

"Sulfonal-Bayer" the new hypnotic of Professor Baumann & Kast.

Contributors

Baumann, E.
Kast, A. 1856-1903.
Farbenfabriken Bayer Aktiengesellschaft.
University of Glasgow. Library

Publication/Creation

Elberfeld : Farbenfabriken vorm. Friedr. Bayer & Co., [1888?]

Persistent URL

<https://wellcomecollection.org/works/jrukw5mg>

Provider

University of Glasgow

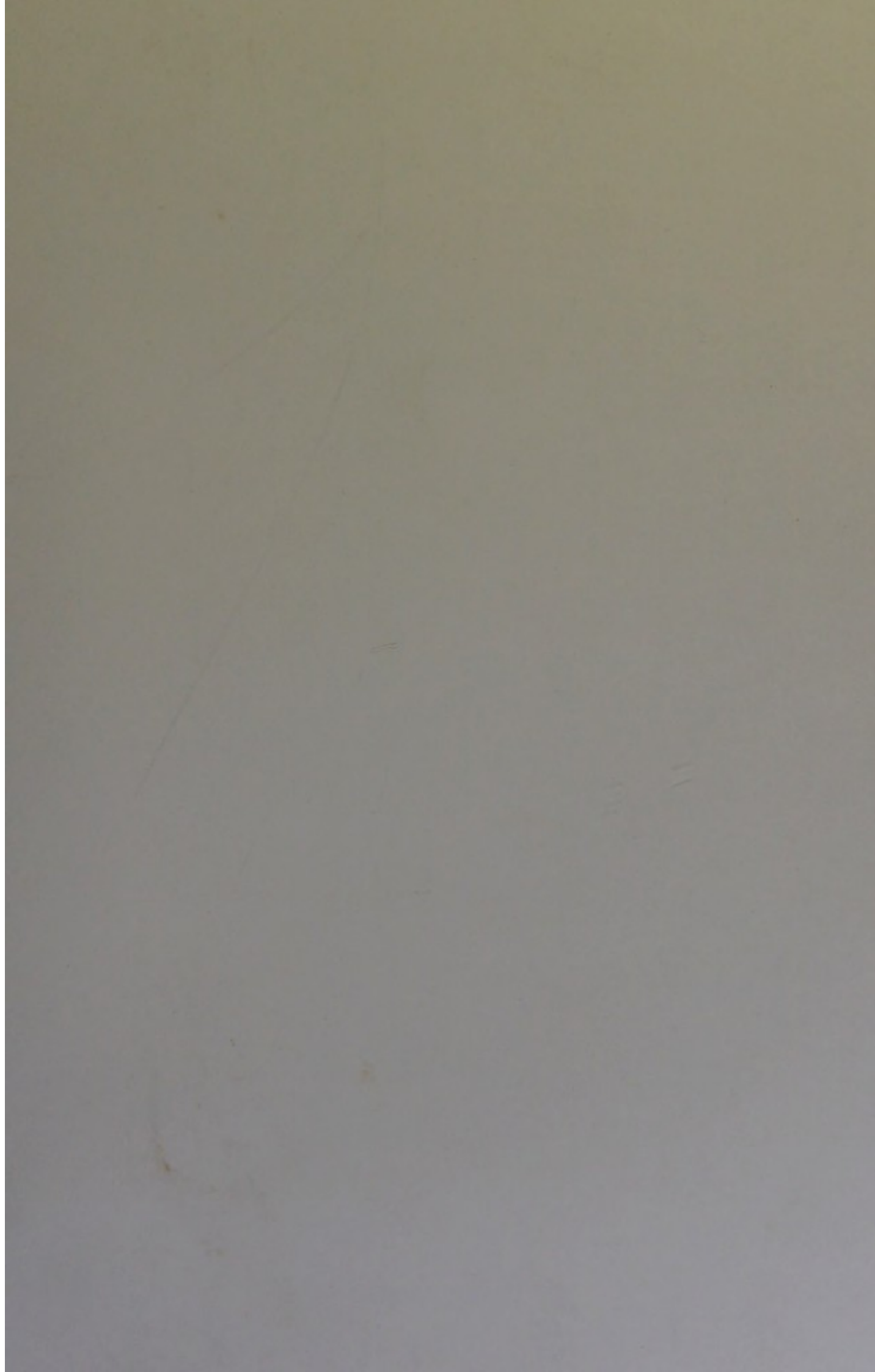
License and attribution

This material has been provided by This material has been provided by The University of Glasgow Library. The original may be consulted at The University of Glasgow Library. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

**wellcome
collection**

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>





“Sulfonal-Bayer“

the new Hypnotic.

The substance $C_7 H_{16} S_2 O_4$ — **Sulfonal-Bayer** — prepared by Prof. E. BAUMANN of the University of Freiburg i. B. and first examined in its physiological and clinical relations by Prof. KAST, also a member of the University of Freiburg, has been submitted to an extended examination — up to the present above 2000 separate observations have been made — at the Clinics of Geh. Hofrath Prof. Dr. BÄUMLER in Freiburg and Prof. Dr. CRAMER in Marburg; it is proved to be a reliable hypnotic, possessing such essential advantages as secure it a prominent position in the *Materia Medica*. As will be seen from the accompanying abstracts, the discovery of the hypnotic properties of “Sulfonal-Bayer“, has supplied for the first time, the want generally felt in surgical practice, in a very large number of cases — to supply a hypnotic which on the one hand can be relied on in its action, and on the other hand is free from the incalculable dangers which the narcotic remedies such as the opiates and chloral, bring to the nervous system, and especially to the organs of circulation. **“Sulfonal-Bayer“ is free from every injurious secondary action on the vascular system.** The pressure of the blood is in no way influenced even by a moderate excess of the medical dose.

No disagreeable after-effects of any kind whatever (such as headache and the like) have ever been observed.

Further, "Sulfonal-Bayer" possesses another practically extremely important advantage, namely its absolute freedom from odour and taste, and for by far the greater number of patients, this alone would guarantee its sovereignty over all other similar preparations.

