removal of the hair bearing skin and split skin grafting.⁵ No recurrence was evident at median follow up of 24 months, but in nine axillae with more severe disease treated by similar excision and flap repair a 22% recurrence rate was noted.

In contrast, recurrence in the axilla was found in 3% of our patients, presumably reflecting our wider clearance of the area bearing hair. Anderson and Dockerty reviewed 38 patients after surgery for perianal hidradenitis.²² At a minimum follow up of eight years 45% had required further treatment for disease at the same site; only eight patients reviewed had been free of disease since operation. Though follow up was shorter in our series, we did not see recurrence after excision of perianal skin. This may reflect our more radical approach.

Apocrine glands of axillary skin are confined mainly to the area bearing hair and the surrounding two centimetres.²³ Woollard applied the term "anal organ" to the similarly concentrated mass of apocrine tissue situated in the circumanal region.²⁴ Adequate excision of skin from these sites is likely to reward the surgeon and the patient with a low recurrence rate. The results of our study confirm this. Apocrine glands are more diffuse in the groin, perineum, and inframammary regions, making complete removal impracticable. Recurrence after surgery at these sites will occur more often. Thirty nine per cent of patients who underwent inguinoperineal excision and half of those who had mammary disease developed lesions in proximity to the scar. Recurrent disease may therefore reflect too limited an excision or widespread, sometimes "ectopic," gland distribution. The former recurrence usually requires further surgery to complete the excision; the latter can be managed conservatively or by local removal of the recurrent lesion. Despite a high recurrence rate most patients are well satisfied after inguinoperineal excision because local areas of "ectopic" recurrence are trivial compared with the disease before surgery. This is not the case with submammary disease, in which recurrence has been widespread and approximates the original disease.

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Medical History

Anatomy and subversion: 150th anniversary of Georg Büchner's death

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Karl Georg Büchner died of typhus in Zürich on 19 February 1837 in his 24th year. Like the friends in whose home he had been cared for, and like Schönlein, one of the physicians who attended him, he was a refugee from the political oppression prevailing in the German states of the post-Metternich era. Death had followed several days of intermittent delirium during which the patient repeatedly talked of friends who were in prison in the state of Hessen-Darmstadt, from which he had fled. His funeral was attended by many of the leading citizens of Zürich, including its two mayors.

Clearly, he was recognised as a man to be honoured for his achievements and for his promise. Yet it is doubtful whether even

those who knew him best could have foreseen how highly posterity would come to value that achievement or indeed what its true nature was. His legacy was indeed remarkable—a literary output consisting of works (*Woyzeck*, *Danton's Death*, *Lenz*) which foreshadowed the preoccupations of Kafka and of Expressionism; a philosophy of science that rebutted the woolly concepts of Romantic natural history; and political utterances that anticipated Marx.

Family of physicians and surgeons

Büchner was born into a medical family in the Duchy of Hessen-Darmstadt in October 1813. On his father's side he came from a long line of physicians and barber surgeons. His father, Dr Ernst Büchner, had served as an army surgeon with the Garde Napoleon, an experience that had left him a devoted Francophile, devoted, however, not to the ideals of revolution but to Napoleonic strength and authoritarianism, a conservatism that was to lead to a serious rift with his son.

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As the eldest son Georg was destined for medicine, but his earliest inclinations were to politics, philosophy, and literature. A schoolfellow describes how Büchner was one of a group who on Sunday afternoons would go out into the woods and read Shakespeare together. With another classmate, Karl Minnegerode, Büchner became an enthusiast for the revolutionary ideals spreading from the French uprising of 1830, and the pair used to greet each other with "Bonjour, citoyen."¹

Engraving of a portrait of Georg Büchner. Published with the kind permission of the Royal Opera House Covent Garden.

In the autumn of 1831 Büchner entered medical school, enrolling according to his father's wish at Strasbourg. The two years spent in the French city were to be decisive for nearly all aspects of his life. Strasbourg was intellectually stimulating in an entirely new way. The medical school was a centre of excellence, and two teachers especially influenced Büchner's future development—Georges Duvernoy, an anatomist and zoologist, and Ernst Lauth, who taught physiology. His fellow medical students numbered many who were active in radical politics, and Büchner frequently attended their meetings, though he tended to play this down in his letters home, rightly fearing his father's displeasure.² In Strasbourg the young student also found a sweetheart, Minna Jaegle, the daughter of the house in which he lodged. The couple became engaged, secretly at first, but by 1834 with parental blessing.

Oppressive Hessen

The laws of Hessen allowed students from the duchy to study abroad for no more than two years, and accordingly Büchner was summoned home in the late summer of 1833 to continue his medical studies at Giessen. Whereas Strasbourg had been a totally liberating experience, Giessen filled Georg with despair. Teaching at the university was lamentable in the extreme, with the notable exception of the chemist Liebig. (Büchner was later to pillory one of his Giessen teachers, Wilbrand, in the character of the doctor in *Woyzeck*.)

