Italian sexology, Nicola Pende’s biotypology and hormone treatments in the 1920s

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By the second half of the nineteenth century, Italy had already produced a number of sexologists who had won Europe-wide reputations.¹ For example, in 1854 Paolo Mantegazza published *Fisiologia del piacere* [Physiology of Pleasure], the first of his scientific investigations into the physiological, psychological, and cultural aspects of sexual pleasure.² During the 1880s, Cesare Lombroso himself began working on the study of sexual psychopathologies. His major works such as *L'uomo delinquente* [Criminal Man] (1876) and *La donna delinquente* [Criminal Woman] (1893) contained a number of pages on the study of the ‘sexual perversions’ and served to popularise sexual knowledge in and beyond strictly medical circles, while his journal, *Archivio di psichiatria* [Archive of Psychiatry], also did much to promote sexology. Lombroso famously argued that sexual perversions were triggered by both environmental and congenital causes, but ultimately he linked behaviours like homosexuality to degeneration. In his judgement, all sexual perversions were due to the presence of a tainted constitution. By 1896, Italy had also produced a sexological journal, *Archivio delle psichopatie sessuali* [Archive of Sexual Psychopathologies], edited by the criminal anthropologist Pasquale Penta. Although this journal would prove to be short-lived, sexology remained prominent in both Lombroso’s *Archivio di psichiatria* [Archive of Psychiatry] and Penta’s subsequent journal, *Rivista mensile di psichiatria forense, antropologia criminale e scienze affini* [Monthly Journal of Forensic Psychiatry, Criminal Anthropology and Related Sciences] which was fundamentally a watered-down version of *Archivio delle psichopatie sessuali.*³ Finally, in 1921, the historian of science Aldo Mieli launched another Italian sexological journal, *Rassegna di studi sessuali* [Review of Sexual Studies].

In the interwar period, biotypology, a new medical classificatory science grounded on constitutional medicine and endocrinology, led sexology in a new direction, less

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concerned to understand the different kinds of sexual behaviour than to normalise people’s bodies and their sexual desires. Developed by the Italian endocrinologist Nicola Pende (1880-1970), biotypology shared with late-nineteenth-century criminal anthropology the assumption that ‘sexual perversions’ were constitutional abnormalities. Whereas Lombroso believed it possible to identify ‘sexual perverts’ by the presence of stigmata of degeneration, Pende assumed that sexual abnormalities could be diagnosed through the impact of certain hormonal disorders. Yet some of the physical signs they both associated with ‘sexual abnormalities’ were the same. For example, both Lombroso and Pende believed male homosexuals presented feminine secondary sexual characteristics such as little or no facial hair, broad thighs and features that indicated an unhealthy constitution (for example, a pallid face).

The methods Lombroso and Pende used to treat ‘sexual abnormalities’ did, however, differ. Lombroso believed that confining homosexuals in special institutions, such as asylums, might be one practical solution serving to defend society from the spread of sexual perversion, but he did not systematically use any medical treatment on homosexuals. He had occasionally employed means like the cauterisation of the clitoris to ‘cure’ female homosexuality, but, generally speaking, he, like most of the medical men working on sexology in this period, was more interested in understanding why an individual manifested ‘abnormal’ sexual desires than in curing them. The assumption behind much of late-nineteenth-century sexology was that ‘sexual perversions’ were congenital, and therefore that there was little hope of ‘normalising’ individuals. Lombroso’s case studies of sexual inverts, along with a meticulous examination of their typical physical characteristics, reveal a willingness to consider their personal history, their inclinations, and the milieu that had contributed to the emergence of certain of their deviant behaviours. This readiness to understand the phenomenon of sexual deviancy also meant that late-nineteenth-century criminal anthropologists compiled detailed case studies that disclosed a great deal about the lives of the subjects analysed.4

By contrast, Pende’s biotypological work does not illuminate the personal lives of his case studies. Instead, it suggests a faith in the power of science to treat all manner of abnormalities, and evinces a more systematic use of invasive methods than was evident

4 Beccalossi, Female Sexual Inversion, 117-146.
in the practice of late-nineteenth-century sexologists. Indeed, Pende employed a range of hormonal therapies to treat sexual dysfunctions like impotence and ‘endocrinological abnormalities’ that manifested bodily and psychological characteristics typical of the opposite sex. These ‘abnormalities’, as I will show, were often associated with homosexuality. As the historian Lorenzo Benadusi has rightly suggested in his brief, but insightful, analysis of the Italian scientist, Pende’s endocrinology was meant to be an instrument to treat infertility and to bring about the normalising of individuals in the interwar period.5 While Pende has been extensively studied in recent years in relation to his contribution to eugenics and racist theories during the Italian Fascist regime, his role in the development of sexology remains largely unexplored. Yet, Pende’s eugenics was deeply intertwined firstly with endocrinology, and secondly with medical sexual knowledge. His research and copious publications had a profound impact upon medical men working on sexology far beyond the borders of Italy, especially in Latin America.6

By focussing on a selection of Pende’s writings from the 1920s on ‘endocrinological abnormalities’ associated with impotence, lack of virility for men, and lack of femininity for women and finally homosexuality, this essay aims to illustrate the ways in which hormone research introduced an innovative approach to the study of sexual behaviour in Italian sexology, and to show how it was used to normalise individuals. It will demonstrate how endocrinology promoted an understanding of the body and sexual desire in which the attributes of masculinity and femininity, and even of sexual orientation, were malleable and subject to deliberate engineering.

Medical knowledge and internal secretions

While in the second half of the nineteenth century Italian sexology, under the influence of psychiatry and criminal anthropology, was advancing in leaps and bounds, in other

countries scientific research on hormones led to a new understanding of the functioning of the human body. But the full impact of these studies on medical sexual knowledge was only felt in the interwar period, when medical researchers began to grasp the wider implications of new scientific discoveries in the field of endocrinology. In the mid-nineteenth century, the French physiologist Claude Bernard, who is credited with coining the term ‘internal secretion’, came to believe that certain organs produce chemical substances that flow into the bloodstream and contribute to maintaining the body’s functions in a stable state.\(^7\) By the end of the nineteenth century more and more credence was given to the view that the testes, ovaries and other glands had an endocrine function,\(^8\) and physiologists shortly came to argue that the internal secretions of the testes and ovaries had a reinvigorating effect on the body. In 1889, the French physiologist and neurologist, Charles-Édouard Brown-Séquard, began experiments to treat virtually any and every kind of disease with a new method, known as ‘organotherapy’ and ‘opotherapy’, which used extracts made from animal glands or tissues.\(^9\) Brown-Séquard believed that if a disorder was caused by dysfunctions in the individual’s glands, the use of extracts taken from the same glands in animals, when administered orally or injected, could restore the individual’s endocrine function. For example, various forms of uterine disease, which were believed to be caused by dysfunctional ovaries, were treated with extracts prepared from animals’ ovaries.\(^10\) Brown-Séquard also believed that extracts from an animal’s testis guaranteed eternal youthfulness and vigour for men. Following these theories, glandular extracts, usually collected in slaughterhouses, became increasingly employed as experimental therapeutic resources. For example, in the 1890s, animal pancreas and thyroid gland extract injections were tested at University College in London in an attempt to treat diabetes and myxoedema,\(^11\) and in Durham, George Murray started to experiment with sheep thyroid implants to treat diabetes in humans.\(^12\)

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\(^10\) As hysteria was believed to be a uterine disease, some doctors treated it with glandular extracts.