Of all hypnotics, "Sulfonal-Bayer" is the only one which possesses this — as is known, long sought for — property which in its realisation in practice is a factor of so inestimable importance and should secure the most extensive employment of "Sulfonal-Bayer" most especially also in psychiatric Therapeutics.

We, the Farbenfabriken vorm. Friedr. Bayer & Co. have undertaken, at the suggestion of Professors KAST and BAUMANN, the manufacture of "Sulfonal-Bayer" and supply it to the trade in a state of perfect purity.

It having been found that absolute purity of the preparation is indispensable, in order to obtain a certain and undisturbed action, we have provided means for the continual examination of our product by the most competent authorities, not only as regards its chemical purity, but also with reference to its medicinal activity.

This product is sent out by us in glass bottles with trade mark, containing 1 and 2 ounces; and can also be obtained from any druggist.

Farbenfabriken vorm. Friedr. Bayer & Co.

ELBERFELD.



Abstract of the publications hitherto
written on

“Sulfonal-Bayer“.

Prof. A. KAST of Freiburg (Berliner klinische Wochenschrift 1888, No. 16) describes in the first place, the chemical and physical behaviour of Sulfonal, and then proceeds to give an account of his preliminary experiments, which were made on dogs, and which showed the considerable physiological activity of the substance on the central nervous system, especially on the cerebrum.

The animals behaved as if they were intoxicated or drowsy, fell partly into a quiet sleep, from which they awoke without any signs of disagreeable after-effects.

After these experiments had proved the harmlessness of “Sulfonal-Bayer“ with doses ranging between fairly wide limits, experiments were made on healthy human beings, in particular on a large number of surgeons and medical men, and these led to the conviction that in doses of 1 to 3 grams (16–48 grains) the medicine did not act as a stupefying agent in forcing sleep on a healthy human being who was not in want of sleep at the time the remedy was administered, but that **spontaneous need of sleep was increased and maintained.**

Corresponding with this assumption are the results of an extensive series of experiments in cases of morbid sleeplessness, conducted partly by the author, at the Clinics of Geh.

Hofrath BÄUMLER in Freiburg, and partly at the Marburg lunatic asylum by Prof. CRAMER and Dr. RABBAS (see the following abstract).

Nervous sleeplessness, with and without organic cause, senile agrypnia, febrile sleeplessness and finally numerous cases of disturbed sleep in the case of lunatics formed the actual material from which the author drew his conclusions, the substance of which may be summarised thus:

After the administration of 1 to 3 grams (16–48 grains) of Sulfonal to patients suffering from want of sleep, these, almost without exception, and within $\frac{1}{2}$ to 2 hours fall into a quiet and steady sleep, which lasts for 5 to 8 hours and from which the patient awakens refreshed, and without feeling any disagreeable consequences.

It is proved by cymographic experiments on dogs that a lowering of the circulation never occurs after the incorporation of large doses of Sulfonal. Experiments made on sleeping human beings also prove that an unfavourable effect on the heart and vascular system is not produced even by full doses of Sulfonal — a fact, in support of which, there is also clinical evidence.

After calling attention to the difficulty which the practical physician encounters, of obtaining a reliable soporific in the place of the drastically narcotic stupefying medicines — which on account of their action on the heart and on the circulation (chloral, opiates) are often dangerous — and one which occupies an intermediate position between chloral and the opiates on the one hand, and the feebly acting bromine salts on the other, the author refers to Schmiedeberg's demand for the employment of substances free from halogens in the place of dangerous halogen compounds (chloral) and mentions the hitherto somewhat unsatisfactory attempts to satisfy this theoretical consideration. KAST considers that Sulfonal which is free from halogen, and in doses of 1 to 3 grams, (16–48 grains according to the constitution of the patient) is perfectly unin-

jurious, and free from all secondary and after effects, must be recommended as a genuine, effective soporific for employment in therapeutics, that is, it is a compound which belongs not so much to the class of narcotic medicines which force sleep, but which support the normal periodical need of sleep, and develop this when it is wanting. The fulfillment of this, KAST regards as one of the most frequent and important problems of the medical practitioner and its satisfactory solution should render "Sulfonal-Bayer" especially welcome.

"Sulfonal-Bayer" was dispensed in powders of 1 gram (16—48 grains) and is best taken in the early evening, either in wafers, (the powder is not bulky) or simply in water.

The absolute tastelessness of „Sulfonal-Bayer“ renders any addition unnecessary and permits of its being administered to lunatics with their food, and without their knowledge.

Dr. G. Rabbas "On the action of Sulfonal-Bayer" (Berliner klinische Wochenschrift 1888, No. 17) reports on 220 experiments with „Sulfonal-Bayer“ which were carried out at Prof. CRAMER'S lunatic asylum at Marburg. They confirmed not only KAST'S work in all essential points but they also led to the conviction that in the case of a large number of very excited lunatics, Sulfonal promptly developed its sleep producing action. From his experience in the Marburg clinic, Dr. RABBAS gives the following resumé:

"Sulfonal-Bayer" is a hypnotic which even in moderate doses (30—45 grains) has a better and more certain action than amylene hydrate and paraldehyde have in larger doses. Its action is also more effective with persons accustomed to hypnotics. It further excels both medicines named in regard to taste and odour.

Chloral hydrate certainly brings about sleep more rapidly but this does not last as long as after the administration of Sulfonal. Single doses of 30—45 grains „Sulfonal-Bayer“ have generally a good effect even on excited patients. After con-

tinued use, it does not appear to be necessary to increase the dose. Sleep generally sets in in half an hour, more seldom after 1—2 hours, and lasts 6—8 hours without interruption, sometimes also extends for some hours into the forenoon; the action is, therefore, gradual. **The sleep resembles perfectly normal sleep.** Larger doses of 60 grains taken at short intervals and alternately with smaller doses of 30—45 grains have no injurious effect on the organism. **There are in general no evil after-effects even after continued employment. The appetite, digestion, respiration and the action of the heart are in no way injuriously affected.** (Whether the sickness of one patient, and the diarrhoe of another are to be attributed to the "Sulfonal-Bayer" cannot be affirmed with certainty). **The total absence of injurious action on the activity of the heart even after the continued use of "Sulfonal-Bayer", constitutes a great advantage over Chloral,** the weakening action of which on the heart is generally known and feared. A few times we have naturally observed that Sulfonal fails in its action; there is no such thing as an absolutely certain hypnotic.

