg. Fahr., each quart containing over one-tenth of a grain of metallic arsenic, or one-third of a grain of arseniate of soda. Two other springs (Sedaigues and La Plagne) of water of the same kind, at a moderate temperature of 91.4 deg. Fahr. and 86 deg. Fahr., afford about one hundred gallons per minute. These secondary springs have a great importance at La Bourboule, as they serve for graduating the temperature of the water from the great spring (Perrière). The advantages of reducing the temperature of a hot mineral water with water of the same kind, but of a lower temperature, are obvious; nothing is lost by evaporation, and it retains unaltered its active principles. These waters are employed as a drink, douches, lotions, inhalations, and pulverised as a spray. According to M. Lefort's analyses, these waters, when properly bottled, keep for a considerable time without losing their principal properties, owing to the small quantity of iron and organic matter they contain. Besides chloride of sodium, bicarbonate of soda, and arsenic, these waters contain other substances—such as iron, lime, silica, etc.—so admirably combined, that Dr. Gubler compares them to a true mineral lymph. Strange to say, the extraordinary cures performed by these waters for so many years only attracted the attention of chemists in 1852, when Thénard, surprised at their marvellous effects, investigated the cause, and discovered the presence of arsenic in a medicinal dose. Since then, a new era began for La Bourboule, and it now possesses one of the finest and most complete establishments in Europe.

The diseases in which arsenic, in the shape of arseniate of soda, plays such an important part are anæmia, chlorosis, certain forms of cutaneous diseases, malarial cachexia, chronic syphilis; and last, but not least, in