In 1901, the first substance purified from the internal secretion of the medulla in the adrenal gland was isolated and dubbed ‘epinephrine’. In the same year the American firm, Parke, Davis and Company, synthesised in the laboratory the substance that came to be known as ‘adrenalin’. In 1905, the English physiologist, Ernest Starling, defined the term ‘hormone’ (from the Greek for ‘excite’ or ‘arouse’). A hormone, Starling stated, was a chemical substance produced in one organ and transported via the bloodstream to another location in the body in order to regulate and coordinate the growth of the organism. But it was in the interwar period that endocrinology became one of the most dynamic medical disciplines, for in those years doctors started to use hormones to treat a wide range of conditions. An important boost to the discipline came with the introduction of insulin, extracted from the pancreas, and launched in the early 1920s as a weapon in the fight against diabetes.

Beyond medical circles, opotherapy captured the public imagination for its use in rejuvenation therapies, as newspapers - and novels such as Black Oxen (1923), by Gertrude Atherton - introduced it to a wider public. For men, the rejuvenation operation could entail either a vasectomy, on the assumption that this would permit the body to retain its hormonal secretions, or the grafting of foreign testicular material (usually from a non-human animal) on to the gonads. Some physicians also endorsed grafting operations for women, but the more common procedure was to ‘stimulate’ the production of hormones in the ovaries through the application of x-rays or electricity. By the end of 1926, the Russian-born surgeon, Serge Voronoff, working in France, had performed a thousand monkey gland transplants in men in order to rejuvenate them.

As Chandak Sengoopta has suggested, the concept of the hormone brought a new understanding of the physiology of the body. A conception predicated on malleable, chemical agencies replaced a more rigid nineteenth-century understanding of the

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14 Nordlund, Hormones of Life, 28.
16 Ibid., 1053.
physiology of the body controlled by the central nervous system. As doctors began administering glandular extracts from the testes and ovaries to men and women, it became clear that people’s secondary sexual characteristics could in fact be modified. Some researchers even hypothesised that internal secretions could affect the sexual behaviour of both animals and human beings. Soon, the internal secretions of the gonads, or ‘sex hormones’, came to be understood as the chemical regulators of sexual development and sexual behaviour. In the early 1910s, Eugen Steinach, the Austrian physiologist, started to transplant ovaries into castrated male animals, precipitating the development of typical female characteristics, and to transplant testicles into sterilised female animals, triggering the development of typical male characteristics. Thus Steinach came to believe that testes and ovaries had masculinising and feminising effects on the recipient. In 1918 Steinach, with the urologist Robert Lichterstern, performed a testicular grafting with the aim of learning whether homosexuality was treatable. In this instance, they transplanted the undescended testis of a healthy and sexually ‘normal’ man into a 30-year-old homosexual with an effeminate physique and, after the operation, the patient started to have sex with female prostitutes.

Medical treatments relying on the effects of glandular extracts and gland transplants also gained popularity in Italy where, in the interwar period, doctors employed opotherapy to treat various sexual dysfunctions such as impotence and perceived deviant sexual behaviours such as homosexuality. In 1923, Ferdinando De Napoli, writing in the *Rassegna di studi sessuali*, wrote that he had treated two cases of homosexuality through opotherapy. One was a case of ‘occasional’ homosexuality, while the second was a case of ‘congenital’ homosexuality, and the first case in particular had convinced him of the effectiveness of the treatment. Both men were treated with ‘viroglandolo’ pills, which contained dried extracts of testicular, thyroid, pituitary and adrenal glands, and even brain extracts.

In the article discussing this treatment, De Napoli explained the theory underpinning the use of opotherapy as a method to treat homosexuality. He argued that all human beings

18 Ibid., 1-2.
19 Ibid., 79-80.
contain both male and female physical characteristics. Drawing on the Austrian philosopher, Otto Weininger, De Napoli suggested that in the psychological sphere we all have a masculine 'I' (U) and a feminine 'I' (D), and in the sexual sphere of every human being there are opposite anatomical elements that are masculine (M) and feminine (F). The human embryo and the foetus are not sexually differentiated until the third month, so morphologically the two sexes start to differ in their secondary sexual characteristics only when the sexual glands develop.\(^2^1\) When the M elements (masculine interstitial cells), which determine the endocrine male character, prevail, the result is a male and very often his psycho-sexual characteristics are M U. Conversely, if the F element (female interstitial cells) prevails, the result is a female.\(^2^2\) Therefore, our essence is not originally male or female; we are all neutral. As De Napoli wrote: ‘So we are not born men and women, but we become such’.\(^2^3\) According to De Napoli, most of the time the psycho-sexual elements are linked to anatomical elements, but abnormalities emerge when there is a dissociation between the sexual characteristics (biological sex and secondary sexual characteristics) and the psychological characteristics,\(^2^4\) and such dissociation results in homosexuality. Relying on Steinach’s theory, according to which male homosexuals’ testicles contain interstitial cells (F), De Napoli argued that ophotherapy had the capacity to restore the endocrinial balance and could alter the sexual orientation if male homosexuals were given glandular extracts of testes and female homosexuals those of ovaries.\(^2^5\) In this article, De Napoli did not refer to Pende’s biotypology, but in Italy it was this new medical science that promoted the use of hormones to treat sexual dysfunctions and sexual perversions in the interwar period.