As a result of our observations, we can but recommend "Sulfonal-Bayer" (Dr. KAST) as a hypnotic.

In a comprehensive work on the hitherto published experiences and on observations of their own on "Sulfonal-Bayer" Dr. LANGGAARD and RABOW write in very favourable terms of the new hypnotic (Therapeut. Monatshefte 1888, Maiheft). After a detailed theoretical introduction on the relations of Sulfonal to the acetals and mercaptals, the authors report as follows on the **action and administration** of "Sulfonal-Bayer."

„Action. On the results obtained with the new soporific there have already appeared the extraordinarily favourable reports of KAST and RABBAS. As regards our own experience, we have not yet made a very extensive series of experiments but one of us (himself suffering from obstinate sleeplessness and therefore very familiar with the good and bad qualities

of all known hypnotics) has been able to make perfectly trustworthy observations on himself, his nearest connections and a suitable circle of his acquaintances; and they entirely confirm the hitherto published favourable reports on the action of „Sulfonal-Bayer“. As emphasised by Dr. KAST, it belongs without doubt to the class of inoffensive medicines which support the natural need of sleep and develop it when this is absent. **In the almost terribly large number of cases of so-called nervous sleeplessness we were able to bring about a beneficial and refreshing sleep lasting the whole night and this with 15 grains, and with 30 grains when we wished to be perfectly sure of the result** (especially in the case of patients with powerful constitutions). Sleep mostly set in in half to one hour after taking the remedy and on waking, a feeling of comfort was noticeable, and the desire for more sleep. — **We have never observed disagreeable secondary effects.** Whether one would become speedily accustomed to the remedy cannot yet be determined with certainty. In one case we were able to prove the contrary; it was that of a lady suffering from nervous sleeplessness who after taking 15 grains Sulfonal slept better in the second night than in the first, the dose being the same. It was further of great interest to us to ascertain that the remedy still develops its action when administered in the middle of the night. It is known that most hypnotics fail in their action when taken late after the patient has retired to bed and his nervous system has got into a strongly excited condition through trying in vain to sleep. After the freedom from danger had been established for this remedy with tolerable certainty by trials on animals and on man — even heart disease forms no objection to its use — we did not hesitate to recommend it in the moderate dose of 15 grains to people who could not sleep whilst travelling by rail at night (after employing it ourselves for the same purpose). The result was in most cases perfectly satisfactory.

The absolute tastelessness of "Sulfonal-Bayer" — in this property it has the advantage of all other soporifics — will certainly be fully appreciated in the many cases in psychiatric practice. In the case of a highly excitable lunatic lady who had for years refused to take any medicine, we succeeded in administering with the food (egg, bread and butter, beer) and without her knowledge, sufficient Sulfonal to secure her rest and sleep.

For a single dose 15 to 30 grains suffice. In the case of strong individuals one can well commence with 30 grains. The insoluble powder is washed down with water or one can also make use of the wafer. We have had pastilles made which contain 15 grains, and these we can very strongly recommend.

Hand in hand with the increased demands made on our nervous system, one of the most torturing symptoms, sleeplessness, has increased to an alarming degree. The group of hypnotics has also been recently increased to a corresponding extent partly by more, partly by less valuable remedies. Among these, the one just made known, "Sulfonal-Bayer" must be especially welcomed as a valuable acquisition to our hypnotic medicines. Drawbacks to its use have not yet come to our knowledge. We must, however, for the present wait to see whether the halting messenger will follow sooner or later. We cannot help already drawing attention to the fact that the certainty of action depends on the absolute purity of the preparation. It must be perfectly odourless and tasteless, and must have the melting point mentioned above. Special attention must be paid to the latter for, as Prof. BAUMANN has communicated to us, preparations which show a slight deviation in melting point, may be quite without action. One will therefore do well for the present in prescribing it, to make use of the term "Sulfonal-Bayer".

Dr. J. SALGO (Hyoscin und Sulfonal, Wt. med. Wochenschrift No. 22) has obtained good result with "Sulfonal-Bayer" especially in cases of succentional nervous sleeplessness.

In one case of severe virile hysterics with morphinism, 30 grains Sulfonal secured a good sleep of some hours duration although the evening dose of morphia had been suddenly reduced to one half. In the previously mentioned case of hypochondrial depression in which there was a pronounced objection to hyoscin, 30 grains Sulfonal had a better effect than 90 grains paraldehyde. The sleep it produced was more persistent and more regular than after the employment of paraldehyde. The patient awoke refreshed and calmed and has since willingly taken **Sulfonal**. Likewise 15 grains Sulfonal were found to be extremely active in a case of epilepsy accompanied by temporary agrypnia (free from excitement) and in which paraldehyde had been previously administered with success. In another case of melancholy depression accompanied by intense delirium (with self-accusation) 15 grains Sulfonal brought about sleep.

No disagreeable effects from the use of "**Sulfonal-Bayer**" were ever noticed by this observer.

In a lecture at the Wanderversammlung süd-westdeutscher Neurologen und Irrenärzte in Freiburg i. B.¹⁾ (9 u. 10 June 1888) Dr. AUG. CRAMER, Assistant-surgeon at the psychiatric University-clinic at Freiburg (Prof. Dr. EMMINGHAUS) communicated the results of an extensive series of clinical and psychological-chemical experiments which he had instituted with "**Sulfonal-Bayer**". In 407 observations on 49 lunatic patients of the most varied types in the clinics at Freiburg and Marburg the most favourable results of KAST and RABBAS were confirmed and extended.

In 374 cases = 92 per cent — among them highly excited Mania — "**Sulfonal-Bayer**" had a positive effect, that is, it brought on a sleep of 5 and more hours duration.

No unfavourable secondary effects of any nature whatever were observed. Trials were made at the Marburg and Freiburg clinics, administering the remedy by day in

¹⁾ Münchener Medizinische Wochenschrift 1888, Nr. 25.

refracta dosi to patients suffering from melancholia accompanied by torturing anguish, and here again it did not fail us; it brought on a kind of sleepy exhaustion which forced the fear and restlessness into the background **as long as its action lasted**. At night the patients, otherwise sleepless obtained from five to eight hours unbroken sleep. The dose amounted to 30 to 60 grains per day.