Politically the atmosphere was oppressive. Hessen was ruled by a corrupt autocracy, poverty was widespread, and radical political ideas were outlawed. Büchner missed his Strasbourg friends and most of all Minna. He felt alienated from his fellow students, who mocked his political ideals.³ It must have seemed the lowest ebb of his experience and, not surprisingly, he became ill.

In November 1833 he went down with an attack of what was probably viral meningitis, and though the acute phase was shortlived, it was followed by several months of depression, an experience that was probably important for the understanding of psychosis that he was to show in his drama *Woyzeck* and his novella *Lenz*. In March 1834 he wrote to Minna: "... a constant starting up from sleep and a tumult of thoughts in which I lose my senses. ...

A sense of death oppressed me. Everyone seemed to have the Hippocratic facies."⁴ A few days later this intense mood had given way to feelings of impotence and nihilism: "I feel annihilated by the hideous inevitability of history. ... The individual no more than froth on the wave. ..."⁵

It was perhaps a kind of recklessness born of this mood of despair that drove Büchner into revolutionary activity, of which Giessen was then a centre, although he had doubts about whether its goals could be achieved in the political circumstances which obtained. Together with a country pastor called Weidig he wrote and published a fiercely partisan pamphlet, *The Hessian Courier*. Under the slogan "Peace to the cottages! War against the palaces!" Büchner proceeded to a devastating analysis of the economics of princely rule. Whereas hitherto antigovernment writings had consisted mainly of protests against censorship instituted by Metternich and pleas for more constitutional forms of government, Büchner argued that the true basis of oppression was economic and that liberal proposals would merely lead to the replacement of one ruling caste by another. The state claimed to be the instrument of law and order for the good of all. "See what it means, this law and order! 700 000 people paying six million [florins]. ... Living under law and order means going hungry and living like a slave!"⁶

Büchner's short life was characterised by a recurring pattern of almost simultaneous preoccupation with opposing themes and emotions. Within a few months of writing the *Courier* he had completed, in his drama *Danton's Death*, a work that looks beyond revolution and foresees its end, like Danton's end, in disillusion and death. Julian Hilton has called it "the most remarkable first play in European culture."⁷ In it Büchner was not only giving expression to the fatalistic view of which he had written to Minna but

Alban Berg's opera *Woyzeck* in its first Covent Garden production, 1952. Frederick Dalberg as the doctor, Marko Rothmüller as Woyzeck. Published with the kind permission of the Royal Opera House Covent Garden.

was describing his own inner torments. The flurry of rebellion that culminated in the printing and distribution of the *Courier* ended in the persecution and arrest of many of his fellow activists, including his collaborator, Weidig, and his old school friend, Minnegerode. (Weidig committed suicide in prison a few days after Büchner's death, while Minnegerode was driven to insanity by the maltreatment to which he was subjected.) Büchner lay low at his parents' home in Darmstadt, reading and dissecting and writing *Danton's Death*. He later acknowledged that it was the examining magistrate Georgi and his police who served as his muses.⁸ The net was closing in, and in March 1835 he was able to escape to Strasbourg only just in time to avoid arrest. It is likely that the guilt of this escape remained with him till his death and that it profoundly influenced the themes he was to develop.

Pursuing science and writing

Settled in Strasbourg, Büchner began again to devote himself to his multifarious intellectual interests. During the winter of 1835-6 he worked on a dissertation on the nervous system of the barbel, which was to gain him a doctorate of the University of Strasbourg. At the same time he was reading an account of the illness (probably a schizoaffective disorder) of the poet and dramatist J M R Lenz, whose work he greatly admired and whose episodic dramatic technique he used in his own plays. This account he turned into a prose piece, unique for its time, which explored from within a psychotic world of thought and feeling, with a subsequent emergence into recovery that is only partial: "... [Lenz] did everything in the same way that others did, but there was a ghastly emptiness in him; he felt no dread any more, no desire—and so he went on living."⁹

In 1836, shortly after completing another play, *Leonce and Lena*, a black comedy that has been hailed as a forerunner of the theatre of the absurd,¹⁰ Büchner moved to Zürich to take up a lectureship in comparative anatomy. Scientific and literary activity continued side by side and at a hectic pace. "By day I sit with my scalpel, and by night with my books," he wrote to his brother in November.¹¹ Among his reading was an account of the trial for murder of a wigmaker and former soldier, Johann Woyzeck, and the long deposition of the examining physician, Dr Clarus, as to the mental state of the accused.^{12 13} Woyzeck had murdered his mistress, the widow of an army surgeon, in a fit of jealousy and showed clear evidence from Clarus's account of a schizophrenic psychosis. From this unemotional legal document Büchner created a dramatic masterpiece, *Woyzeck*, which Esslin has called "one of the first modern plays—the germ of much of Brecht and of German Expressionism."¹⁰