**Nicola Pende, Biotypology and Hormonal Research**

Pende graduated in medicine in 1903 with a thesis involving experimentation on kittens in which he demonstrated the relationship between the endocrine glands, especially the adrenal ones, with the nervous system.\(^2^6\) Prior to the First World War, he initially worked

\(^{21}\) Ibid., 235.
\(^{22}\) Ibid., 231.
\(^{23}\) Ibid., 236.
\(^{24}\) Ibid., 231-32.
\(^{25}\) Ibid., 242.
in various hospitals in Rome and then was appointed as medical assistant to Giacinto Viola, an eminent proponent of constitutional medicine, at the Special Medical Pathology Cabinet at the University of Palermo. After serving as a doctor in military hospitals during the war, Pende continued to work in the Universities of Bologna, Messina, and in 1923 in Bari where he helped to establish the University of Bari. In 1925, he left Bari to replace the celebrated Italian doctor, Edoardo Maragliano, as director of the medical clinic at the University of Genoa. Finally, in 1935 he obtained the prestigious chair of Special Medical Pathology at the University of Rome, followed by the chair of Special Medical Pathology and Clinical Methodology the year after at the same university. Well known to historians as a eugenicist, and as one of the most important representatives of so-called Latin eugenics, he was a pioneer in hormone research, recognised as such by the international medical community. On three separate occasions Pende was nominated for a Nobel Prize in Physiology or Medicine, in recognition of his major contributions to the field of endocrinology. His important treatise *Endocrinologia* [Endocrinology] was first published in 1914, went through several editions (each of which were enlarged), and was well known, especially among those scientists who spoke Romance languages.

Pende claimed to have coined the term ‘biotypology’ in 1922, interestingly the same year as Mussolini took control of Italy. Even before the latter became a totalitarian dictatorship, Pende saw in Mussolini’s government the opportunity to put into practice...

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28 Ibid., 48-50, 57-67.
29 The chairs were in ‘Patologia speciale medica’ in 1935 and in Patologia special medica e metodologia clinica’, see Ministero dell’educazione nazionale, Stato di Servizio di Nicola Pende, 30/152, Archivio Centrale di Stato, Ministero della Pubblica Istruzione, Direzione Generale, Professori Universitari Epurati (1944-46), b. 26, Nicola Pende.
30 Stepan, *The Hour of Eugenics*.
31 Beccalossi, ‘Latin Eugenics and Sexual Knowledge in Italy, Spain and Argentina.’
32 1937 for his work on endocrinology; 1943 for his work on the biotypology of man, surgical treatment of essential hypertension, and hyper-function of the thymus; 1951 for his work on endocrinology. According to Maria Sophia Quine, Pende himself coined the term ‘endocrinology’ in 1909. Maria-Sophia Quine, ‘Racial “Sterility” and “Hyperfecundity” in Fascist Italy: The Biological Politics of Sex and Reproduction’, *The Journal of Comparative Fascist Studies*, 1, 2 (2012): 113.
social-medical programmes that liberal governments had not been able to guarantee.\textsuperscript{34} Pende’s support for fascism is well-documented by historians and is evident in his biography: in 1924 he enrolled in the Partito Nazionale Fascista;\textsuperscript{35} in 1928 he became Director of the Opera Nazionale Balilla for the Liguria region;\textsuperscript{36} various works contained more or less explicit apologies for Fascism,\textsuperscript{37} and his \textit{Bonifica umana razionale e biologia politica} [Human Rational Reclamation and Political Biology] (1933) was actually dedicated to Mussolini.\textsuperscript{38} Finally, his political career was crowned by his appointment as senator by King Vittorio Emanuele III, in 1933.\textsuperscript{39} With Mussolini’s Fascist regime, Pende shared the totalitarian aspiration to control every aspect of the everyday life, even the most intimate, from what Italians ate to the ways in which they had sex; all of this had the explicit aim of improving the Italian stock. It is this last aspect, the eugenic component of his work, that has attracted the most attention. Indeed, a number of historians have explored Pende’s critical role in the development of Italian eugenics,\textsuperscript{40} and his controversial involvement in the writing of the 1938 \textit{Manifesto della razza} [Manifesto of the Racial Scientists], a turning point in Mussolini’s politics which paved the way for the enactment of the Racial Laws later that same year.\textsuperscript{41} Historians such as Giorgio Israel and Pietro Nastasi have highlighted the fact that Pende, under the influence of the Catholic religion, developed a ‘spiritualist’ racism, contrasting somewhat with the forms more typical of Nazi Germany.\textsuperscript{42} Claudia Mantovani, who has the great merit of having shown the extent to which Italian eugenics was concerned with the control of sexual behaviour, has

\textsuperscript{34} Dall’Era, ‘Strategie politiche ed esigenze scientifiche,’ 56.
\textsuperscript{35} Mottola, \textit{Gente di Razza}, 2010, 17.
\textsuperscript{38} Nicola Pende, \textit{Bonifica Umana Razionale e Biologia Politica} (Bologna: Cappelli, 1933).
\textsuperscript{39} Mottola, \textit{Gente di Razza}, 2010, 45.
stressed how Pende inherited from Lombroso’s School a practical and political
dimension. In other words, Pende’s biotypology, like Lombroso’s criminal anthropology,
was indeed a system of various knowledges that sought to manage the whole society,
making biotypology something more than simply a clinical medicine. 43 Francesco Cassata
has identified in Pende’s biotypology one of the most important conceptual references of
‘fascist eugenics’. 44 Yet oddly enough not much has been written about the role that
Pende played in developing medical sexual knowledge, and its applications, in Italy. This
reticence is more than a little surprising, given the fact that Italian eugenics, as Mantovani
has demonstrated, put reproduction at the centre of its activities. Still less has been
written on the contribution made by Pende’s endocrinology to Italian sexology. How
eugenics, endocrinology and sexology were intertwined in the interwar period and the
practical consequences of this for sexological practices remain, in my opinion, largely
unexplored in the Italian context. The rest of the essay focuses on Pende’s hormonal
research and treatments, in order to illustrate the ways in which endocrinology changed
Italian sexology, until then dominated by Lombrosian criminal anthropology, and to
show how it was put to practical use. So as not to go on at too great a length, I focus on
some of the activities carried out at Pende’s Institute of Biotypology in Genoa and on a
selection of texts published in the 1920s.