In some cases, especially of **periodic mania**, the calming action of the remedy on the patient was remarkable and this after only a few doses had been administered. After its discontinuance, the excitement mostly returned in a few days or weeks.

That no injurious effect results from the continued administration of larger doses of "**Sulfonal-Bayer**" is shown by CRAMER'S observation, according to whom, a female patient took 8 drams within 6 days and this without the least signs of injurious action, and **without the activity of the medicine becoming exhausted**.

In the discussion ¹⁾ which followed Dr. CRAMER'S lecture, this question was raised by Prof. FOREL of Zurich, and the lecturer declared that according to his numerous observations, patients did not become "accustomed" to "**Sulfonal-Bayer**", and that after long continued use it was, almost without exception, unnecessary to increase the dose. There likewise appears to be no particular difficulty in disaccustoming the patient to the use of Sulfonal. A man who suffered for years from want of sleep in spite of chloral, paraldehyde and the like, took some "**Sulfonal-Bayer**" with good effect and with its use the needed sleep returned. The remedy was discontinued without any appearances of abstinence asserting themselves.

In the second part of his lecture, Dr. CRAMER reported on the **experiments for the determination of the influence of the ordinary sleeping medicines on the digestive process**.

¹⁾ Compare *semaine médicale*, 13 July 1888.

In a large number of experiments on artificial digestion with chloral, paraldehyde, amylene hydrate and "Sulfonal-Bayer", it was established that „Sulfonal-Bayer“ was the only one of the soporifics named, which in no way interfered with the digestive process.

The author recapitulates that according to his observations, a good and important medicine for psychiatric therapeutics has been gained in „Sulfonal-Bayer“ and he urges its further examination with a view to the determination and extension of the indications for its employment in the treatment of lunatics.

In an abstract in the *Centralblatt für klinische Medicin* 1888 No. 28, Dr. TUCZEK, Docent at the University of Marburg expresses himself as follows, with reference to „Sulfonal-Bayer“.

“The more extensive trials which RABBAS made with the new remedy on sleepless and excited lunatics of the most varied types entirely confirmed KAST’s commendation. According to the view of the abstractor who took part in these observations, they place **“Sulfonal-Bayer“ at the head of all known sleeping medicines.**

Comparative experiments made with other soporifics showed that Merbon, amylene hydrate and paraldehyde even in large doses cannot compete with “Sulfonal-Bayer“. The latter acted promptly in some cases where even chloral (45 grains) failed. This last alone can be regarded as a rival; but Sulfonal-Bayer has a more lasting effect, and does not share with chloral, the objectionable action on the organs of circulation.

The comparatively slow action of “Sulfonal-Bayer“ in producing sleep, and also the extension of its action over a greater length of time, allow of the conjecture that the difficultly soluble medicine is but slowly absorbed and its action therefore gradually developed.

Further experiments will have to show whether — as already appears to be the case — if is possible by frequently repeated small doses say 8 grains every two hours, to alleviate or to remove the **excited condition of a lunatic.**

In Prof. ROSENBACH'S ward at the Allerheiligen Hospital at Breslau an extensive series of experiments were made with "Sulfonal-Bayer" and the objection to the influence of a suggestive action at the commencement of the sleep-producing effect was taken into account and met.

On the basis of 274 separate trials, which the assistant-surgeon Dr. K. PERIN at the Hospital named fully reports on in the "Berliner klinische Wochenschrift 1888 No. 25" the conclusion is arrived at with reference to the action of "Sulfonal-Bayer", that

„in doses of 30 grains it proves to be a medicine which
„in its safety is not inferior to the other approved
„soporifics such as morphia and chloral, whilst on
„account of the absence of injurious secondary actions
„even when taken in double the above dose viz 60 grains,
„it is to be strongly recommended in cases of non-com-
„plicated sleeplessness.“

In a paper in the same journal (Berliner klin. Wochenschrift 1888 No. 25) by C. OESTREICHER, Assistant-surgeon at Dr. JASTROWITZ'S Maison de Santé at Schöneberg-Berlin the results are given which were obtained with Sulfonal-Bayer at this institution, in the treatment of a very great variety of corporeal and psychical diseases.

More than 100 observations were made on about 50 patients, and comparative trials with chloral, paraldehyde, amylen hydrate and morphia were also carried out.

From the interesting experiments of the author, the following have been selected and are given in detail:

1. Gardener K., engaged at the Institution. Floride Phtise with Haemoptoe, rise of temperature towards evening and

violent perspiration at night. Sleeplessness of several weeks duration. Morphia 0.3 grain produced rest and sleep for 3-4 hours; Sulfonal 45 grains producing 7 hours undisturbed sleep and after a short pause the patient again fell asleep, awoke in 4 hours, complained of great exhaustion and of feeling unwell; slept the following day with short intermissions and perspired a great deal. Pulse unchanged, breathing quiet. In the evening the patient made no complaints but wished to take no more of the medicine "because it acted too powerfully". Owing to the great weakness of the patient, the dose of 45 grains appeared to have been overdone.

2. Workman W., Status epilepticus; fits increased during last two days, rise in temperature and great restlessness; patient did not remain in bed, **obtained no sleep whatever after taking 60 grains chloral, and on the following night 45 grains.** After having 22 fits during the day, the patient took 45 grains "Sulfonal-Bayer", fell asleep in $\frac{1}{4}$ hour and awoke in $7\frac{1}{4}$ hours. On following day the spasms began again, the patient took 45 grains chloral which likewise produced a lasting sleep preceded by great inebriation **of short duration.**

3. Prince Sch., Paranoa, refusal of food for $4\frac{1}{2}$ months and until a month ago, strong impulse to inflict self injury, absolute sleeplessness; 60 grains **chloral**, 2 drams **paraldehyde** and $1\frac{1}{2}$ dram **amylene hydrate** (pr. Clysma) produced **very restless** sleep and mostly of only 3-4 hours duration; after 45 grains "Sulfonal-Bayer" slept during 3 consecutive nights for $7\frac{1}{2}$ -8 hours; in the morning still great fatigue. After 30 grains **Sulfonal** the patient slept $6\frac{3}{4}$ hours and at repeated intervals for 5-7 hours with mostly but one short interruption. He fell fast asleep $\frac{1}{4}$ hour after taking the dose.