Woyzeck was uncompleted when Büchner died and was not performed until shortly before the outbreak of the first world war. One of the earliest performances was seen by the composer Alban Berg, who was inspired to make it the subject of his first opera, and it is in this form that the work is most widely known. It deserves to stand on its own, however, for it encapsulates many of the themes that have preoccupied twentieth century art: alienation and power, violence and madness. German psychiatry during Büchner's time was still engaged in the debate between the *Somatiker*, who saw all mental illness as due to organic disease, and the *Psychiker*, for whom it was invariably the result of sin. (The utterances of the doctor in the play resemble the writings of some of the *Somatiker*.¹⁴) Büchner saw Woyzeck's condition as representing something universal. "What is it in us," he had written to Minna, "that murders, lies, and steals?"¹⁵ Inarticulate, oppressed, impotent, in a world without meaning, Woyzeck descends into a blind rage which he cannot contain (and which for the doctor is "unscientific") and thence into madness and murder.

Meanwhile the scientist Büchner had been grappling with the question of absence of meaning in the universe but with vastly greater optimism than in *Woyzeck*. In his paper "On the cranial nerves," which he presented on his inauguration to a lectureship at Zürich, he attacked teleological theories as to

function. "We do not have hands in order that we may grasp, rather we grasp because we have hands. . . . Nature does not concern herself with purposes . . . but in all her manifestations is totally sufficient unto herself."¹⁵ Büchner contrasted the sterility of a priori theorising with the "fresh green life" which is the subject matter of the natural sciences and in which he found beauty and harmony.

The gulf between the pessimism of *Woyzeck* and the acceptance of the world in "On the cranial nerves" could hardly be more complete, yet Büchner was occupied with both almost simultaneously during the autumn and winter of 1836-7. This contrast may have been the expression of a violent inner tension that may have contributed to his illness and death in February 1837. In a psychoanalytically oriented review of Büchner's life and writing White maintained that much of the conflict that is evident can be attributed to Büchner's relationship with his authoritarian father and to guilt over his rebellion.¹⁶ White points out the recurrence of the word *Schulden* (debts or guilt) in his terminal delirium.

Whether or not such conflicts played any part in the genesis of his final illness we can only regret the early death of one who achieved so much and promised so much more.

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A healthy 75 year old man was found at a routine medical screening to have a thyroxine concentration four times the upper limit of normal. He was clinically euthyroid. What could be the cause of this high concentration and should he be further investigated?

I assume that the thyroxine concentration refers to total thyroxine and that the patient is truly euthyroid, bearing in mind that hyperthyroidism can present in an atypical manner in the elderly. The most likely cause of a thyroxine concentration of four times the upper limit of normal is the inheritance of an excess of thyroxine binding globulin. This is an X linked form of inheritance so that men are homozygous with a three to fourfold increase in thyroxine binding globulin and hence in total thyroxine. The serum triiodothyronine concentration will also be raised but the free hormone values (free thyroxine and free triiodothyronine) will be normal. The new sensitive thyroid stimulating hormone assay (immunoradiometric assay) can distinguish the euthyroid state from hyperthyroidism and will be normal in this patient. These are the further investigations that are indicated. Family studies will also be appropriate. All his daughters will be heterozygous and so will have a twofold increase in their thyroxine binding globulin and hence their serum total thyroxine concentrations, and one half of their sons will be homozygous and will have similar results of thyroid function tests to their grandfather. There are other abnormal binding globulins that are inherited, the most important of which is familial dysalbuminaemic hyperthyroxinaemia. This is an inherited autosomal dominant disorder that occurs because of the presence of an abnormal albumin that binds thyroxine avidly. The serum total thyroxine is usually

double the normal value whereas the serum total triiodothyronine is normal. The free thyroxine is erroneously raised because of the enhanced affinity of the isotope analogue used in the assay for the abnormal albumin. The free triiodothyronine, however, is normal as the triiodothyronine analogue does not bind more strongly to the variant albumin.

Another cause of euthyroid hyperthyroxinaemia is autoantibodies that bind circulating iodothyronines. These usually occur in patients with autoimmune thyroid disease and frequently affect both total thyroxine and free thyroxine. The presence of such antibodies should be suspected when the free thyroxine concentration is inconsistent with the clinical picture or with the thyroid stimulating hormone concentrations. There are rare occasions when resistance to thyroid hormones develops. These patients usually have raised free hormone as well as total hormone concentrations and frequently have thyroid enlargement, and their thyroid stimulating hormone concentration is usually modestly raised. There are also several drugs and medical diseases that may give an acquired increase in thyroxine binding globulin and hence in serum total thyroxine. Oestrogens are the most important. There is an excellent review by Stockigt and Barlow¹ and another good review by Borst *et al.*² Bantle *et al.* have reviewed the rare cases in which there is resistance to thyroid hormones at receptor level.³—C W H HAVARD, consultant endocrinologist, London.

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