When historians speak about Pende’s eugenics they often refer to biotypology, allegedly
Pende’s version of eugenics, which centred on endocrinology and won widespread
support in Latin American countries. As I also mentioned above, Pende claimed to have
coined the term ‘biotypology’ in 1922: from the Greek βίος ‘life’, τύπος ‘type’ and
λόγος, ‘logos’ meaning word, study or doctrine. He defined it as the ‘science of the
somatic and psychic individual biotypes’. 45 It was a medical science that in Italy had its
roots in constitutional medicine46 and in Giacinto Viola’s study of the ‘constitutional

43 Mantovani, Rigenere la società, 227-33.
44 Francesco Cassata, ‘Verso l’ “uomo nuovo”: il fascismo e l’eugenetica “latina”, in Francesco Cassata e
Claudio Pogliano (eds), Storia d’Italia. Scienza e cultura dell’Italia unita (Turin: Einaudi, 2011), 131. According
to Cassata two were the most important intellectual references of ‘fascist biology’: Pende and Corrado
Gini. See also: Cassata, Molti, sani, forti.
45 Mottola, Gente di Razza, 16.
46 From the late nineteenth century onwards, there existed an approach known as constitutional medicine,
a medical perspective based on a holistic view of the organism. Practitioners rejected microbiological
approaches, advocating the primacy of clinical medicine and proposing an individualised conception of
illnesses, once again viewing the body as a whole, as a synthesis of its parts. On Pende’s early career and
biotypology: Dell’Era, ‘Strategie politiche ed esigenze scientifiche’. For his influence outside Italy see:
Stepan, The Hour of Eugenics.
types’, but it used endocrinology to classify individuals: the various biotypes were indeed identified on the basis of the hormonal component.

As Tommaso Dell’Era has pointed out, between 1921 and 1924 Pende published the first explicit works to have elaborated biotypology, but already in 1921, before Mussolini came to power, Pende had formulated its basic concepts. Thus, in Dalla medicina alla sociologia [From medicine to sociology] (1921), Pende had already expounded the theory according to which the endocrine glands, especially the thyroid, the adrenal and the sexual glands, due to their links with the vegetative nervous system, impact on an individual’s constitution, meaning not only the body, but also intellectual and moral development. Therefore, according to Pende, the endocrine glands affect human psychology, the emotional sphere and even sexual behaviour.47 Already in this book Pende explained that as the endocrine glands influence the psychological characteristics, the different balances of hormone production of the testes and ovaries, produce different intellectual characteristics in men and women: for example, according to the Italian endocrinologist, men are characterised by logical thought while women are dominated by their emotions.48

Biotypology was a medical classificatory science that studied the human types within a given ethnic group, identifying for each type its morphological and functional characteristics, its morbid predispositions and attitudes. It was also meant to be a clinical approach that aimed to treat not the sick but the healthy, and to reveal their morbid hereditary or acquired predispositions. Biotypology highlighted minor weaknesses and sought to disclose the relationship between the endocrinal and the nervous systems, as it was believed that an early intervention was more successful than a belated one.49 This should not be taken to mean that Pende’s biotypology was not used to treat the sick. It was simply that he envisaged his science as best suited to enhancing the individual and the race. Indeed, the aim of biotypology was to improve the physical, psychological and sexual development of individuals so that ‘normality’ could be ensured and abnormalities prevented, and this task could be achieved, it was supposed, through the use of hormone treatments. Importantly, Pende judged that the endocrinal glands were specific sites for

As Benadusi has rightly pointed out, Pende’s biotypology had at least two eugenicist purposes, namely, to increase the fecundity of Italians and to improve the Italian stock. When it came to men, both purposes also meant the virilisation of men, and incidentally the repression of homosexual behaviour. Both the increased fecundity and the improvement of the Italian stock could be achieved, according to Pende, through endocrinology. Such eugenicist aims did not remain purely abstract ambitions but assumed a concrete form in 1926 when Pende founded the Instituto biotipologico ortogenetico (literally Biotypological Orthogenetic Institute, hereafter referred to as Institute of Biotypology) in Genoa. The purpose of this new institution was to screen the health of the entire Italian population and to correct bodily anomalies, but it also functioned as a sexological centre. The aim was thus to promote sex education and offer pre-marital counselling, to evaluate racial unions, favouring those that would produce ‘fit’ offspring in the long term, and to treat infertility and impotence with hormone therapies. It attempted to cure purported ‘sexual deviancies’ such as homosexuality through opotherapy and phototherapy (the stimulation and inhibition of internal gland secretions through x-rays), and offered treatments that required climatic and dietary changes, and psychotherapy. All of these aims were consonant with the Fascist ambition to renew the Italian race and create a ‘new man’. As Pende some years later wrote in his introduction to the Italian translation of a study by Gregorio Marañón, *La Evolución de la sexualidad y los estados intersexuales* [The Evolution of Sexuality and the Intersexual States] (1930), the

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51 From its inception in Genoa, to its period in Rome, and then to its activities after the Second World War, Pende’s Institute changed its name a number of times. For practical reasons in this article I refer to it as the ‘Institute of Biotypology’, a name for which it was also famous abroad.
The eugenic purposes of this Institute and its aim to help Mussolini to create the ‘new man’ became more entrenched as time went by. Following Pende’s move to Rome to take up the prestigious chair in 1935, the Institute of Biotypology was transferred to Rome. Two of Pende’s closest collaborators, Sellina Gualco and Antonio Nardi, wrote about the Roman Institute, stating that Pende himself identified the Institute as ‘Mussoliniano’ in its very nature, serving as it did to ‘defend our people’. This aim, they said, was achieved through (1) the ‘physical and spiritual’ training of Italian children; (2) the training of the mothers of the future; (3) the promotion of hygiene and the medical prevention of disease and the consequent increase in the productivity of workers (4) the enhancement of the integrity of the Italian stock by means of the eradication of hereditary diseases. The Institute, Gualco and Nardi continued, sees to the ‘integrity, prevention, normalisation and correction of thousands and thousands of individuals.’

Even the decision in 1939 to rename the Institute – it became the ‘Istituto di Bonifica Umana e Ortogenesi della Razza’ [Human reclamation and racial orthogenesis institute] – indicated a closer alignment with fascist policies. Pende’s Institute of Biotypology was not unique in Italy as regards its eugenicist sympathies. Indeed, the destruction of the First World War and the attendant sense of decline, had led to the launch of a number of projects to renew the Italian stock, among them the programmes to protect children and maternity and the creation of enterprises such as OMNI [Opera Nazionale Maternità e Infanzia]. I suggest that the real novelty of this institute lay in its use of endocrinology, which came to offer highly practical tools of intervention, in the guise of hormone treatments, to improve the Italian stock. It is worth noting that such tools took the form of post-natal interventions, and as such were consistent with the fundamental tenets of the Catholic religion.