4. Manufacturer S., Dementia paralytica; accompanied by a state of fear and sleeplessness; after taking 45 grains "Sulfonal-Bayer" slept for 9 hours without waking, and on the following night for $5\frac{3}{4}$ hours; afterwards quiet as if half asleep; snored loudly which he did not do after the other medicines. After 30 grains chloral patient did not sleep at all, talked aloud to himself and only became quiet towards morning; after 45 grains chloral, obtained 4 hours sleep, then conducted himself quietly. **Paraldehyde was mostly without action**, amylene hydrate had somewhat more effect.

5. Tradesman B. Dementia paralytica; at night very restless, frequently gets up, talks aloud to himself. After 45 grains chloral — which he generally objects to take, on account of its disagreeable taste as also paraldehyde and amylene hydrate — the patient slept $6\frac{3}{4}$ hours and after 45 grains "Sulfonal-Bayer" obtained 8 hours sound sleep.

6. v. K., Dementia senilis; has hitherto taken large doses of bromide for sleeplessness and with but little effect; after 24—30 grains "Sulfonal-Bayer" he slept the whole night.

7. v. d. O., Melancholia; slept badly without medicine; after $1\frac{1}{2}$ dram paraldehyde, 75 grains amylene hydrate slept for 5—6 hours and after "Sulfonal-Bayer" repeatedly for the whole night.

8. Workman L., Alcoholism; periodically excited, then sleepless, likes to take chloral on account of the intoxication it produces in him; strives to keep awake after taking 45 grains "Sulfonal-Bayer" but after $1\frac{1}{2}$ hour became tired and slept for $6\frac{1}{4}$ hours without interruption.

9. Workman Sch. Periodic mania, madly excited, tears and talks aloud to himself; falls asleep late after taking 45 grains chloral and generally soon awakes again. After 45 grains "Sulfonal-Bayer" he falls into a sound sleep lasting nearly 6 hours, and snores loud which he is said not to have done previously.

10. Assessor E. Hypochondria; sleeplessness. After paraldehyde and amylene hydrate and formerly after morphia injections, sleep frequently disturbed. With 30 grains "Sulfonal-Bayer" excellent effect; patient fell asleep in $\frac{3}{4}$ hour and only awoke at about 8 o'clock on the following morning, felt much recovered and praised the remedy for its good action.

11. Mrs. L. Exhausting psychose with delirium cordis; cheerful delirium alternating with a state of anguish, often sleepless; after 30 grains "Sulfonal-Baer" obtained 6 hours sleep; paraldehyde and amylene hydrate act in like way but in the case of the latter remedy the patient very soon gets accustomed to it.

12. Mrs. D. X. Paranoia with many fearful hallucinations, refusal of food and suicidal fancies; sleeps soundly only after morphia injections but which frequently cause vomiting. After taking 45 grains "Sulfonal-Bayer", the patient lay for a time as if stupefied, remained quiet but did not sleep.

13. Workman R. Epilepsy; patient has for many years been accustomed to take 45 grains of chloral every evening, after which he sleeps well; after 45 grains "Sulfonal-Bayer" he obtained 8 hours sleep with one break, and before falling asleep complained of a strong feeling of heat and of the weak action of the new medicine. Five other epileptic patients said the same but made no complaint.

14. Workman Th. Epilepsy. Slept better after 30 grains "Sulfonal-Bayer" than after 30 grains chloral.

Hitherto nothing has been published on the efficacy of "Sulfonal-Bayer" for morphia patients; I have therefore made some experiments both during the time of breaking off the taking of morphia and also during the first weeks of abstinence when as is known agrypnia is wont to be very persistent for some length of time. The following account will show the results obtained but it must be borne in mind that these patients had almost exclusively been accustomed to narcotics for a series of years.

15. Mrs Sch. Sleeplessness during abstinence from morphia, first deprivation. Patient has taken small doses of morphia for 17 years, has had none for 3 weeks and does not sleep after taking 75 grains paraldehyde and 1 dram amylene hydrate. Strong vasomotoric disturbance. After taking 30 grains "Sulfonal-Bayer" had at first a sleepless night; was tired on following day and frequently wanted to sleep. At 10 o'clock in the evening took 30 grains "Sulfonal-Bayer"; fell asleep at about 2 o'clock and awoke after 2 hours sound sleep. Without medicine she slept only 2½ weeks later for 3-4 hours.

16. v. H. Morphinism; 45 grains chloral, 1½ drams paraldehyde or 75 grains amylene hydrate did not produce sleep during the first nights of abstinence. After 45 grains Sulfonal he slept the whole night and felt completely well and strengthened the next morning; regards Sulfonal as superior to the other remedies. Without a hypnotic, he still obtained no sleep; after a few days, patient took 30 grains "Sulfonal-Bayer" and again slept extremely well. The patient, who has for years tried the efficacy of most soporifics on himself praises "Sulfonal-Bayer" as the best of all.

17. Tradesman R. Morphinism in consequence of tabes; sleeplessness. At the time of the experiments, the patient took 2 grains morphia a day for Crices gastriques; he had

formerly taken large doses of morphia and also Chloral, and for a long time as much as 5 drams in 24 hours and on one occasion 10! in the same time. After 45 grains "Sulfonal-Bayer" no particular fatigue, at night no sleep and next morning the patient was tired and slept periodically during the forenoon; after 3 doses on three consecutive evenings he slept in the third night 9¹/₄ hours, did not awake at his usual time for having an injection and on the following day was still fatigued. Afterwards 45 grains "Sulfonal-Bayer" taken on two consecutive evenings were without any action.

18. v. A. Morphinism; during abstinence patient slept the greater part of the night after taking 45 grains Chloral, whilst 45 grains "Sulfonal-Bayer" produced no sleep.