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53 Nicola Pende, preface to Gregorio Marañón, *L’evoluzione della sessualità e gli stati intersessuali* (1934), cit. in Benadusi, *Il nemico dell’uomo nuovo*, 51. Whether Pende’s aim to cure ‘sexual abnormalities’ was inherited from the Lombroso School, where medicine had a practical and political dimension designed to help the government to manage the society, or whether it was part of his broader plan to help fascists renew ‘the Italian race’ and create the ‘new men’ with science would deserve an entire article. What is certain is that even before the rise of fascism, Pende envisioned an endocrinology that could be used to solve certain social problems. See Pende, *Dalla medicina alla sociologia*.


55 Ibid., 149.


57 Pende’s eugenics was indeed ‘positive eugenics’ and not ‘negative eugenics’.

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problem of sexual abnormalities could not ‘be ignored given the Fascist movement’s goal of maximizing fertility and sexually normalising Italians’. 53
At the time of its foundation in Genoa in 1926, the Institute of Biotypology consisted of Pende, twelve other medical researchers, a technical photographer, a technician responsible for the upkeep of the scientific and medical equipment, and a librarian. The Institute had a number of rooms devoted to various sorts of examination: from anthropometric to psychological examination, from functional to blood examinations; all individuals were photographed and the results of the examinations recorded.\footnote{Maura and Peloso, ‘Allevatori di uomini,’ 30} There were two whole rooms devoted to the evaluation of professional attitudes, as one of the aims of the Institute of Biotypology was to help children and young men and women to identify the profession or trade to which they were best suited on the basis of their individual bodily characteristics and psychological attitudes.\footnote{Barbara and Vidoni, L’Istituto Biotipologico, 59. Interestingly the Institute advised working -class women on which sorts of manual work were best suited to different kinds of women.} There was an entire department for hormone research ‘applied to the clinic’, where hormone tests on humans and experimental research on animals were conducted.\footnote{Ibid., 33.} There was also scope for ‘individual treatment with opotherapy.’\footnote{Ibid., 34.} The Institute of Biotypology in Genoa set out to ‘correct’ anomalies and ‘organic hereditary weaknesses’, to rectify ‘sexual anomalies’ and to prevent ‘moral deviations’, especially in adolescents.\footnote{Ibid.}\footnote{Barbara and Vidoni, L’Istituto Biotipologico Ortogetnetico di Genova, (Genoa: Carlo Badiali & C., 1933), 21-33. For an overview of this Institute based on Vidoni and Barbara’s work see also: Maura and Peloso, ‘Allevatori di uomini,’ 30.}

The Institute of Biotypology examined dozens of individuals every day, most of whom were young men and women, members of the local fascist youth organisation, Opera Barilla Ligure, and students from the schools of Genoa, which made them available to the researchers. Emilio Maura and Paolo Peloso point out that as Pende had been Director of the Opera Nazionale Balilla for the Liguria region since 1928, this would have certainly made it easier for him and his Institute to obtain access to the bodies of young men to be examined and eventually treated.\footnote{Ibid., 34.} But many men and women went to Pende’s Institute of their own accord to seek treatment for their sexual dysfunctions and sundry endocrinological problems. Mario Barbara, doctor and Deputy Director of the Institute, and Giuseppe Vidoni, psychiatrist, who worked with Pende at the Institute of Biotypology in Genoa, are vague about the number of people they each treated: they just
According to Sellina Gualco, who had worked with Pende since the time of the Institute of Biotypology in Genoa, as they started their activities in 1936 at the Roman Institute, they anticipated that they would examine 70,000 individuals a year. If the Roman Institute was open seven days a week, this means that they must have examined about 190 individuals a day. This institute continued in operation until at least the early 1950s, despite Pende having been removed from his academic teaching after the fall of Fascism.

**Pende’s early works on sexuality**

Pende’s oeuvre is vast, and in his endocrinological treatises he kept abreast with developments in the field. As a consequence some of his theories and hypotheses changed over time. Works published just before and after the opening of the Institute of Biotypology illustrate Pende’s views on sexual abnormalities as they were in the 1920s. In his 1923 edition of *Endocrinologia* [Endocrinology], Pende argued that an individual’s biological sex and secondary sexual characteristics were not only determined by the ‘internal secretions’ produced by the testes and ovaries, but also by the ‘overall hormonal system’ which, in cases of hormonal disorders, caused the sexual instinct to deviate. The sexual characteristics were stimulated by the genital, thyroid, and pituitary glands and by the adrenal cortex. Much as De Napoli had suggested in the abovementioned article published in *Rassegna degli studi sessuali*, Pende believed that in their embryological state, all human beings are potentially ‘bisexual’, meaning that they can develop with male genitals and secondary characteristics or with female genitals and secondary characteristics, but elements of the opposite sex remain latent for their entire life. Both the testes and the ovaries retain some ‘germ’ [germe] of the opposite sex, which in certain abnormal

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66 Not all of these individuals received hormone treatments. I have not as yet been able to establish how many people were treated with opotherapy, but it has become increasingly clear that hormone treatments were not a secondary practice within the Institute.
67 Archivio Centrale di Stato, Presidenza del Consiglio dei Ministri, Gabinetto, 1951-54, Fasc. 5-1, no. 83001. I am currently preparing an article that will cover the history of the Institute after the Second World War. Following the fall of Fascism Pende underwent the ‘epuration’ process; so forced to leave the teaching at the university until 1948, when he came back and in 1950 he retired.
conditions may re-emerge later in life. In Pende’s view, the sexual instinct was strictly linked to the hereditary constitution, the biological sex, the endocrinial system, and the psychological organisation. So biological men are normally attracted to the opposite sex.

Hermaphroditism, homosexuality and other ‘sexual perversions’ such as masochism and sadism were all caused by anomalies in the internal secretions produced by the testes or the ovaries. However, the genital glands were not solely responsible for sexual deviations; they could only intervene when a ‘hereditary sexual predisposition’ already existed, and the ‘psychical centres’ also played a significant role in the manifestation of a sexual deviation. The endocrinial system and the sexual instinct were strictly connected, as was shown by the fact that, according to Pende, disorders in the sexual sphere were common when endocrinial dysfunctions were in evidence. For example, in the condition of ‘adrenal virilism’, the ‘sexual instinct deviates’ and the condition of early adrenal ‘macrogenitosomia’ presents a perverted sexual instinct. Hinting at homosexuality, Pende also observed that in men, ‘gynaecomastia’ was associated with female physical and psychological characteristics, and in women the condition of ‘hypogenital virilism’ presented psychologically male characteristics. Furthermore, experiments on animals demonstrated the link between the endocrine system and sexual behaviour. Recalling Steinach’s research, Pende stated that transplants of ovaries and testes in animals affected their sexual instincts. For example, castrated male animals, following the implant of an ovary, had been shown to have had sex with other males. Gynaecomastia and euconism were often associated with homosexuality in Pende’s work. More generally, feminine physical and psychological characteristics in men were an indication of possible homosexuality. In his writings Pende did not always make this link explicit, but it is reasonable to assume that he did by and large take it for granted. Pende’s description of the ‘endocrinological constitutions’ and ‘endocrinolocal temperaments’ makes the allusion more explicit.