The results of these experiments with „Sulfonal-Bayer“ which are in perfect agreement with those hitherto published by KAST and RABBAS, are summed up in the following expression of opinion:

“It is a harmless soporific, the action of which is unaccompanied by any objectionable secondary effects. Respiration, the pulse and the secretion from the kidneys as far as albumin in the urine is concerned are uninfluenced. Whether disturbances would ensue from its persistent use, one cannot for the present say.

On account of its being tasteless and odourless it is to be preferred to amylene hydrate and paraldehyde especially for lunatics.

In its action it is not absolutely certain but for the most part equals Chloral and it has the advantage over the latter in being free from danger even in cases of heart affection; it also has no intoxicating effect, and in fact, produces no foregoing excitement.

In the first days of abstinence from morphia it generally helps as little as the three other soporifics named.

Sleep is often brought on more slowly than is the case with the other medicines named — viz in 1–3 hours — but

it is persistent and sound. It is advisable to administer the medicine some hours before the patient goes to bed.

In an editorial notice, Prof. A. EWALD, on the strength of his own experience, confirms the favourable results obtained with the preparation.

In a paper entitled "On the clinical estimation of the action of Sulfonal" (Deutsche medicinische Wochenschrift 1888, No. 25) Dr. J. SCHWALBE reports on the comprehensive and detailed examination to which the remedy has been subjected in the municipal infirmary Friedrichshain in Berlin under the guidance of the directing surgeon Prof. FÜRBRINGER.

The "**Sulfonal-Bayer**" was obtained from the Firm **Bayer and Co.** of **Elberfeld** and the claims to purity were satisfied in the most complete way possible.

Out of 50 patients who took the remedy, there were 23 cases of nervous sleeplessness and in 21 of these (90.3 %) the medicine exercised its full activity. A less favourable result (44 %) was obtained in those cases where an organic disease (phthisis, acteritis, carcinome, **uncompensated** heart-affection) was the cause of the sleeplessness.

Prof. FÜRBRINGER and the author's interpretation of these facts is "that "**Sulfonal-Bayer**" is a **hypnotic** in the sense employed by KAST but not a narcotic, and that it is able to calm the brain cells and produce sleep."

In none of his numerous observations did the author perceive any injurious effects.

Above all it must be particularly emphasised that neither in the cases under my observation nor in those observed by others was there any alteration in the temperature, pulse and respiration. In most cases, I have had the temperature, pulse and respiration tried immediately before and after administration of the medicine but never found any appreciable modification. I have myself made many experiments in this direction to check these results and can confirm the notes taken

by the nurse in charge. **This result is extremely valuable.** Not only because with this evidence to rely on, one can administer "Sulfonal-Bayer" with good effect in preference to morphia and Chloral to patients suffering from heart disease and even when this is the cause of the sleeplessness, but also in **cases of nervous sleeplessness where there is danger from the weakness of the heart.** Thus in a case of pneumonia crouposa with moderately strained and very frequent pulse and in one of typhus — in both cases the fever was at its height — I could venture to give small doses of the medicine and setting aside the slight headache and drowsiness the result was prompt and I might almost say striking. It will be especially desirable to pursue the experiments in this direction in the hopes of establishing this acquisition to therapeutics, which may afford us a safe and yet certain soporific for typhus and other fevre patients who are frequently deprived of their nightly rest for weeks.

In this property, „Sulfonal-Bayer“ appears to possess almost equal value for the **treatment of children.** I have certainly but few results to show but the certainty with which the remedy acted in 4 grain doses of 75 % and the absence of any secondary effect even after 8 grains had been given in a case of vomiting accompanied with diarrhoe — though for the reasons already given sleep was not produced — encourage one to make further experiments and to express the conviction that it will prove a permanent acquisition.

The author sums up in the following paragraphs the conclusion to which his experiments with „Sulfonal-Bayer“ lead:

1. Sulfonal in its pure state is on account of its freedom from odour and taste a pleasant medicine.
2. In cases of nervous sleeplessness it acts as a hypnotic in doses of 15—30 grains with very acceptable promptness.

3. Sulfonal affects neither the temperature, the pulse nor respiration and on this account it deserves the preference over morphia and chloral in febrile diseases and all affections in which there is reason to fear weakness of the heart's action. It may also find employment especially for children.
4. The subjective secondary effects of Sulfonal are of an insignificant nature and shew no indication against its employment.

The extensive series of experiments with "Sulfonal-Bayer" which were carried on in the clinic of

**Hof- and Geh. Medicinalrath Prof. Schönborn
at Würzburg**

have been published by Dr. JOSEF FRANZ. (On the action of Sulfonal on chirurgic patients, Würzburg, 1888).

In the course of the observations 260 separate trials on 82 patients were made for the most part with the view to determine the following points:

- I. What action has "Sulfonal-Bayer" and in what dose should it be administered in order that it may exert its action:
 - a) on patients suffering merely from nervous sleeplessness or so-called Agrypnia nervosa?
 - b) on patients who cannot sleep through having undergone an operation or who suffer pain from some other cause?
 - c) on patients who are suffering from the after-effects of chloroform?
- II. When does its action commence?
- III. What subsidiary action has it?
- IV. What influence have age and sex on the dose?

In the case of 26 patients suffering from purely "nervous" sleeplessness, 82 doses of "Sulfonal-Bayer" produced excel-

lent hypnotic effect on 78 occasions (that is 95.1 % of the doses). In the majority of cases the sleep produced was so good that the patients did not awake of themselves but had to be woken. They described the sleep mostly as agreeable and refreshing. The **only** patient who did not obtain sleep was one suffering from phthisis and accustomed to morphia. In two cases the action of the remedy was retarded, and sleep was obtained on the following morning.

Among the cases of nervous sleeplessness mentioned by the author, one which is worthy of note is that of a patient — an apothecary — accustomed to nightly subcutaneous injections of morphia (0.15 grain); **it was found that the administration of "Sulfonal-Bayer" rendered it remarkably easy to disaccustom the patient to the morphia. This property of "Sulfonal-Bayer" cannot be too highly valued** as it would enable one to keep patients from the abuse of morphia and to deprive them of the latter even if it is only available in the less severe cases of morphinism.

The author found that even the small dose of 15 grains often sufficed to produce the full effect in cases of nervous sleeplessness.

In the second class of cases — "patients who could not sleep through pain, in consequence of an operation or some other cause" — the action of "Sulfonal-Bayer" proved less constant though only in 5 cases did it completely fail in its action.

"In the other cases the patients slept fairly well in spite of the violent pains and even after a dose of only 15 grains; sleep set in rather late but the patients stated regularly that they afterwards felt very much strengthened and refreshed".

On the whole, the author has gained the impression that violent pains certainly do considerably hinder and retard the soporific action of the remedy but that it is never completely annulled. He considers therefore that "Sulfonal-Bayer" acts chiefly as a hypnotic, less as an anaesthetic and that the effect it produces is inversely proportional to the intensity of the pain.

"In most cases however in which the patients could not sleep through pain, 15 grain doses of "Sulfonal-Bayer" did their duty well, producing a sound and quiet sleep after a shorter or longer time, which in many cases lasted but a few hours but still much refreshed the patients who, without Sulfonal, had had little or no sleep in the preceding nights."

If on the whole "Sulfonal-Bayer" cannot be regarded as an established remedy for appeasing pain, still some of the author's observations in this direction are worthy of consideration: the first case is that of a young man suffering from violent supraorbital neuralgia the terrible pain of which prevented him from sleeping. A single dose of 15 grains immediately effected a diminution of the pain and the patient obtained a good night's rest.

In the case of another patient, tooth-ache was relieved.

Finally, the author mentions the case of a patient with a complicated fracture of the humerus; every evening he received a 15-30 grains dose of "Sulfonal-Bayer" and slept fairly well after it. On two successive days however, he took morphia c. aq. laurocei and stated that each time after the morphia he slept worse and had greater pain. After again taking 15 grains of "Sulfonal-Bayer" the patient slept much better all through the night and in spite of the great pain which he suffered.

Favorable results were also obtained from the administration of the remedy to fever-patients.

"The fever patients, and amongst them several boys under 6 years of age, fell asleep immediately after taking the powder and obtained a sound and good sleep which lasted the whole night.

In the case of a boy of 5 suffering from meningitis tuberculosa, "Sulfonal-Bayer" also produced an excellent effect. The boy had already had some sleepless nights and exhibited signs of great restlessness during the day-time, yet 8 grains of "Sulfonal-Bayer" sufficed to completely calm the patient

and on repeating the dose on the following day the same satisfactory result was obtained.

The fact that even patients who are suffering from the aftereffects of chloroform will bear doses of 15—30 grains of "Sulfonal-Bayer" is of considerable importance in judging of the harmless action of this substance even on an already affected nervous system. In connection with this the author remarks:

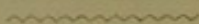
"If it ("Sulfonal-Bayer") exercises any injurious action at all, one would certainly assume that it would do so in such a case and yet there was no sign of any ill after-effect or even of the ill-effects of the narcotic being intensified."

Neither did it produce headache, sickness nor weariness. Some of the patients even stated that "the headache resulting as the effect of the narcotic was diminished after taking "Sulfonal-Bayer" and after a time disappeared entirely". Cases in point are mentioned by the author.

The action of the remedy was found to be retarded especially when the patients suffered great pain.

In cases of nervous sleeplessness, a healthy sleep generally set in within an hour after the administration of the medicine.

In concluding his detailed treatise, the author mentions that also according to the experience gained in the Juliusospital at Würzburg, "Sulfonal-Bayer" has no injurious action either on the nervous system nor the organs of circulation and digestion, even when administered in doses of 45—60 grains; and it was not only given to patients but was also taken for the sake of experiment by a number of healthy physicians at the Julius-Hospital.



On the
Administration and Prescribing of
"Sulfonal-Bayer".

Prof. A. Kast

gives full directions under this heading (Therapeut. Monatshefte, Juliheft 1888).

Starting with the fact that isolated — on the whole very rare — cases occur in which the soporific action of "Sulfonal-Bayer" is retarded to an undesirable extent (2—3 hours and longer) and in which, sleep after it has once commenced lasts longer than was intended, KAST attempts to determine the cause of this action:

"There are two properties which "Sulfonal-Bayer" possesses to which must evidently be assigned the generally recognised advantage which it possesses in its gradually developed and lasting action but which are on the other hand responsible for the undesirable persistence of the action in certain cases; one of these is a **physical** property — the difficult solubility in water — and the other a **chemical** property — the great stability of its molecule."

An extensive and new series of experiments on the solubility of "Sulfonal-Bayer" and on the length of time it remained unaltered in the blood led to the conclusion that the effects mentioned above must be attributed partly to the one and partly to the other of the two causes named.

As to the result of his experiments on the solubility of "Sulfonal-Bayer", KAST gives the following rule as representing the most favourable conditions for its administration:

"The remedy, in a fine powder, should be mixed with at least a $\frac{1}{4}$ pint of a warm fluid and given in the early hours of the evening; it is most advantageously taken in soup or tea with the last meal and between 7 and 8 o'clock."

When prescribed in this way, the most favourable conditions are — according to KAST's experiments — satisfied for the rapid solution of "**Sulfonal-Bayer**": a considerable amount of fluid with a suitable proportion of hydrochloric acid and an abundant quantity of salts and peptone.

"Attention to these instructions is especially to be recommended for cases in which a **speedy action** is desired or when from the character of the disease, **difficulty of absorption** may be expected.

In this last direction, I have in mind especially **heart-disease** with disturbed compensation. It will be found whether and to what extent the hitherto not very effective action of "**Sulfonal**" can be improved by this mode of administration.