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69 Ibid., 217.
70 Ibid., vol. 2, 1009. See also: Pende, *La debolezze di costituzione*, 177.
72 Ibid., 968.
73 Ibid., 969.
74 Ibid., 707.
75 Ibid., 994.
76 Ibid., vol. 1, 196.
77 In his *Scienza dell’ortogenesi*, Pende uses a photograph of a man with gynaecomastia and a man with euconism to illustrate his points about homosexuality, see Pende, *Scienza dell’ortogenesi*, 233-35.
Biotypology provided a biological classification in which deficiencies and excesses were pathologised. A taxonomy of this kind, combined with specific behaviours and psychological characteristics, was designed to codify men and women as certain kinds of human being. While biotypology did not produce taxonomies of sexual perversion analogous to those contained in late-nineteenth-century works such as Richard von Krafft-Ebing’s *Psychopathia Sexualis* (1886), it nonetheless provided a classificatory system and an explanation for abnormal sexual behaviours. In his work *Le debolezze di costituzione* [Constitutional Inadequacies], which was published for the first time in 1922 and translated into a number of different languages (including English), Pende explained how endocrine dysfunctions affected the sexual instinct, and spelled out the scientific assumptions behind opotherapy and gland transplants. In the chapter on the anomalies and constitutional inadequacies of the endocrine system, Pende listed and described the endocrinological constitutions characteristic of the ‘hypo’ and ‘hyper’ functions of various different glands: hyperthyroid constitution; hypothyroid constitution; hyper-pituitary constitution; hypo-pituitary constitution; hypoadrenal constitution; hyperadrenal constitution; hypo-parathyroid constitution; and hyperthymic constitution. The descriptions of these endocrinological constitutions included both tacit and explicit references to sexual perversions. For example, the typical woman who might be identified as having a hypo-pituitary constitution presented hypotrophy of the breasts, with incomplete secondary sexual characteristics and a tendency in some cases to ‘masculinism’. There was also a disposition to amenorrhea, sterility or low fecundity, and to ‘sexual frigidity’. Women with a hyper-adrenal constitution displayed a ‘general tonic adiposity with hirsutism or a wealth of hair of a masculine type and premature sexual development, with a tendency to dissociation of the sexual characteristics and to masculine character’. This may serve as an example of a tacit reference to female homosexuality, since in Pende’s endocrinological works female homosexuality was associated with masculine physical and psychological traits. Both men and women with a hyperthymic constitution after puberty ‘are distinguished by a strong tendency to inversion of physical and psychic sexual characteristics, by the existence in the male of elegant feminine bodily outlines, with wide thighs, a long thorax, rounding pelvis, the

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80 Pende, *Constitutional Inadequacies*, 233.

81 Ibid., 234.
soft skin of a child, of an unhealthy opaque white or milky colour, little or no hair on the face, in some cases genu valgum and flatfoot.’ Women with hyperthymic constitution, Pende continued, may present ‘soft, delicate skin and nails, a lack of mammary development, little hair, scanty and delayed menstruation and in some cases a certain persistent adiposity and juvenility if there is also hypophyseal insufficiency.’ Their psychological traits included a ‘tendency to homosexuality and to masochism, and then to a certain moral irresponsibility, more or less impulsiveness and incapacity for adaptation to the difficulties of social life, a tendency to crime and suicide!’

In another chapter Pende also described a number of ‘dysgenital temperaments’; that is, types of people whose dispositions were determined by their anomalous genitals. For example, the ‘primary hypogenital type, the so-called eunuchoid type’, is characterised ‘by the exaggerated length of the lower extremities’, his stature is taller than average and he displays a deficient development of the genital organs and ‘somatic and psychic pubertal sexual characteristics.’ Pende then identified a range of different psychological characteristics and mental attitudes: ‘If there is a constitutional hyperthyroidism, the hypogenital subject may have a psychic temperament which by its vivacity and irritability, its emotionality and expansiveness, and the superior quality of its intelligence, is in strong contrast with the pure phlegmatic, (...) close pessimistic, depressed, schizothymic, at times puerile, hypogenital temperament which is also poor in imagination and intellectual creative power.’ If there coexists a ‘cortical hyperadrenalism, as sometimes occurs in hypogenital females, the eunuchoid habitus in these acquires masculine characteristics in the type of hair distribution, the form of the skeleton and facial integuments, the developments of the voice, the thorax, the skeletal muscles and the psychic energy even to low grades of external feminine pseudo-hermaphroditism.’ This again is a tacit reference to homosexuality. But in other pages, the reference becomes explicit. For example, if hypogenitalism is associated with hyper-thyroidism, then the subject is energetic and irritable, and highly intelligent. Constitutional hypogenitalism may become more complex, and, when it is related to other endocrinological abnormalities,

82 Ibid., 235.
83 Pende, Le debolezze di costituzione, 208. Italics in the original text.
84 Pende, Constitutional Inadequacies, 199.
85 Ibid., 201.
86 Pende, Constitutional Inadequacies, 201.
87 Pende, Le debolezze di costituzione, 176.
manifests characteristics typical of the opposite sex. In these cases, somatic and psychic (mental) hypogenitalism may be associated with ‘homosexuality’.  

Pende agreed with the German psychiatrist Ernst Kretschmer, who had demonstrated that some sexual perversions were not only related to the genital glands, but also caused by a constitutional imbalance in the neuro-psychic apparatus helping to regulate the sexual life. However, he highlighted the fact that his clinical experience had shown that when ‘psychosexual development’ was not fully complete (ipoevolutismo della psicosessualità) as in the case of homosexuality, there was always a hyper or hypo functionality of the genital glands. For example, women with hyperpituitary or hyperadrenal constitutions might present masculine characteristics, homosexual inclinations and an excessive libido.

From theory to practice

While biotypology provided the scientific foundation and legitimisation for the ‘correction’ of men and women who did not match up to the ideal or normal type, endocrinological research and experimentation provided the practical tools for normalising them. Indeed opotherapy, gland transplants and other hormone treatments were used to normalise individuals who presented ambiguous genitals or secondary sexual characteristics. In his *Constitutional Inadequacies*, Pende explained that while clinical medicine aimed to treat the disease, both constitutional medicine and his own discipline of biotypology aimed to ‘cure the soil’. Biotypology focused on prophylaxis and on taking measures to strengthen the organism and reinforce weak or anomalous organs, with a view to preventing exogenous disease agents from gaining a ‘foothold or overcoming the resistance of our cellular condition’. Consequently, study of the anomalies and the constitutional weaknesses was designed to make the individual stronger. This was achieved through hormone therapies. Pende explained that doctors could undertake to correct constitutional anomalies by means of organotherapy ‘up to a

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88Ibid., 177.
89 Ibid., 177-78.
90 Ibid., 183.
91 Pende, *Constitutional Inadequacies*, 236.
certain point’ by seeking to act upon the system that is the regulator, *par excellence*, namely the endocrine system. This system ‘can be influenced not only by means of opotherapy’ or the administering of ‘glandular extracts, continued over a long period of time and applied with care and intelligence, but also by means of stimulation, in cases of insufficiency, or reduction, in cases of hyperactivity, of the individual endocrine glands through the use of other procedures, such as roentgen-rays and radium (which are able to modify even the hereditary quality of the sex cells), electricity, climate and particular diets having an elective action on certain cells. Last of all, it is possible that the best results along these lines may be obtained in the future through the practice of glandular grafting. Hormone treatments achieve their greatest success during the ‘*endocrine phases* of life’, that is, those periods related to growth, puberty, menstruation, pregnancy, lactation and menopause.

A number of Pende’s publications testify to the use of hormone therapies to treat not only endocrinological disorders, but also sexual dysfunctions and what he perceived to be ‘sexual anomalies’. An interesting publication that illustrates Pende’s endocrinological practice and his approach to the sexual sphere is an article entitled ‘Heteroplastic pluriglandular implants in man for the treatment of the endocrinopathies’ published in *Rassegna clinico-scientifica dell’Istituto Biochimico Italiano* [Clinical-scientific Survey of the Italian Biochemical Institute] in 1928. This article reported the results of two years of surgical transplantations of multiple endocrine glands, conducted since the opening of his Institute of Biotypology in Genoa. It focuses on 21 clinical cases of transplants of endocrine glands from monkeys to men and women carried out by the surgeon, Professor Luigi Durante, at the time also working in Genoa, and under the supervision of Pende himself.

As Pende explained, implants of a single gland were commonly carried out among endocrinologists in those years, and the glands most commonly implanted were either the testes or ovaries and, less frequently, the thyroid and parathyroid glands. Less well-known, Pende continued, were the pluriglandular implants. Pende stated that he was not interested in entering into a discussion about whether other endocrinologists before him

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94 Ibid., 240.
95 Ibid.
had carried out heteroplastic pluriglandular implants, although it is clear he was claiming to be among the first to have used such a method successfully. Pende advocated the systematic use of multiple implants from monkeys as a treatment for the endocrinopathies, and especially in cases where there was a ‘deficiency in the sexual development’, or in cases of growth syndromes rather than monoglandular implants.  

In this article Pende credited Voronoff with having experimented with testes, ovaries, thyroid and parathyroid transplants from monkeys to men. Voronoff, Pende explained, had been unfairly criticised, on the grounds that it was reckoned to be impossible to demonstrate that glands from different species of animal or from animals in general to men could take root. However, Pende noticed that there were already a large number of cases of testicle transplants from monkeys to men, and also a very small number of cases of ovarian transplants from monkeys to women that had been beneficial and successful. Pende claimed that his method for carrying out heteroplastic pluriglandular implants was new, although he admitted that Voronoff and Louis Dartigues had anticipated his findings, having published four cases of simultaneous ovary and thyroid transplants from monkeys to women.

The 21 clinical cases studied by Pende comprised 4 women and 17 men between the ages of 14 to 60, with 12 of these cases (eleven men and one woman) suffering from sexual dysfunctions. Unfortunately, Pende does not say much about the personal lives of his patients. In marked contrast to psychiatric clinical cases, the writing-up of endocrinological cases are generally very cursory. The emphasis is upon the examinations of the body, the therapies administered and the bodily changes recorded over a limited period of time (where Pende was concerned, from six months to around two years). Where there is any mention of the occupations of the men treated, we find that they belonged to the professional classes: medical doctors and naval officers. The reader also gathers that two men treated by Pende had already had monoglandular implants elsewhere, one of them in Austria and the other in France. From this we can assume that Pende’s fame as a clinical endocrinologist had reached other countries. These men very probably did not come to Pende’s Institute for his theories on the biotypes, or his views

97 Ibid., 339.
98 Ibid.
99 Ibid.
100 Ibid., 340-41.
regarding the Italian version of eugenics. They attended the Institute of Biotypology for Pende’s hormone therapies. The fact that most of the patients were regularly monitored for at least a year would suggest that they had sought treatment voluntarily. While we cannot deduce much about the inner life of Pende’s patients, this article provides evidence of the invasive endocrinological methods that Pende had at his disposal to normalise individuals and illustrates how they were thought to work.

Pende divides his cases into different groups and, for brevity’s sake, I will summarise those cases relating to the genital and sexual sphere. All these groups are treated for a generic defective or excessive genital function. The first group involves cases of testicle, thyroid and pituitary gland implants to treat three male patients (two of them medical doctors themselves) between the ages of 55 and 60; two for sexual impotence and one for ‘insufficient genital sensibility’. One of these men had already been treated in Vienna with the Steinach ligature and while the transplants did not have any tangible impact on the two cases of sexual impotence, it was successful for the case of insufficient genital sensibility. In this patient, after three months, Pende observed a ‘progressive sexual development’ that lasted for the entire year in which Pende continued to monitor him. The second group involved two men in their mid-thirties suffering from ‘constitutional hypogenitalism (spontaneous euconism) with gynaecomastia’. Their sexual function had decreased and the penis was small with rare erections. These two patients, like those in the first group, had multiple transplants of testicle, thyroid and pituitary glands. After the operation both men acquired capacity to feel sexually aroused and the effects of the implants lasted for at least four months. The gynaecomastia decreased visibly, but Pende was unable to continue his monitoring of the patients after four months. Bearing in mind my earlier observations about the putative presence of tacit references to homosexuality in a number of cases, these two men might have been homosexuals, or so Pende could well have believed. A third set of observations concerns a man who was thirty years old, suffering from dyspituitarism with adipose gigantism and scant sexual functionality. Pende opted again for multiple transplants of testicle, thyroid and pituitary glands, whereupon the patient lost weight and regained his virility enough to marry some months later. The fourth group comprises two men in their mid-forties