With regard to the first point — **acceleration** of the action by observing the above directions — there are already a number of observations and amongst them a case of fever-delirium which recently occurred at the medical clinic of Geh. Hofrath BÄUMLER and may here be briefly mentioned:

The patient (aged 23) suffering from severe abdominal typhus was admitted into the clinic in the second week of his illness. A few days afterwards extremely violent delirium set in — the mean temperature being 103–105° F. in axilla. On Wednesday the 27th June he became very excited, talked nonsense, thrust himself with increasing violence from his bed, so that finally he had to be held down. A subcutaneous injection of 15 grain morphia at 1 o'clock and 30 grains chloral at 3 o'clock and also several baths (68° F.) had no tranquillising effect; the patient was in a state of continual movement and restlessness. At 8 o'clock „**Sulfonal-Bayer**“ was administered in hot soup and in almost less than 20 minutes the patient became quieter and soon sank into a quiet sleep, from which he only awoke about 10 hours after with perfectly clear sensorium. As the temperature again rose in the afternoon, **the excited condition also returned**. On administering 60 grains "**Sulfonal-Bayer**" with plenty of warm soup, the patient became quiet in a quarter of an hour, slept until the morning of the 29th and awoke with full consciousness. He was quiet without being sleepy for the

whole day and until late in the evening (9 o'clock) when he again became excited but after taking 45 grains „Sulfonal-Bayer“ he again obtained 8 hours of undisturbed sleep.

On the following days there was not a trace of the previous nervous excitement in spite of the persistent high fever.

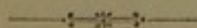
If such observations clearly indicate the significance of the conditions of solubility of „Sulfonal-Bayer“ and the aid which can be rendered by the mode of administration, it must on the other hand be borne in mind that the detection of „Sulfonal-Bayer“ in the blood of an animal in whose intestines no trace could be found, affords proof that also the second factor mentioned — the resistance of the molecule to chemical action — must also be taken into account.

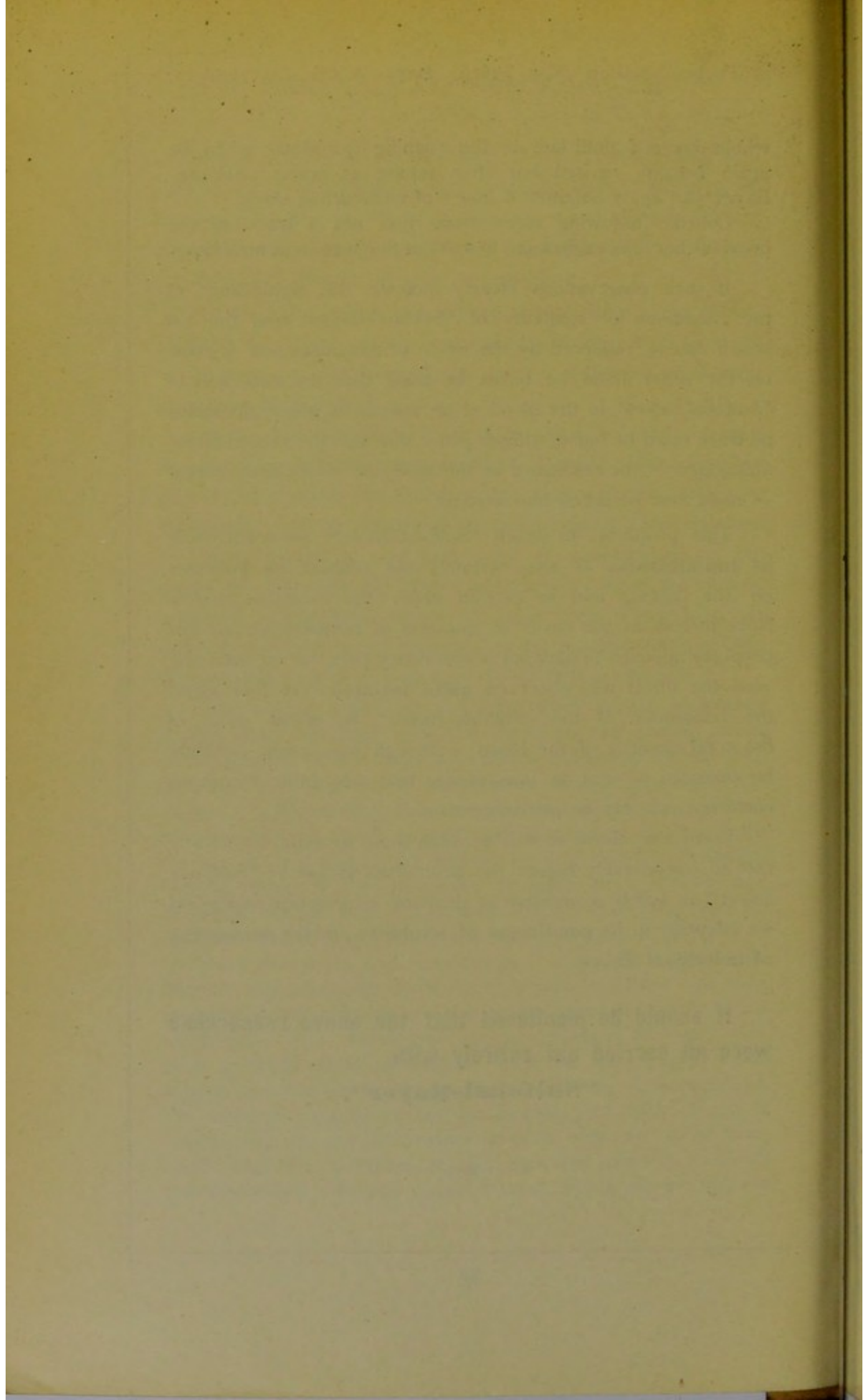
This property, to which „Sulfonal-Bayer“ no doubt owes its **harmlessness** is also certainly not without its influence on the lasting and in certain cases the retarded action. Nevertheless in the cases in question of retarded action, this property appears to play but a secondary part, for on one occasion the effect was observed **quite isolated**, but then again the remainder of the „Sulfonal-Bayer“ in about 40% of the total quantity of the blood — though loss could certainly be excluded — was so insignificant that any later symptoms could not possibly be attributed to it.

From the above it will be seen that, to avoid or at any rate to considerably lessen the protracted action of „Sulfonal-Bayer“ is solely a question of growing experience dependent on attention to its **conditions of solubility** and the **measuring of individual doses**.

It should be mentioned that the above researches were all carried out entirely with

„Sulfonal-Bayer“.







“Sulfonal-Bayer“

can be obtained through any wholesale
druggist

in

Great Britain and Ireland.