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101 Ibid., 341-42.
102 Ibid., 342. As I mentioned earlier, euconism and gynaecomastia were quite often associated with homosexuality.
103 Ibid.,
suffering from a lack of sexual function and from neurasthenic disturbances. One of the two men had already been treated in France with a monkey testicle implant. In one case Pende implanted a testicle, a thyroid gland and a pituitary gland, and in the other a testicle, thyroid, pituitary glands and an adrenal cortex. The first patient was only monitored for three months, so the reader is unable to judge whether this treatment was successful, but the other subject was treated for longer and Pende reports that his sexual function subsequently became normal. The fifth set of observations concerns a 14-year-old youth suffering from dyspituitarism with adipose gigantism, euconoidism with gynaecomastia, and genital hypoplasia. In this instance Pende implanted testicle, pineal, pituitary and thyroid glands, and the implants enhanced his sexual function. The sixth set of observations concerns a 14-year-old youth suffering from adipose genital syndrome and gynaecomastia, first treated with opotherapy for a year and then with testicle, thyroid and pituitary gland implants. Five months after the implants, the man had frequent erections, and his hair and his body grew.\textsuperscript{104} As in the case of the men in the second group, we may venture the hypothesis that this young man was homosexual. The seventh, eighth and ninth groups were treated for endocrine disorders unrelated to the sexual sphere. The tenth group consists of a woman and two men. The woman was 40 years old and had been castrated when she was 35, and Pende transplanted an ovary, a parathyroid, and a pituitary gland; a 27 year old man and a 38 year old woman, both manifesting only weak erections and an inability to perform normal coitus, had multiple implants of testicle, surrenal cortex, thyroid and pituitary glands, which resulted in normal erections and enhanced sexuality.\textsuperscript{105}

After reporting the clinical cases, Pende explained the procedure involved in performing the heteroplastic pluriglandular implants. The endocrine glands were removed from monkeys while they were still alive. This operation had to be carried out as swiftly as possible, and care had to be taken to ensure that the animals were in good health. The glands were then transplanted to both sides of the testicular tissue, and, for women, into the deep tissue of their breasts.\textsuperscript{106} The heteroplastic pluriglandular implants did not put down roots in the new body but, according to Pende, when inserted under the appropriate conditions, entered into a state of ‘diminished life’ (\textit{vita ridotta}) for at least a year, or indeed, according to Voronoff, for three or even four years. So the transplants

\textsuperscript{104} Ibid., 342.
\textsuperscript{105} Ibid., 343.
\textsuperscript{106} Ibid., 343.
still continued to have endocrine functions.\textsuperscript{107} Generally patients had a fever 12–14 hours after the operation, which reached 39 degrees for two or three days, with other symptoms including vomiting, hypotension and migraine.\textsuperscript{108} In the first three to four months the sexual performance might deteriorate, but it would then improve. Some conditions, such as constitutional eunuchism after the age of 60, did not respond well to these pluriglandular implants. However, conditions of physical, psychological and sexual underdevelopment and, in women, cases of amenorrhea caused by hypoovarism, responded well to multiple implants.\textsuperscript{109} Pende argued that the heteroplastic pluriglandular implants from monkeys to humans were more effective than opotherapy and that they represented the future of endocrinology.\textsuperscript{110} It would certainly be of interest to learn what some of these patients told Pende in the consulting room, how they spoke about their inability to achieve coitus, or whether a few of them were indeed homosexuals. Pende does not refer to any of this. Yet, these cases show how men and women were normalised: the disappearance of feminine bodily characteristics such as gynecomastia in men was a sign of success. Hormone treatments were used to make men more virile.

\textit{Conclusion}

Pende did not call himself a sexologist and medical sexual knowledge did not lie at the heart of his scientific endeavours. He considered himself to be an endocrinologist and devoted most of his energies to hormone research and treatments. But because hormones controlled sexual development and because hormonal dysfunctions could impact on the sexual sphere, it was impossible for an endocrinologist like Pende to avoid writing about sexual matters. In the interwar period, Pende’s biotypology became one of the scientific foundations for the advancement of a sexology based on bodily explanations. In a way biotypology represented a continuation of the older Italian sexology, being predicated as it was upon a taxonomy of physical signs indicating different degrees of sexual abnormality. In Pende’s biotypology bodily disproportions, genital malformation, the size of the breasts and thorax, and the pattern of body hair signified diverse types of constitution and temperament with specific associated psychological characteristics and sexual tendencies. Yet while late-nineteenth-century criminal anthropologists were interested in the personal history of their subjects, given

\textsuperscript{107} Ibid., 345.
\textsuperscript{108} Ibid., 344.
\textsuperscript{109} Ibid., 344–45.
\textsuperscript{110} Ibid., 345.
their concern to understand how sexual tendencies developed, Pende ignored that kind of investigation and instead of scrutinising the past of the individuals in his care, he looked forward and focussed on therapies.

Late-nineteenth-century criminal anthropologists and early-twentieth-century endocrinologists agreed that people might be identified and classified on the basis of morphological and functional characteristics, with the latter arguably formulating a new scientific language in which to dress older assumptions. By the 1920s, the theory of degeneration had proven too vague and inadequate to explain the manifestations of perceived sexual perversions; hormones provided a new scientific foundation and a new language for old modes of reasoning. Yet it may also be claimed that endocrinology introduced an important novelty. Where late-nineteenth-century psychiatrists employed invasive methods such as the cauterisation of the clitoris or ovarectomy to treat women suffering from various mental and sexual disorders, these methods were not systematic. Such methods had been used in extreme cases to halt the occurrence of, for example, some same sex practices, to eliminate any sexual instinct and to contain deviances. Invasive treatments did not aim to turn a homosexual man or woman into a heterosexual, as it was believed that the essence of a purported sexual pervert could not be changed. Physicians thought that they could not effectively treat a degenerate.¹¹¹ Pende’s use of hormone treatments rested on a different assumption. Pende viewed the attributes of masculinity and femininity, and I suggest, even of sexual orientation, as malleable and subject to deliberate engineering and manipulation. Various hormone therapies, from opotherapy to gland transplants, inaugurated a new era of invasive treatments designed to alter significantly the individual’s body, and thus to forge ideal types of men and women, each with their harmonic proportions and hormonal balances. Even though sexual perversions were understood to be constitutional, in the 1920s with Pende it was now assumed that it was possible to alter the inner essence of a human being.

¹¹¹ In the late nineteenth century there were some psychiatrists - such as the German Albert von Schrenck-Notzing - who believed that ‘acquired homosexuality’ could be treated by using hypnosis, but generally speaking congenital homosexuality was thought to be untreatable.